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Trail and Commercial Pack Stock Management In the Ansel Adams and John Muir Wildernesses

Record of Decision



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Introduction

This document presents our decision for the Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses project. This decision results in a non-significant amendment to the Land and Resource Management Plans for the Inyo and Sierra National Forests in California.

The analysis area includes the Ansel Adams and John Muir Wildernesses, covering 810,581 acres of California's Sierra Nevada range. The eastern portion of the analysis area ranges from west of Lone Pine, California to State Highway 120 in the north. The western portion of the analysis area extends from the southern boundary of Yosemite National Park to west of Sequoia Kings Canyon National Park. The planning area lies within Madera, Fresno, Inyo, and Mono Counties.



The John Muir Wilderness was established in 1964 by the Wilderness Act and enlarged 81,000 acres by the 1984 California Wilderness Act. The John Muir Wilderness extends from Mammoth Lakes, California in the north, forks around the Sequoia Kings Canyon Wilderness, and extends some 100 miles to the south with its southern most boundaries just west of Lone Pine, California. The John Muir Wilderness is one of the most heavily visited wildernesses in the National Wilderness Preservation System. There are 580,323 acres within the Wilderness, with 228,366 acres on the Inyo National Forest and 351,957 acres on the Sierra National Forest. Approximately 26,000 acres in the northern portion of the Fish Creek watershed are Sierra National Forest lands administered by the Inyo National Forest.

With the completion of the Ansel Adams, John Muir and Dinkey Lakes Wilderness Plan in 2001, new direction for the management of these wildernesses was incorporated into the Land and Resource Management Plans for the Inyo and Sierra National Forests. The Wilderness Plan was the culmination of nearly ten years of public involvement and focus on wilderness management planning on the two Forests.

In April 2000, a lawsuit filed against the Inyo and Sierra National Forests alleged violations of the National Forest Management Act, National Environmental Policy Act (NEPA), and the Wilderness Act. The judge found in favor of the plaintiffs on the NEPA claim, determining that in authorizing the special use permits for the pack stations prior to 2001, the Forest Service failed to adequately document environmental impacts as required by the NEPA.

A Court Order was issued that required the Forest Service to complete a two step process for issuing commercial pack stock special use permits. First, a cumulative impact analysis of pack stock operations in the Ansel Adams and John Muir Wildernesses must be completed no later than December 2005. The Court ordered that the analysis consider limits on numbers of stock animals, limits on group size, trail suitability and designation of campsites for use by commercial pack stations. Secondly, by December 2006, the Forest Service is to complete a site-specific analysis for each permittee. The court allowed all nineteen pack station operations to continue to be authorized, with specified conditions and restrictions imposed by the court.

An interdisciplinary team conducted an extensive, broad condition assessment in approximately 75% of the areas used by pack stock operators. In areas where field assessments were not

conducted due to costs or time constraints, existing Forest Service records were used. These areas were typically areas of low use or low concerns. We feel we have collected adequate information on the conditions in the locations where commercial pack stock operate to make this decision, and that this level of information reduces the uncertainties and risks of decision making.

Summary of the Decision

It is our decision to select **Alternative 2 – Modified** as presented in the *Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses Final Environmental Impact Statement*. We believe Alternative 2 – Modified meets our purpose and need, meets our public service commitment to provide for use and enjoyment of these lands as wilderness, and that the keystone of the alternative—destination management—responds to environmental concerns and allows us to remediate the environmental concerns and preserve wilderness character most effectively. The Final EIS discloses that at the wilderness-wide scale, the effects of commercial pack stock use in the Ansel Adams and John Muir Wildernesses are negligible. There are, however, site-specific “hot spots” in these wilderness areas that need to be managed to ameliorate the effects of this use. **During our analysis, it became clear that the key to protecting the wilderness character of these areas is to control the timing, frequency, intensity and location of commercial pack stock use. The overall levels of use were not as critical as how, where, and when these uses occur. The destination management approach of Alternative 2 – Modified is a site-specific strategy that allows us to pinpoint resource concerns and take direct actions to remedy impacts.**

We have made our decision after careful review of the public comments on the Draft Environmental Impact Statement prepared for this project pursuant to the National Environmental Policy Act (NEPA). The 2001 Wilderness Plan for the Ansel Adams, John Muir and Dinkey Lakes Wilderness and Record of Decision is modified by this direction. This is a non-significant amendment to the Land and Resource Management Plans for the Inyo and Sierra National Forests.

An open, inclusive approach was used to make this decision. Although we make this decision based upon the best information currently available to us, it is not without some uncertainty or risk. We fully expect that by placing an emphasis on adaptively managing these commercial uses to achieve prescribed conditions, we can actively manage these uses and continue to improve conditions over time.

Key Features of the Decision

Listed below are the key features of the management direction for these wildernesses as described in Alternative 2 – Modified, the selected alternative.

Trail Plan

Alternative 2 – Modified adjusts trail maintenance levels to reflect recreation categories, desired conditions and allowable levels of use.

The Extent Necessary

This decision, based on a thorough analysis of the selected alternative, identifies the need for the type, location and amount of commercial pack stock services. Furthermore, we have determined—as required by the statutory requirements of the Wilderness Act—that this level of use is needed by the public and represents a level of use that does not degrade the wilderness character of the area. We demonstrate in the analysis and this decision that the number of permits, area of operations and levels of use are limited to the “extent necessary” that will preserve wilderness character.

Destination Management

All destinations that will be used by commercial pack stock operators will have a prescribed use and desired condition to achieve. The desired condition is driven by the three recreation categories outlined in the 2001 Wilderness Plan and by an assessment of the capacity of the destination for the prescribed type and amount of use. Approximately 190 destinations will be managed for commercial use.

Destination management is achieved through a strategy that describes desired condition by destination. Desired condition includes recreation category setting, access, grazing, use levels, campsites and any corrective actions (remedy) that must be taken. The emphasis of destination management is to articulate the conditions we are managing for over time. Many tools are used to achieve the desired conditions depending on the site specific needs including designated campsites, party size limitations, limits on numbers of stock, trail restrictions, and grazing strategies.

Day Rides

Day rides will be managed within the desired conditions established for destinations. The intensity of day ride activities varies considerably across the planning area. Where day ride activities occur with identified cumulative effects from other activities (Mammoth Lakes Basin and Reds Meadow to Rainbow Falls) a finite number of rides is identified. In all other areas, the location, type and number of stock to be used for this activity are identified and will be managed to insure that desired conditions are met.

Trail Suitability

This direction identifies trails that are not suitable for commercial stock, based on an assessment of resource conditions, the desired conditions of a destination and projected levels of use. While

some suitability determinations are temporary based on the future trail work needed to improve the condition of the trail, most determinations are not subject to change in the foreseeable future.

Designated Campsites

This direction identifies overnight stock holding camps for commercial operators. All overnight stock holding and all expense or traveling trips in the wilderness must take place at a designated campsite determined suitable and approved by the Forest Service. Approximately 180 designated campsites are identified in Alternative 2 – Modified.

Party Size

Party size wilderness-wide is 15 persons and 25 stock. In addition, based on an assessment of the capacity of the destination, Alternative 2 – Modified identifies 15 site-specific locations where the commercial pack stock party size is lower to assure wilderness resources are protected.

Stock Numbers

Each operator will have a limit on the number of stock in the wilderness at one time. This number includes stock used for day rides. In addition, 13 locations have site-specific limitations on the number of stock to destinations. The analysis identified that these limitations are necessary to maintain the desired condition for the destination area.

Campfires

Minor adjustments to the elevational closure are made with this decision. Where adequate fuel wood has been identified there will be a change in the boundary of the closure to reflect the areas as open to campfires for all visitors. In one case, where fuel wood is sparse, the boundary is modified to reflect the area as closed to campfires.

In all areas where campfires are not allowed all visitors will be allowed to have charcoal fires with a fire-pan and required to pack out the ash. A monitoring component is included in this direction to assure that this action does not lead to unacceptable impacts associated with charcoal campfires. The use can be revoked site specifically if compliance is not achieved.

On a case-by-case basis, specific areas meeting strict criteria may be identified where commercial pack stock operators may have wood campfires provided they pack in wood from outside the wilderness or an approved source, use a fire-pan for the fire, and pack out the ash.

Grazing Management Strategy

Identified grazing areas were assessed and a determination of suitability was made.

Estimates of suitable forage availability were made within grazing zones and are measured and prescribed site-specifically in terms of stock nights. Critical areas too wet for grazing or

containing Yosemite toads or fens are protected and not available for grazing. A rest rotation strategy is used in areas where hydrologic conditions were identified with a downward trend.

All drift fences associated with commercial pack stock use were assessed in terms of the needs they served for resource protection and visitor safety. Where these two elements were not met, drift fences will be removed.

Heritage Values

This decision conforms to the *Controlling Impacts on Historic Properties; Management of Ansel Adams, John Muir, and Dinkey Lakes Wildernesses, Inyo and Sierra National Forests Programmatic Agreement*. This agreement was designed to manage and protect the historic resources of these wilderness areas.

Recreation Category Changes

Adjustments to the recreation category boundaries were made at 36 locations to better reflect the conditions we intend to be managing for with the 2001 Plan direction. These areas were most likely mapped incorrectly due to lack of accurate information.

Rationale for the Decision

How the Decision Meets the Purpose and Need

1. There is a need for additional guidance for managing commercial pack stock operations in the Ansel Adams and John Muir Wildernesses in order to achieve and maintain desired resource and experiential conditions identified in the 2001 Wilderness Plan and Record of Decision.

The 2001 Wilderness Plan implemented new management direction for these two wilderness areas relying strongly on the “recreation category” concept to define desired conditions. This concept recognizes that within the context of preserving wilderness there are different settings, objectives and goals across the 800,000 acres. There are popular destinations that are managed—and should be managed—differently from the vast majority of the very pristine, rarely visited areas. This is a common practice in wilderness management and fully supported by agency policy (FSH 2309.21.1).

It has been our goal in this process to make sure that the management of commercial pack stock use is consistent with the 2001 strategy. Alternative 2 – Modified contains a number of control mechanisms with the key component of this strategy being destination management; that is, managing the use to ensure that the conditions at the destinations are consistent with the assigned recreation category.

We have concluded that destination management as displayed by Alternative 2 – Modified is the best method to manage site-specific impacts and use of commercial pack stock. A number of land management agencies commented on the Draft EIS and generally consider this approach to

be the most effective strategy for managing commercial pack stock use. In addition, all the resource specialists in their analysis of the alternatives in Chapter 4 have indicated that the direct and responsive nature of destination quotas is the superior method of managing impacts and protecting resources.

It is not simply the level of use that determines the protection of wilderness; rather, the timing, frequency, intensity, and location of use are most relevant. Research on wilderness recreation repeatedly emphasizes this, as is documented in Chapter 3 of the Final EIS. Our specialists' analysis affirms this and shows that when the frequency and intensity of use is controlled to a destination the relationship between use and impact can be better managed and evaluated.

This destination management approach enables us to pinpoint resource concerns and take direct actions to remedy impacts. This approach effectively incorporates and combines other commercial stock management tools including designating camps for holding stock, limiting commercial stock from using unsuitable trails and applying use trail and party size restrictions at certain destinations.

At the center of this approach is the destination quota, this controls the frequency, intensity and location of use to each destination. This measure ensures that each destination is protected and consistent with the desired condition. Each destination for spot and dunnage services has a capacity that has been determined based on resource information, the recreation category desired condition, and professional judgment by an interdisciplinary team of specialists and decision makers. The stock at one time limitation controls the timing of the use, and insures that trail encounters with pack stock do not exceed an acceptable level. Collectively, the actions in Alternative 2 – Modified control the timing (stock at one time), frequency (number of trips), intensity (party size, stock number limitations) and location of use (destination management).

Other alternatives utilize less precise control mechanisms on commercial pack stock operations, such as trailhead quotas and service days (Alternatives 1, 3, and 4). For these less precise mechanisms, the analysis indicates that resource protection is achieved only through probability; that is, if a certain number of people travel from a trailhead the probability is that they will disperse and not cause overcrowding and associated resource impacts. Although the likelihood is that commercial pack stock use will have fewer impacts on the resources by an overall reduction in use—such as Alternative 4—it is not at all certain, since the frequency of use can change and the intensity of use to a destination is not controlled. Destination management directs the controls at specific locations which, in the end provide far better protection and management of resources than relying on the probability of trailhead quotas.

Our destination management approach also addresses remediation that the courts considered necessary for past damage caused by or contributed to by commercial pack stock activities. In most cases, we determined it was not appropriate to conduct “pick and shovel” work to remediate damage to meadows that may not have been caused by commercial stock, or may be just natural vulnerabilities or historical grazing impacts that can over time heal if the disturbance is removed or reduced. However, in situations such as serious resource impacts caused by trails or campsites, where commercial stock use has been heavy, we either reduced use and/or prescribed no use until the trail or campsite is stabilized or brought up to standard.

At a destination or site-specific level, we are prescribing the relocation of campsites where needed, party size limitations, seasonal limitations on stock, and rest of grazing areas throughout

the wilderness. Each situation and each destination was assessed to consider how effective the management options would be to remedy known concerns or past effects.

This management strategy not only identifies and corrects known resource concerns but provides the framework to continue to improve or insure that acceptable conditions are maintained over time. This, along with the very site-specific controls on commercial uses, constitutes what we consider appropriate remediation for past damage to wilderness character qualities.

2. There is a need for a trail plan that accurately identifies a system of trails for all users, and appropriate trail management objectives for each system trail, consistent with the desired condition of areas within the two wildernesses as identified in the 2001 Wilderness Plan and Record of Decision.

The trail plan component of this project was originally scoped as a separate environmental analysis. After receiving public comments and reviewing the two projects, we recognized the potential for the trail plan and commercial pack stock management project to be considered connected actions. In addition, there were obvious cumulative effects associated with the two efforts that should be analyzed together. The DEIS combined the trail plan and commercial pack stock management projects and offered four variations (including the No Action) on the proposed trail plan. The trail plan adopted in Alternative 2 – Modified responds to comments received on the Draft EIS.

Alternative 2 – Modified meets this need by providing a system of trails that is consistent with our objectives of wilderness management and is fully aligned with the strategy of destination management. The trail plan in Alternative 2 – Modified also accomplishes the goal in the 2001 Wilderness Plan that direct the forests to “provide a transportation system that ensures suitable access for the types and numbers of trail users, protection of resources, and is consistent with management objectives for the areas accessed.”

Alternative 2 – Modified provides a trail system that aligns the level of development of the trails with the assigned recreation categories. Adjustments were made so that there are fewer anomalies between high development trails in a recreation category 1 and low development trails in a recreation category 3. This trail system is more consistent than any of the other alternatives with the levels of development that currently exist, and although the levels may seem high to some, and low to others, they usually reflect the class that is presently on the ground.

Besides connected actions and cumulative effects, the primary issue we assessed in response to the trail plan was the issue of trail development. There were many DEIS respondents who expressed the desire to have more highly developed trails and fewer trails at the “primitive” level. There was a concern that these trails (Trail Class 1) would not be available or managed for riding and pack stock. Although our trail class standards clearly convey this is not the case, there was still a concern that over time, these trails will deteriorate and not be cleared or maintained even at the primitive level. Our ability to maintain all trails to standard will continue to be a challenge, but it is not a reason to establish an inventory that either increases the trail class level, or reduces the trail class level for reasons other than what the resource and management of allowable uses requires. We set our inventory and trail classification consistent with what was reasonable and needed for the expected levels and types of uses.

We know there is a constituency of visitors that prefer lesser developed trails, not to be confused with un-maintained trails. We feel that our inventory reflects and responds to the settings of the

landscape, with no preconceived goals for miles in each trail class. The inventory responds to the needs of users and the resource, which was our objective.

In meeting these above needs, the following purposes must be met:

(1) Provide for needed commercial pack stock services.

The Needs Assessment (Appendix D) clearly establishes the need for commercial packing services in the Ansel Adams and John Muir Wildernesses and identifies a range for this need. The Needs Assessment indicates demographic trends point to the likelihood that in the future, more people will need these services and our assessment must consider such future needs and not be entirely focused on the past or present situation. While Alternative 2 – Modified does not meet the full level of public need as displayed in the Needs Assessment, it does allow for a reasonable level of service that is within the low end of the need range. We believe Alternative 2 – Modified contains the combination of control mechanisms that will preserve the wilderness character of the area and still allow for the prescribed use range of needed commercial packing services.

Alternative 2 – Modified allows for reasonable use of these wildernesses by persons needing commercial pack stock services. We feel it is important to allow all segments of the American public the use and enjoyment of these wilderness areas as wilderness. The Needs Assessment identifies that a segment of visitors to these wildernesses need commercial pack stock services for their access and proper wilderness uses. Without pack stock commercial services, these visitors' opportunities for using these areas would be severely limited or perhaps eliminated. It is important that future generations be allowed to experience and enjoy these wilderness resources and appreciate the value they have in our society and culture. If we exclude all but the fit and healthy, we are not fulfilling the Wilderness Act goal to secure for the American people of present and future generations the benefits of an enduring resource of wilderness devoted to "the public purposes of recreational, scenic, scientific, educational, conservation, and historical use."

It is important on a number of levels to provide access to these wilderness areas to a diverse population as in many cases it is access and enjoyment of these areas that builds support and constituency for the wilderness concept. As David Brower in his 1948 Sierra Club Bulletin article "Are Mules Necessary" so appropriately concluded:

So it would seem that the big traveling trips through the wilderness such as initiated by the Sierra Club in that first Annual Outing, should be continued, by whatever organizations may be qualified to conduct them. The argument that John Muir presented remains valid. If we want mountain wilderness—the spacious scenic wilderness that means something—we must make it known to the men who, knowing it will protect it. Those who like best the most Spartan of wilderness trips—cross-country backpacking—must make haste slowly in any attempts to impose such trips upon others, or there may be too few men in the wilderness to protect it.

Today, the overall condition of these wildernesses is significantly improved from the stock impacts described in 1948 by changes in regulations and management; however, the need for and the benefits of commercial packing services remain and to some degree continue to fulfill the needs envisioned by John Muir and David Brower of introducing and educating citizens to wilderness and its purposes.

(2) Comply with the Wilderness Act by preserving wilderness character.

Throughout the environmental analysis process, the protection of wilderness character has been identified as an essential prerequisite in selecting a commercial service alternative. Four components of wilderness character were evaluated and compared: untrammelled¹, undeveloped, opportunities for solitude or primitive and unconfined recreation, and natural conditions. These concepts are used in the legislative definition of wilderness in the 1964 Wilderness Act. Our analysis rigorously explored the elements of wilderness character in relation to the various levels and types of commercial pack stock use proposed in the alternatives. A summary of the selected alternative's compliance with wilderness character preservation can be found below in the Wilderness Act part of the *Findings Required by Other Laws* section.

Two of the four components, untrammelled and undeveloped, have minimal application to commercial pack stock use and management actions in this plan. The trammeling of wilderness would take place with large-scale manipulations of ecological processes, such as dams, fire suppression, animal, or plant restorations. With all alternatives, the level of commercial pack stock use is not causing any manipulation of ecological systems at a scale near that of dams and fire suppression, i.e. not allowing natural processes to occur. Relative to permanent improvements, human habitation, and structures, commercial pack stock represents very limited and insignificant development. Primitive drift fences—wire strung between short native wood posts for a short distance—is the extent of the development in these alternatives. Though this level of development may affect some visitors, the overall conditions of these wildernesses continues to provide a striking contrast to modern civilization, perhaps even more so now than in 1964.

The other two components, opportunities for solitude or primitive and unconfined type of recreation and natural conditions, are most relevant in this analysis. It appears from our analysis that the most affected component of wilderness character resulting from commercial pack stock activities is the unconfined recreational experience. This is true in each of the alternatives. To a lesser extent, the natural component is affected, but only at a site-specific local level, and not at the wilderness scale and not to a degree that has any significance in the overall natural conditions of these areas. Since commercial pack stock use is so tightly controlled and managed, our strategy for preserving one component of wilderness character—natural conditions—is arguably detrimental for some public's opportunities for solitude or unconfined recreation. However, we conclude that protecting the natural components of wilderness character are more fundamental to preserving wilderness *as wilderness* than insuring that every person has the experience they want—when and where they want it. To protect wilderness “as wilderness” requires that we manage for the long-term conditions of wilderness, not necessarily the short-term experiential values that are fleeting and intangible and often reflect opinions and beliefs, not concrete measurable conditions.

The five alternatives had varying effects on the wilderness character qualities of solitude or unconfined recreation and natural conditions. Of the six alternatives, Alternative 3 provides the best opportunities for unconfined recreation; however, there are less predictable impacts to natural conditions and opportunities for solitude. Generally, there is more of a risk of ecological impacts becoming more pronounced with management controls (trailhead quotas) that are less

¹ “untrammelled is one of the most misunderstood words in the Wilderness Act. An untrammelled area is where human influence does not impede the free play of natural forces or interfere with natural processes in the ecosystem”

directly tied to the actual impacts. Alternative 2 and 2 – Modified contain a number of features such as party size and grazing limitations that will result in an improvement of natural conditions in these wilderness areas (compared to current management or Alternative 1).

Alternative 4 limits commercial pack stock operations to the lowest amount and fewest locations, other than Alternative 5, which analyzes no commercial use. However, the overall level of use that is identified (in service days) has less of an effect on the extent of operations than the trail limitations, designated campsite requirements and party size restrictions; which collectively substantially reduce the extent of operations. Opportunities for solitude will increase in all areas where pack stock is not allowed, but the areas where use is proposed to be eliminated are traditionally where these commercial services has been low and infrequent. The unconfined and primitive recreation qualities are greatly diminished in Alternative 4 as a result of the more severe limitations. Naturalness will improve over time in areas where commercial pack stock operations are prohibited, but not immediately, as other uses will continue.

Reductions in overall use levels, without direct controls over frequency and intensity of use at specific destinations does not necessarily result in vast resource improvements. In fact, Alternative 2 – Modified with internal quotas and specific destination management actions will result in a greater resource improvement than Alternative 4, even though there is a higher level of use allowed in Alternative 2 – Modified compared to Alternative 4. The key to protecting the wilderness resource is controlling the timing, frequency, intensity and locations of commercial pack stock use. Compared to the other alternatives, Alternative 2 – Modified provides more direct and responsive remedies to past environmental harm and will insure that the wilderness is maintained **as wilderness** over time.

The safest approach to full protection and preservation of wilderness character is to prohibit all use. However, when Congress directed the preservation of wilderness character, we do not interpret their intent to direct the elimination of all use and enjoyment of these wilderness areas. In fact, recreation is one of the six uses specifically mentioned in the Act that wilderness areas are devoted to. To close all meadows to grazing, for example, for the purpose of preserving unimpaired conditions goes beyond what we consider to be a reasonable and practical approach to providing use and enjoyment and preserving wilderness character.

Our task has been to understand the effects of these actions and uses on the various components and values of wilderness. Our analysis demonstrates the care and attention given to this task. We believe that balancing these multiple values as we have in the management direction articulated in Alternative 2 - Modified, does not value one element at the detriment of another, but rather values each element to achieve as many of the goals of the Wilderness Act as possible.

(3) Comply with the January 10, 2002 court order from the United States District Court for the Northern District of California granting injunctive relief in High Sierra Hikers Association v. Powell (No.C-00-01239) by:

a) Identifying appropriate group size limits for commercial stock operations.

Alternative 2 – Modified re-affirms a wilderness wide party size limit of 15 persons and 25 stock. Although pack stock have greater resource and experiential effects than other uses in the wilderness, research shows that party size may have the least effect on physical impacts than other managerial controls (McClaran and Cole, 1993).

All of these behaviors [party size limits, requiring feed to be packed in for stock, encouraging riders to stay on trails, restricting loose herding of stock on trails, restricting the practice of tying stock to trees, encouraging the use of hitchlines, restricting the practice of picketing stock, encouraging the practice of hobbling stock] have been suggested as potential means of reducing packstock impacts (Cole 1989c). If visitors would comply with these regulations or guidelines, impacts associated with packstock use could be reduced substantially without reducing the amount of use. **Of these behaviors, limits on party size may have the least effect on physical impacts** [*emphasis added*]. Party size limits are likely to be the most effective where physical impacts are likely to occur quickly (Cole and others 1987). Because most impacts occur with initial use in such areas, subsequent use isn't as important. Party size limits may be more important to avoid conflict with backpacking groups. Such groups particularly dislike encountering large parties with stock (Stankey, 1979).

Our analysis relied on existing party size research, and a review of the occurrences of large commercial stock parties in these wildernesses. We concluded that party size is most relevant to address social concerns but generally not physical impacts. Only 30% of all commercial trips have a party size greater than 10 persons and 15 stock and less than 2% have a party size greater than 12 persons and 20 stock. This is not a significant amount of use. With relatively few occurrences of large commercial pack stock parties in these wildernesses it does not seem either necessary or effective to arbitrarily reduce the party size to respond to social concerns expressed by a small percentage of visitors.

When ranked against other perceived problems in these wildernesses party size is amongst the lowest ranked problem. In the John Muir Wilderness it ranked as 13th in the list of problem identified by hikers (Watson et al., 1993). Watson et al. (1993) summarizes his findings with:

Stated as simply as possible, hikers who dislike meeting horses in wilderness believe the horse should not be in wilderness; they believe they are an inappropriate use of the resources. These hikers also are not as likely to accord high status to horse users, have stronger relationships with the wilderness, and place more value on the opportunities for solitude than those who do not dislike horses.

Translating this knowledge into management strategies requires acknowledging first of all that hikers who dislike horses are in the minority.

Reducing party size would not likely reduce the overall stock numbers (which is a greater concern) and may, in fact, lead to a greater number of small parties and stock. Research indicates that many people would prefer to see one large party rather than multiple small parties. Without a reduction in overall stock numbers, the party size limit in and of itself is irrelevant to reducing impacts. Alternative 2 – Modified controls overall stock numbers in wilderness at one time, which we conclude will most effectively reduce the environmental effects of stock when combined with other actions of this decision.

We also considered the effects of party size on and off trails. This direction re-affirms the 2001 Wilderness Plan direction that commercial operators must stay on designated trails. There are approved use trails, and very limited approvals for cross country travel as discussed below under (c), but these are limited occurrences. When a trail or use trail was determined to need further limits on either party size or annual stock limits, these are implemented site specifically.

We acknowledge there are specific locations that benefit from a reduced party size. Alternative 2 – Modified identifies 14 locations that have known environmental issues or constraints and we imposed site-specific reductions to the 15/25 party size limit to address the issues. The destination management approach provides for continual monitoring and the ability to control

numbers of stock per year to destinations, or at one time, or by party as needed and site specifically.

We considered alternative approaches to party size in this analysis. Alternative 4 restricts the party size to 12/20; but more importantly, this alternative allows the trailhead quota to further limit party size as borrowing quota from the next day is prohibited. This would have significant effects on party size and would greatly reduce the ability of an operator to utilize the wilderness-wide party size, either very often or in very many locations. We considered this approach recognizing that the plaintiffs have a very strong interest in reducing the party size. In fact, we received comments on the DEIS that stated that Alternative 4 approach, “did not go far enough.” However, we concluded that further restricting the party size, on top of all the other restrictions and limitations contained in Alternative 2 – Modified, is neither necessary nor desirable. Although there are some limited beneficial effects for the resources from a reduced party size limit, there would also be significant limitations imposed upon public access to these wilderness areas including the impact on extended family gatherings, youth groups and others that benefit from a more generous allowance on party size. We do not feel the issues of party size are significant enough to warrant such a severe policy. We feel that we can manage this site specifically and through our existing policies.

Our party size decision takes into consideration the larger wilderness landscape picture. Ansel Adams/John Muir Wilderness visitors travel into and from Yosemite National Park, Sequoia Kings Canyon National Park, and the Emigrant Wilderness. Our neighboring forests and parks have worked together to develop the 15/25 party size maximum. Only Sequoia Kings Canyon National Park has a different party size of 15/20, which is an anomaly in the Central Sierra. Alternative 2 – Modified maintains consistency with neighboring forests and parks in terms of party size and manages for exceptions as needed to respond to environmental constraints.

b) Establishing camping limitations (designated campsites) on commercial pack stock operations.

Alternative 2 – Modified designates over 150 campsites and requires their use whenever commercial stock are held overnight in these wilderness areas. Our site-specific destination management approach evaluated and concluded that every destination where commercial pack stock use is approved has adequate sites for spot and dunnage camps or drops. If we were managing under a trailhead quotas scheme, where the frequency or even the locations were not managed, it may require more spot and dunnage designations in order to achieve the same level of protection, as is evident in Alternative 4. The destination management approach allows us to manage for more internal freedom and visitor choice because we are managing the destination and the capability of that destination has been fully considered.

Our analysis concluded that designating campsites is most important when stock is held overnight in the wilderness. The designated site is the main control of where all expense trips camp and plays an important function in managing these types of trips. When not controlled, these sites tend to be larger, more impacted and at higher risk for impacts to heritage resources, water resources and use trails accessing the sites. Designating these sites concentrates the impact and prevents more sites from becoming impacted over time, thereby decreasing the overall extent of impact. It allows us to manage the impacts and hold pack stations accountable for the conditions of the sites. The adaptive destination management strategy includes long-term

monitoring and evaluating of campsite impacts and provides managers with tools to take additional actions to achieve the desired designated camp conditions.

c) Identifying which trails are suitable for use by commercial pack stock.

Existing 2001 Wilderness Plan direction restricts commercial pack stock to existing system trails and approved use trails. Alternative 2 – Modified has a designation of “Not Suitable for Commercial Stock” (NSCS). This designation is used to reflect trails that either have resource concerns or concerns with the appropriateness of the destination for repetitive commercial stock use. The alternative has 89 miles of trails designated as “NSCS.”

Alternative 2 – Modified effectively responds to the issue of trail suitability by approving a limited number of visible use trails that are not maintained as system trails. These are not system trails because they typically serve campsites or areas that are primarily used by the packer, not by the general public; and, they do not duplicate system trails. This greatly minimizes the extent of off-trail travel that occurred in the past. The use trails that are approved typically have minimal resource concerns and are suitable for commercial stock use.

We have very few cases where cross-country travel is allowed. Most of these exceptions are for the occasional hunting trip to access remote areas where hunting takes place. We believe these are legitimate exceptions to manage for. Hunting is a infrequent activity in these wildernesses and occurs in September and October when the peak of the use is past. Conflicts and risks associated with this allowance are minimal. The additional few non-hunting cross-country travel approvals are tied to low levels of use on suitable resilient soil types where trailing does not become an environmental concern (e.g., granite expanses).

Alternative 4 proposes a significant difference in trail suitability determinations. It explored the effects of eliminating commercial stock on 173 miles of trails with a substantial number of areas unavailable for commercial pack stock clients. We did not find that removing commercial pack stock use from many of these areas would have greater environmental benefits as compared to maintaining a low, sustainable use levels. We sought ways to accommodate a sustainable level of use in order to meet the goals of the Wilderness Act, and low use is preferable to no use in order to meet as many of the goals as we can without causing harm to the wilderness resource.

We considered the many trails that were suggested for “NSCS” designation that went into the adjoining National Parks. We discussed the trail continuity issues with the National Park Service to insure that our actions were consistent with current park management and made our trail suitability determinations to reflect their desired conditions.

d) Identifying an appropriate level of stock to be used in conjunction with the commercial operations.

Each alternative looked at different mechanisms for limiting stock numbers. Alternative 2 proposed daily and seasonal stock limits on each operator in combination with destination quotas. We refined this approach in Alternative 2 – Modified to produce more direct effects. We concluded this is a more effective approach than stock thresholds described in Alternative 3. The threshold concept concerned both operators and the public in that it did not include a defined limit. Alternative 4 merely used a tight trailhead quota on people to control stock, albeit indirectly. Although this would greatly reduce use, it was not a direct stock control.

We settled on the **stock at one time limitation** to provide a temporal control and prevent spikes in use and direct the control on the source of the impacts that are of the highest concern—the

number of stock in the wilderness. This measures all the stock an operator uses in these two wildernesses at one time, including their day rides. As disclosed in the analysis, the number of people being serviced is not as much of a concern as the number of stock used to provide this service.

The stock at one time limitation also minimizes experiential impacts to other visitors on the trails or at shared destinations. This limitation acts as an overall governor of use as it caps stock use and helps to prevent overcrowding during the peak season. The concentration of too many parties at one location can lead to ecological impacts including the creation of new campsites. Overcrowding can lead to disproportionate physical impacts; by controlling crowding we are providing an overall control that protects resource and experiential values. By allowing packers to fully utilize the shoulder season instead of adding more people to a crowded, short season we can help to mitigate the overcrowding that occurs during the peak season.

e) Completing a cumulative impact analysis by December 2005.

This EIS analyzes the activities of 19 pack stations and other users in these two wildernesses collectively. It is estimated that 9% of these wilderness areas are available to commercial pack station services. This is figured by a spatial analysis that buffered all trails, campsites and grazing areas that packers identified as having used (even when they have not used some of these locations for years or decades). Commercial pack station use comprises only 8-10% of total use for these areas.

The degree to which commercial pack operators overlap (the environmental effects of this overlap is documented in the affected environment chapter) is minimal. There were 75 analysis units where pack station operations overlap in their identified operating areas. In 52% of these areas only two pack stations have overlapping operations, while in 45% of the areas 3-5 operators overlap. Although 75 units were identified as overlap, only 17 site specific locations overlap for spot and dunnage services. Most overlap exists as the result of traveling trips going through an operator's primary area for providing spot and dunnage services. These traveling trips comprise only 8% of the commercial pack stock use.

With the current management (Alternative 1) there could be more overlap as considerable freedom of movement is allowed. In Alternative 2 – Modified, the number of locations are limited and controlled by the destination management quota, with an overall limit on the use at these locations. Generally, it is less about how many operators and more about the total number of trips and stock to locations, regardless of how many operators are in a specific area. However, we recognize conflicts and overcrowding are more probable with additional operators. The destination management approach addresses this issue and insures the use levels are site specifically regulated.

The bigger factor with overlap appears to be associated with traveling trips. With alternatives that use service days (Alternative 4) or just trailhead quotas (Alternative 3) to control use there is more potential for traveling trips to increase and, therefore, increase overlap of operators. Alternative 2 – Modified definitively identifies the number of all expense trips and limits the extent of these types of trips in order to control the potential for overlap and cumulative effects of overlapping operations.

Alternative 2 – Modified also includes a methodical wilderness-wide and site-specific cumulative effects analysis in a National Environmental Policy Act (NEPA) context. NEPA

requires that a cumulative impact analysis be structured to assess what additive effects the current actions would have, when viewing the effects of past, present, and reasonably foreseeable actions. Our specialists examined all relevant past, present, and reasonably foreseeable actions in their analysis. A catalogue of these actions can be found in Chapter 4 of the Final EIS. Each specialist assessed these actions at two scales: the wilderness scale and the eight geographic scales (note that a typical programmatic document would not look site-specifically at cumulative effects). The analysis of site-specific cumulative effects was done to ensure that even at a location basis, site-specifically, we were not missing cumulative effects from past or present actions, including other uses, adjacent lands and regional contexts.

As noted earlier, the planning process was designed to include similar or potentially connected actions by incorporating the Trail Plan into the commercial pack stock analysis. This facilitated an analysis of combined impacts which was considered to be essential to completing a cumulative impacts analysis. As a result of this design and with the thoroughness of the analysis, it is with great confidence that we conclude there are not major long-term or short-term adverse effects to any resource or species.

There are instances of minor, short term or locally intensive impacts to resources; some cannot be directly attributable to commercial pack stock. To the greatest extent possible these impacts have been mitigated by our management actions. In addition, we have built into our approach a strategy to monitor and adapt and manage these uses over time should conditions change or assumptions prove to be wrong.

4) Identify the appropriate level of grazing associated with commercial pack stock operations.

Our analysis indicates that the levels of incidental grazing that we are allowing in suitable grazing areas will effectively preserve these meadows' ecosystems, as long as the critical areas are protected. In many high elevation areas, we found meadows to be unsuitable and therefore unavailable for grazing because they are too wet and never reach range readiness. For most suitable grazing areas, we found it is not the utilization of forage that prevents meadow conditions from meeting standards; instead it is the impacts associated with the movement of stock and of the related trampling and chiseling of soil and vegetation that cause unacceptable impacts. We acknowledge in our analysis the long-term ramifications of historic grazing, including sheep, cattle and large pulses of recreational pack and riding stock from trips like the Sierra Club outings of the early to mid twentieth century. With conservative estimates of utilization (measured in stock nights) and a monitoring strategy that makes operators accountable, we are confident that these measures preserve wilderness character in these areas. We limited drift fences to a minimum number used only for resource protection, and the level of development of these primitive fences does not constitute a significant effect to the undeveloped quality of wilderness character. No permanent fencing, caches, or permanent improvements are used to achieve the grazing conditions we desire.

Meadows found with a downward trend in hydrologic functioning condition will be rested from commercial pack stock grazing. While the degraded condition may not have been caused by commercial pack stock, continued grazing would not allow the trend to reverse. Our analysis indicates that trends can change and conditions are dynamic.

Whether we are looking at trends in conditions, or the mosaic character of meadows (intermingling wet and dry portions), or general range readiness determinations, there is a need

to manage for dynamic conditions over time. It is our goal to protect and restore meadows. Establishing conservative estimates of stock nights, as opposed to managing a utilization rate that would require more intensive monitoring, enables us to manage the use more proactively instead of reactively.

5) Identify monitoring requirements to facilitate responsive adaptive management for commercial pack stock operations.

We realize there are risks associated with any of the assumptions made in this analysis. At times it has been difficult to distinguish what the cause of some conditions are; in many cases existing conditions could have been primarily caused by nature, yet appear to have the imprint of human influence. Natural influences and human influences are not easily distinguishable in this wilderness environment. We made our decisions conservatively and cautiously. Over time, natural influence or synergistic effects may have different consequences than we have predicted.

It is for this reason that we have attempted to describe the desired conditions we intend to maintain at destinations, grazing areas and on trails. Over time we will undoubtedly need to take further actions to maintain these conditions. We have developed a comprehensive monitoring and evaluation plan and toolbox that will assist and guide us to consistent applications of adaptive management.

We have approached adaptive management in a responsive way. It is an approach to managing resources where the planning process includes recognizing the uncertainty in existing knowledge related to the resource being managed, and treats management actions as hypotheses to be tested using monitoring specifically designed for the particular action.

It is not our intention to be constantly changing, modifying or reversing the decisions in this document. But the greatest importance and attention must go to managing for the conditions we desire. The actions are merely tools we are using to get to the desired condition.

We understand the need to be realistic in our monitoring goals and objectives. These wildernesses comprise over 800,000 acres of topographically challenging terrain that can only be accessed by foot or horseback. Some destinations take days to reach. We have designed our monitoring goals and objectives around these realities, but have not perceived these as constraints. These considerations have led us toward an integrative approach to monitoring that identifies priorities based on multiple resource objectives, consistent with wilderness management goals to manage wilderness as a composite of resources, not as individually single resources.

We fully expect the pack stations to be fully engaged and accomplish a high level of self-monitoring. We welcome any other interested parties to help us with ongoing management and effectiveness monitoring. These efforts must be accomplished systematically and we will hold ourselves and our partners to a high standard of monitoring, using established protocols.

How the Decision Responds to Public Input

Throughout the development of the Final EIS and Alternative 2 – Modified, we considered public input in developing a scientifically credible, resource sustainable, and legally sufficient plan. In our judgment, the decision we are making will more effectively meet legal

requirements, improve environmental protection measures, and further reduce the potential for environmental harm from human activities in these wildernesses.

A Notice of Intent to prepare an EIS was published in the Federal Register on June 15, 2004. Two Proposed Actions (*Trail Management Plan* and *Commercial Pack Stock Use Authorizations for the Ansel Adams and John Muir Wildernesses*) were distributed to interested parties in June 2004. Public meetings were held to clarify the Proposed Actions in Clovis, California (July 8, 2004) and Bishop, California (July 12, 2004). The public was asked to submit comments to the action from which issues could be determined and alternatives developed. Approximately 300 comments were received for the *Commercial Pack Stock Use Authorizations Proposed Action* and approximately 200 comments were received for the *Trail Plan Proposed Action* (table below provides a summary of these comments). The comments for both of these projects were used to develop the significant issues.

Table 1. Number of Comments received on the Proposed Actions

Project	Agency	Interest Group	Commercial Pack Station	Individual	Form Letter	Total
Commercial Pack Stock Use and Authorization	3	7	6	119	131	266
Trail Management Plan	2	7	3	88	67	167
Total	5	14	9	207	198	433

Using the comments on the Proposed Actions, organizations from the public, other agencies, and (affected) tribes, the interdisciplinary team and Forest Supervisors developed a list of issues. Significant issues directly influence the initiation, development, and technical design of the project; are disclosed in the analysis; and were used to develop alternatives to the proposed action.

On January 25, 2005, a revised Notice of Intent was published in the Federal Register. This notice incorporated the *Trails Management Plan EA* into the *Commercial Pack Stock Use Authorizations EIS*. The project was renamed *Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses EIS* and the purpose and need for the project was clarified. This combined EIS responded to concerns over these two projects being connected actions and better displays the cumulative effects of two projects occurring in the same geographic area.

The Draft EIS was released for public comment on March 29, 2005. The document was placed on the Inyo and Sierra National Forests' websites and was mailed to interested parties. On April 15, 2005, the Draft EIS Notice of Availability was published in the Federal Register. Two public meetings were held. Approximately twenty people attended the May 17, 2005, meeting in Bishop, California and three people attended the May 19, 2005, meeting in Clovis, California. The comment period closed June 15, 2005. Over 400 comments were received on the DEIS, the majority of which were form letters.

Table 2. Summary of Comments received on the Draft EIS

Agency	Interest Group	Commercial Pack Station	Individual	Form Letter	Total
12	10	5	178	224	429

Throughout the process we have engaged the public and responded to what we have heard and there is no doubt that commercial pack stock use is a very polarized issue. There are clearly two sides, with very differing values and opinions that each feels is the “right” way to view these decisions. Both sides engaged in extensive letter writing campaigns that netted no new views or opinions other than the ones that were repeatedly expressed. Engagement at this level is not always productive or constructive and it does not help to facilitate resolution. It is with great regret that we have been unable to bring these two sides together to come to resolution and agreement on the management of these wildernesses.

But we feel our decision, can be seen as a fair approach to managing public use of these lands. We strongly believe there is a public need from commercial services in these wilderness areas and at the levels and conditions prescribed with Alternative 2 - Modified will protect and preserve the wilderness character. While both sides disagree over the means to do this, both sides agree that protecting wilderness character is paramount.

Responses to our Draft EIS led us to reconsider our approach and enhance a number of elements of the analysis. For example, between Draft and Final EIS we developed a new alternative that modified Alternative 2 and designed a specific destination management strategy to help readers understand the synergism of the actions at the destination level. This destination management strategy controls how, when, and where commercial pack stock activity can take place in these wildernesses and responds to the remediation that the courts are anticipating with the Final EIS.

Also, some respondents were very critical of our draft Needs Assessment, and encouraged us to better demonstrate the need for the commercial services. To get a better sense of the public’s use of commercial packing in these wilderness areas, a survey of past commercial clients was conducted between the Draft and Final EIS. In early August 2005, the survey was mailed to 537 pack stock clients from 2004. The names and addresses of the clients were gathered from the Inyo and Sierra National Forests’ Wilderness Permit Databases. The clients contacted were the individuals who identified themselves as the group leader and provided their names and addresses when receiving their wilderness permit. In 2004, 4,015 overnight clients were serviced by commercial pack stock. The average group size was three individuals, so approximately 1,338 commercial packing groups used the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. A total of 346 surveys were filled out and returned to the forests. In all, data was available from 346 out of the 1,338 commercial groups that utilized commercial pack stock in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses (approximately 40% of the groups).

The survey revealed the extent to which certain segments of the population rely upon commercial packing services to access the wilderness. Nearly 90% of the groups surveyed had an unqualified obvious need for the service and the vast majority of the need was related to age or physical limitation. A number of the respondents identified themselves as people that enjoyed backpacking at one time, but because of age or physical limitation were no longer able to carry a backpack. Another group of respondents identified themselves as family groups and according

to these individuals, commercial packing was the only way they can bring their children along on the trip. Still, another group of responses came from those with a physical disability who indicated that they would never be able to enjoy the wilderness without commercial packing services. One respondent, for example, said they had a car accident that restricted their ability to carry a backpack. Another survey response came from an individual who said they were bringing a terminally ill family member along with them; commercial pack stock support was vital as the family member did not have the strength to carry a pack. Perhaps the most striking finding in the survey was that 88% of the responses indicated that they would not have taken their trip without commercial pack stock support.

There has also been some skepticism expressed as to how we can do what we say we are going to do; that our plan is too ambitious, and we will not be able to successfully implement all the direction. In addition some believe we will not achieve the conditions we prescribe in our analysis. To respond to these concerns, we spent considerable effort creating adaptive mechanisms and the monitoring and evaluation components for this plan. We believe this greatly strengthens the plan and shows a means and method to be accountable for implementation of the direction and on going management.

Alternatives Considered

Six alternatives were considered and analyzed in detail. The following table summarizes the components of the alternatives comparatively.

Table 3. Comparison of Alternatives

Alternative						
	1 No Action	2 – Modified	2	3	4	5
Use Levels and Stock Numbers						
Day Rides	Allocated by Wilderness Plan in service days.	Day ride locations identified per Pack Station and limited by number of stock at one time in the wilderness. Limits placed on areas where day ride activities have potential for use or resource conflicts.	Allocated per Pack Station location.	Allocated per packer.	Allocate service days per packer with consideration of resource or social issues.	None authorized.
Service Days	Allocated service days with additional temporary service day pool.	No Service Days to Resort Permittees.	No Service Days to Resort Permittees.	No Service Days to Resort Permittees.	Service Days at 20% reduction from Alt 1.	None authorized.

Alternative						
	1 No Action	2 – Modified	2	3	4	5
Quotas	Trailhead quota for people. Borrowing of next days quota allowed. FS writes all wilderness permits.	Destination quotas managed through destination management plans. Stock at one time limit. FS writes all wilderness permits.	Destination quotas. Stock quotas daily/seasonal. FS writes all wilderness permits.	Trailhead quota for people, seasonal. Threshold for clients and stock. Few destination quotas. FS writes all wilderness permits.	Trailhead quota for people, reduction in party size at some trailheads. No borrowing. FS writes all wilderness permits.	None authorized.
Primary Operating Area	N/A	Identified by destination quotas.	Identified operating area.	Identified operating area.	In effect, no overlap of areas for spot and dunnage trips.	None authorized.
Party Size	15/25	15/25 And site specific party size limits.	15/25 And site specific party size limits.	15/25 And site specific party size limits.	12/20 And where trailhead prohibits full party size.	N/A
Trail Management Plan						
General Trail Plan	2001 Wilderness Plan direction and existing inventories.	Designates system of trails and assigns development levels.	Designates system of trails and assigns development levels.	Designates system of trails and assigns development levels.	Designates system of trails and assigns development levels.	Designates system of trails and assigns development levels.
System Trails	Inyo 1988 inventory Sierra 2001 inventory.	Aligns with recreation categories and destination management objectives.	Aligns with recreation categories and commercial destination quotas.	Aligns with recreation categories allowing higher development system than Alt 2.	Aligns with recreation categories allowing lower development system than Alt 2.	Aligns with recreation categories allowing lower development system than Alt 2.
Grazing Management						
Grazing Strategy	Utilization standards. Range readiness standards. Suitability direction not yet implemented.	Utilization standards estimated with stock nights. Range readiness standards same as Alt 1. Grazing suitability	Grazing zones, (stock nights, utilization and meadow closure) 5% impact in critical areas.	Grazing zones, (stock nights, utilization and meadow closure) 5% impact in critical areas.	Grazing zones, (stock nights, utilization and meadow closure) 5% impact in critical areas.	None by commercial pack stock authorized.

Alternative						
	1 No Action	2 – Modified	2	3	4	5
		determinations. Establishment of grazing zones and critical areas.				
Drift Fences	Allow drift fences only where needed for protection of resources or safety of visitors.	Retain 13 drift fences and approve one additional for resource protection.	Retain 11 drift fences and approve one additional for resource protection.	Retain 10 drift fences and approve one additional drift fence for resource protection.	Retain 4 drift fences and approve 1 additional temporary drift fence for resource protection.	None authorized for commercial pack stock.
Trail Suitability						
System Trails Suitable for Comm. Pack stock	Only use on existing system trails as directed by wilderness plan.	Use of system and authorized user trails except system trails identified as “Not Suitable for Commercial Stock.”	Use of system and authorized user trails except system trails identified as “Not Recommended for Stock.”	Use of system and authorized user trails except system trails identified as “Not Suitable for Commercial Stock.” Fewer NSCS trails.	Use of system and authorized user trails except system trails identified as “Not Suitable for Commercial Stock.” Many trail NSCS.	None authorized for commercial pack stock.
User Trails	Require approval Use trails approved in 2004.	Use trail approvals based on destination management.	Use trail approvals based on destination quotas.	Same use trail approvals as in Alt 2.	Very few use trails approved.	None authorized for commercial pack stock.
Campsites						
Campsites	50 feet from water.	Required to use designated stock camps when holding stock overnight with option of reserving site. All designated stock camps will meet BMPs.	Required to use designated stock camps when holding stock overnight with option of reserving site.	Required to use designated stock camps when holding stock overnight with option of reserving site.	All campsites for commercial pack stock designated (not just for overnight holding of stock) and limited to these sites.	None authorized for commercial pack stock.
Campfires						
Campfires	Elevational closures Site specific closures.	Few modifications to elevational fire closure boundary where firewood is available. Allow charcoal fires in areas	Elevational closures and packers allowed to pack in wood and charcoal.	Same as Alt 2 for full service trips in designated sites only.	Elevational closures Site specific closure.	Elevational closures.

Alternative						
	1 No Action	2 – Modified	2	3	4	5
		closed to wood campfires. Case by case wood campfire use by commercial pack stations.				



Description of Alternatives Considered in Detail

Alternative 1 – No Action

The No Action Alternative is the existing management direction from the Final Environmental Impact Statement and Record of Decision for the Ansel Adams, John Muir, Dinkey Lakes Wildernesses (April 2001). Generally, the No Action Alternative reflects the status quo of current management under the direction of the 2001 Plan. The Wilderness Plan programmatic direction has never been fully implemented, in part, because over the last three years resources have been diverted to the court-ordered analysis and/or restricted by the court's injunction from full implementation. For the purpose of this analysis, the No Action Alternative includes the elements of the 2001 Wilderness Plan that have been implemented.

In this alternative, the Trail Management Plan for the Inyo National Forest is based upon the 1988 trails inventory and is consistent with the direction in the Inyo National Forest Land and Resource Management Plan. In the absence of a similar trail inventory associated with the Sierra National Forest Land and Resource Management Plan, Appendix C from the 2001 Wilderness Plan serves as the basis for the Sierra National Forest trail system in this alternative. Direction for managing the trail system, including system and use trail suitability is based on the 2001 Wilderness Plan, but assumes that the designation of a trail system, consistent with the newly designated recreation categories (including identifying trails not recommended for stock) has not yet been fully implemented.

Alternative 2 – Modified

As discussed above, Alternative 2 – Modified is the selected alternative for this project. In this alternative, the emphasis is on destination management and managing for conditions at destinations. The desired condition of each destination is driven primarily by the three recreation categories outlined in the 2001 Wilderness Plan. Seasonal destination quotas will be the starting point for achieving the desired conditions. Grazing will be managed through a determination of suitability and stock night capacity for grazing zones and specific meadows. Critical areas will be protected from grazing impacts.

The proposed system of trails and development levels are based on recreation categories, current and anticipated use, resource impacts, and trail maintenance considerations. These factors are considered to ensure that trail management objectives are consistent with area management objectives.

Alternative 2 – Modified was developed in response to public comments on the Draft EIS and modified Alternative 2, the original Proposed Action.

Alternative 2 – Proposed Action

Alternative 2 is the original Proposed Action that was scoped in June 2004. The proposed action was developed by this project's interdisciplinary team and both Forests' District Rangers. It was designed in response to the interdisciplinary team's assessment of conditions found in locations

where pack stations operate. The central feature of the alternative is managing use through destination quotas. It also identified the system of trails and trail management objectives consistent with the allowable use levels and recreation categories. A grazing management strategy identifies suitable meadows and zones for grazing with estimated use levels measured in stock nights.

Stock thresholds, site-specific party size and campfire allowances are also identified in Alternative 2.

Alternative 3

This alternative uses the trailhead quotas to ration use, establishing separate quotas for commercial packing at trailheads where pack stations are located. It also identifies a threshold for the seasonal number of clients and stock on each trailhead. The system of trails and trail management objectives established in this alternative are consistent with the allowable use levels and recreation categories. Grazing is the same as Alternative 2 except for meadows with downward trends in hydrologic functioning condition are closed to grazing. Site-specific party sizes are the same as Alternative 2. In addition, a number of slight modifications to the recreation category boundaries are made based on further information of the area's conditions.

Alternative 4

This alternative retains the use of service days and reduces overall commercial pack stock use by 20% and trailhead quotas are further reduced to respond more conservatively to resource issues. Party size is 12 people and 20 head of stock and further constrained by trailheads quotas. Trail suitability determinations greatly reduce the areas where commercial pack stock can operate. Grazing is similar to Alternative 3 except that meadows with hydrologic function alteration are closed to grazing. The Trail Plan generally assigns lower trail class levels but manages a very similar system of trails as Alternative 2 and 3.

Alternative 5

This alternative does not allow commercial pack stock services in the two wildernesses. The Trail Plan responds accordingly, typically with lower trail class levels due to the projected type and levels of use. Although Alternative 5 does not meet Purpose #1 (*Provide for needed commercial pack stock services*), it was included in the analysis for two reasons. First, analyzing the environmental effects associated with no commercial pack stock provides a useful baseline to compare to other alternatives. Also, the second environmental analysis addressing commercial pack stock permit issuance, the *Commercial Pack Station and Outfitter/Guide Permit Issuance EIS*, will analyze a No Action Alternative not issuing special use permit to the pack stations. Rather than reanalyze commercial pack station operations in the Ansel Adams and John Muir Wildernesses in the *Permit Issuance EISes*, we determined that the prudent approach would be to analyze the environmental effects of no commercial pack stock in this EIS.

Alternatives Not Considered In Detail

Federal agencies are required by the National Environmental Policy Act “to rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated” (40 CFR 1502.14). Public comments received in response to the original scoping phase and the DEIS were used to develop the alternatives contained in the FEIS.

Many ideas have been suggested and evaluated during the development of the alternatives considered in detail. Various components were considered, such as additional mitigation measures, changes to quotas and allocations, no grazing, and adjustments to commercial use quotas. Addressing all of the possible permutations would create an unmanageably large number of alternatives that would not be helpful to the decision makers or the public. In addition, some components were determined to be outside the scope of the current wilderness plan revision process, were already represented by one or more of the alternatives considered in detail, or were determined to risk unnecessary environmental harm. Therefore, a number of alternatives were considered but dismissed from detailed consideration.

There was a concerted effort by some who commented on the DEIS to forward what might best be described as “Modified Alternative 4.” This proposal suggested reducing quotas, party size and service days further, and identifying more trails as not suitable for stock. This alternative was not analyzed in detail for three reasons. First, it was determined that Modified Alternative 4 did not meet Purpose # 1 (*Provide for needed commercial pack stock services*) for this project. The levels of service that would have been provided in Modified Alternative 4 would have fallen far short of the public need as identified in the Needs Assessment. Modified Alternative 4 would reduce commercial packing services considerably below what is provided today. Secondly, the proposed reductions were rather capricious and lacked rationale beyond a desire to have less pack stock in the wilderness.

It appeared as though the primary basis for the proposed alternative was to address visitor concerns about encountering stock rather than environmental considerations. We believe that merely reducing commercial services to arbitrary levels below Alternative 4 does not demonstrate a corresponding improvement to the condition of the wilderness and justify the draconian reduction in public access to these wilderness areas. In addition, Modified Alternative 4 was not analyzed because it is believed that the environmental effects associated with this alternative will ultimately closely resemble the effects described for Alternative 5. The alternative did not provide the decision maker or public with an approach to managing commercial pack stock much different than in Alternative 5.

Environmentally Preferred Alternative

The Council on Environmental Quality (CEQ) regulations for implementing the NEPA require that the ROD specify “the alternative or alternatives which were considered to be environmentally preferable” (40 CFR 1505.2(b)). According to the Council on Environmental Quality’s 40 Most Asked Questions concerning NEPA, this direction has been generally interpreted to be “the alternative that will promote the national environmental policy as expressed in NEPA’s Section 101.”

Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which “best protects, preserves, and enhances historic, cultural, and natural resources.” Section 101 of the National Environmental Policy Act states that:

...it is the continuing responsibility of the Federal Government to ...

- (1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- (2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- (3) attain the widest range of beneficial uses of the environment without degradations, risk to health or safety, or other undesirable and unintended consequences;
- (4) preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment which supports diversity and variety of individual choice;
- (5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
- (6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

It may appear as though Alternative 5 “causes the least damage to the biological and physical environment.” Removing all pack station operations from the wilderness does eliminate a source of impact on the wilderness environment. Alternative 5, however, is not the environmentally preferred alternative if the human environment, including historic and cultural resources are considered. NEPA directs federal agencies to consider the effects of federal actions on not only the physical and natural environment, but also the human and social environment. Alternative 5 falls far short of meeting the federal government’s responsibility #4 above to “preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment which supports diversity and variety of individual choice.” As discussed in the Final EIS, Alternative 5 will severely limit the ability of a certain percentage of the public to access and enjoy the wilderness areas analyzed in this project. Commercial packing in the Sierra Nevada has a long history of providing access for the public and is recognized as an important cultural and historic resource.

Within this context, Alternative 2 – Modified would also be considered the environmentally preferred alternative in that it maintains a reasonable level of commercial packing service for the public and protects the wilderness character and resources of the area. Alternative 2 – Modified contains a number of site-specific mechanisms that control how, when, and where commercial packing activity can occur in these wildernesses. As discussed earlier in this Record of Decision and in the Final EIS, increased levels of use do not automatically translate into increase impacts to the wilderness. Whereas Alternative 5 provides the highest level of physical and ecological protection at the expense of the human and social environment, Alternative 2 – Modified meets all of the goals in Section 101 in that it “attain[s] the widest range of beneficial uses of the environment without degradations, risk to health or safety, or other undesirable and unintended consequences and preserve[s] important historic, cultural, and natural aspects of our national heritage and maintain[s], wherever possible, an environment which supports diversity and variety of individual choice.”

Relationship of Management Direction to Existing Plans

The Wilderness Goals and Objectives, Desired Future Condition and management direction (Standards and Guidelines) of the existing Land and Resource Management Plans (LRMPs) are amended by this decision for the Ansel Adams and John Muir Wildernesses only. This decision is otherwise consistent with the current LRMPs for the Inyo and Sierra National Forests and with the Sierra Nevada Forest Plan Amendment.

Relationship to State and Local Plans and Proposals

We have reviewed this decision and have determined that it is consistent with tribal, state and local plans.

Relationship to Other Lands

The influences of activities on lands administered by the Bureau of Land Management and the National Park Service were considered in the assessment of cumulative impacts in the FEIS. This decision does not adopt new management direction for those federal lands. Likewise, this decision does not establish direction or regulation for state, tribal, or private lands.

Monitoring and Mitigation

Mitigation Measures Adopted

Extensive measures to avoid or minimize environmental harm are being adopted in the Plan. Some of these measures have been discussed previously. Mitigation measures are an integral part of the management direction. Singularly and collectively, they avoid, rectify, reduce, or eliminate potential adverse environmental impacts of wilderness management activities. Some more significant mitigation measures will be included in the Programmatic Agreement between the State Historic Preservation Office, Advisory Council on Historic Preservation, and the Forest Service and other interested parties.

Monitoring and Evaluation

As described in our rationale, adaptive management and monitoring is integral to this decision. Our actions, such as designating a campsite or resting a meadow from grazing, must be monitored and evaluated for effectiveness. Our monitoring plan identifies the priorities for monitoring based on needs, risks and uncertainties of certain outcomes. We have also identified high priority areas for monitoring with the intention to achieve some integration in our monitoring program.

Evaluation of commercial pack stock management in the Ansel Adams and John Muir Wildernesses will continue indefinitely. The knowledge gained from the current actions is

necessary to inform future pack stock management within the Ansel Adams and John Muir Wildernesses as well as adjacent National Parks and other National Forest Wildernesses.

Integral to the success of adaptive management is site-specific and accurate reporting of commercial pack stock use. An emphasis will be placed on this so we are able to better understand the relationship between this use and impacts. Over time, we believe that we will refine our understanding of the effects of certain management actions, and can inform future management by our critical evaluations of these actions.

Findings Required By Other Laws

The Forest Service manages the Inyo and Sierra National Forests in conformance with many federal laws. In this section some of the more relevant laws pertinent to this programmatic-level decision are discussed.

Wilderness Act

The Wilderness Act (Public Law 88-577) requires that wilderness character be preserved. This section documents our conclusion and finding that wilderness character will in fact be preserved under Alternative 2 – Modified. Section 2(a) of the Act states the designated wilderness areas shall be administered...

...for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness and so as to provide for the protection of those areas, the preservation of their wilderness character.

Wilderness character combines biophysical and experiential qualities, and is never explicitly defined in the Act, however Wilderness is defined in Section 2(c) and through this definition; concepts of wilderness character are expressed as:

an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements of human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

Impacts are inevitable with recreation use. Impacts often occur rapidly and recover slowly. Many factors that influence the magnitude of impact (amount, timing, and type of use, and spatial distribution of use) can be manipulated by managers to limit impacts (Cole, 2004). The most important attributes of wilderness are that it is natural, wild, un-crowded and free, yet these attributes are in conflict with one another when management attempts to provide for any one of them (Cole, 2000). Wilderness research points to the need to provide for a range of opportunities, settings, and conditions within designated wilderness. Choices between access and protection, wildness and naturalness are value judgments that should reflect society's needs and desires (Cole, 2001). According to Cole (2001):

A broad range of wilderness conditions could be provided by allowing high visitation in carefully selected and delineated wilderness locations, while protecting most wilderness in a lightly used condition. Such a wilderness management zoning approach (Haas et al. 1987) would keep most wilderness close to the low use ideal described in the Wilderness Act and still meet the increasing demand for wilderness experiences.

To evaluate compliance with the Wilderness Act in regards to wilderness character, four factors, or qualities of wilderness character were used to assess the effects of each alternative on wilderness character in Chapter 4. These come directly from the language in the Wilderness Act. Both legislation and agency policy mandate a responsibility to preserve wilderness character, yet no specific process has ever been established.

Current interagency efforts to monitor wilderness character (Landres et al., 2005) define wilderness character as the combination of biophysical, experiential, and symbolic qualities that distinguish wilderness from all other lands. Wilderness character is protected or diminished and sometimes both, by management decisions and actions.

Because wilderness character is multidimensional, composed of both biophysical and social aspects, actions taken to protect one aspect of wilderness character may diminish another aspect. For example, a bridge built to protect a stream bank from erosion caused by people or horses crossing the stream may also diminish the opportunity for people to experience the challenge of crossing a stream, and it may diminish the feeling or experience of a natural setting. Similarly, the required use of hardened or designated campsites to protect the soil and vegetation in an area may diminish the opportunity for unconfined recreation and the sense of freedom from the constraints of society (Landres et al 2004).

As this statement acknowledges, there are competing factors of wilderness character. It is the responsibility of the administering agency to assess these factors in relation to each other.

Here, these four qualities that represent the essence of wilderness character, are identified and defined, and then analyzed in relation to the selected alternative.

Untrammeled

The essence of this factor is that human activities should not control or manipulate wilderness ecosystems. Synonyms for untrammeled include unrestrained, unrestricted, unhindered, unimpeded, unencumbered, self-willed, and wildness. When speaking in terms of effects on the untrammeled quality, this evaluation considers the scale of the control or manipulation. Examples in Landres (2005) of trammeled include dams that impede natural flood cycles, animals or plants that are transplanted or re-established, and fires that are suppressed. These types of actions are intentional and deliberate, and conspicuous in their effects on ecological processes.

In Alternative 2 – Modified, there are no intentional controls or manipulations of ecological processes to facilitate or in conjunction with commercial pack stock use that affect ecosystems at the wilderness scale.

There are remnants of past actions on the wilderness landscape that predate wilderness designation that have nothing to do with commercial pack stock use. The most imposing of these types of actions are water retention structures. A total of ten dams predate the Wilderness Act, three of which would not be noticeable to the average visitor's eye since they are small in scale and/or not visible from a trail. The substantial structures that predate the wilderness do trammel

wilderness and are major adverse effects to the natural ecosystem. Commercial pack stock activities have no additional effect. In relation to these dams, commercial pack stock and noncommercial visitation pale by comparison in their effects on the untrammelled quality.

To the extent that a small percentage of area (9%) is used to camp by clients of commercial pack stock, or trails are used to travel, there is a very minor effect on the untrammelled quality of wilderness with minor water flow diversions, or vegetation loss. This level of impact is minor in scale and intensity and occurs as a result of all recreational visitation as a means to allow the use and enjoyment of wilderness.

The designation of stock camps is intended to reduce effects on water quality and reduce the overall area of impact to vegetation and soil resources. We anticipate that by designating these sites there will be less than 40 acres of disturbed environment in these wildernesses that may be considered light to moderately "trammelled." Considering even this level of obtrusion to be an effect on the untrammelled quality is magnifying the issues beyond what an average person would consider apparent. But even so, this is less than ¼ of 1% of the wilderness that would be directly affected by commercial pack stock activities, most of which may be on a very infrequent basis on generally used by other wilderness visitors.

Natural Conditions

The Wilderness Act makes it very clear that these areas serve as a contrast to modern civilization. They are places where "man and his own work do not dominate the landscape." The agency manages for natural processes to dominate the landscape. Implied is that natural conditions vary over time and evolve. The condition at the time of designation is an important consideration in the evaluation of this factor. If, for example, a road or heavy grazing has had an effect on natural conditions, the effect of subsequent actions may be greater as a result of these past actions. The basic premise of this quality is that humans allow the processes to function on their own and that natural conditions dominate the landscape. It is not the obligation of the agency to manipulate natural processes to restore past damages, as that can become an effect on the untrammelled quality and can become as much a disturbance to natural conditions as the original activity. Each situation needs to carefully consider the best course of action to maintain natural conditions.

These wildernesses still provide a vital contrast to modern civilization. Disturbance to natural process is limited to site specific locations where commercial pack stock activities may contribute to local soil erosion, sedimentation into surface water from pack stock grazing, campsites and trails. Water quality is thought to be good and will remain so except at few very local areas where there may be slight degradation.

Alternative 2 - Modified manages for an increased level of protection for Yosemite toad meadow breeding habitats. Fifty-six meadows approved for commercial packer stock grazing overlap with Yosemite Toad breeding areas. Thirty meadows that have been approved for grazing are determined unsuitable in this alternative, and would be closed to provide full protection for toad breeding habitats.

No significant effect to any species or ecological process occurs as a result of the pack stock activities. There will remain a rich diversity of flora and fauna with interdependencies that exemplifies an unimpeded natural world. This is because the use of system trails, use trails, destinations, and grazing areas is authorized site specifically; and the levels of use assigned are

within an acceptable level that protects species and processes. This is not to say that there is no disturbance, and no effects to natural conditions, but that the disturbance occurs within acceptable locations and where it was determined to have an unacceptable effect, the area was either closed to the use or limited in how much use could occur there.

Undeveloped

This is a basic requirement of wilderness, that it is undeveloped land, void of habitation and other evidence of modern human presence. The physical evidence of humans and human activity should be “substantially unnoticeable.” Trails and campsites, while facilitating the use and enjoyment, can also be considered obtrusive and evidence of human influence. The “minimum necessary” philosophy directs managers to exercise restraint in order to ensure that visitors experience a primitive environment.

The level of development that will ensue with this alternative does not change from current conditions; they are limited to drift fences and trails. The scale of this development is so small as to be hardly discernable to the average visitor.

Campsites will have no level of development other than at most locations a small diameter (less than two feet) rock ring for containing ash, wood and coals and a small locational sign. All other features of campsites are brought in and removed with each trip or series of trips. There are no permanent structures associated with these sites.

The only structures that are allowed and authorized associated specifically with commercial pack stock uses are “drift fences,” which are primitive fences using native posts and wire strung a short distance across a trail, typically in a box canyon or narrow to contain drifting stock. Drift fences are limited in size, scope and obtrusion. There will be fewer of these structures than are allowed currently. Thirteen of these primitive structures will be allowed. Many are being allowed and kept in place to keep the drifting stock out of unsuitable areas for grazing thereby protecting natural conditions in sensitive areas.

Trails facilitate use and travel and are normally a welcome development for most visitors. The level of trail development for the purpose of facilitating commercial pack stock use is moderate in Alternative 2 – Modified. This has a minor to moderate effect on the undeveloped quality of wilderness character. Development of trails occurs to facilitate use and enjoyment of wilderness for commercial and noncommercial visitors. The highest level of trail development in these wildernesses actually occurs on a trail where stock is not allowed (Mt. Whitney). The next highest level of trail development occurs to popular areas for all visitors, and those trails where pack stock use is heavy. Trails do need a higher level of development when they are maintained for riding and pack stock use. The trail is typically more substantial, with more structures on the trail, and more steps and moderate grades. This does have an affect on the quality of wilderness character, however, the level of development that is needed is also responding to protecting resources, such as meadows, steep slopes, and riparian areas.

Actions to develop trails value recreational uses over the undeveloped quality, however the scale of this development is insignificant in contrast to the developments recreation facilities (e.g., ski areas, campgrounds) and urban areas.

Outstanding opportunities for solitude or a primitive and unconfined type of recreation

The experiential component of wilderness is shaped by the other three factors of this evaluation and includes individual's perceptions, responses and opinions. For example, one person may observe a trail as too highly developed and therefore affect their wilderness experience while another person may not even consider the level of development and think that the trail enhances their wilderness experience. These three elements of the wilderness experience attempt to define a wilderness experience in more tangible terms. Evaluating opportunities for solitude considers the ability for a visitor to find and experience a very low density of other visitors. Primitive recreation encompasses concepts of simplicity and reliance on personal skills to travel and camp. Unconfined recreation highlights the importance of freedom and lack of managerial controls, where a visitor takes on their own risk and experiences the consequences of their choices. Together and separately, these experiential elements distinguish wilderness recreation from recreation on other more developed lands or controlled environments.

Alternative 2 - Modified has substantial effects on the unconfined recreation of commercial pack stock visitors. With limits placed on each destination that each pack station uses, there may be visitors that cannot have the trip to the location they desire. Visitation is further regulated by party size, where you can have a campfire, and where you can camp on a traveling or all expense trips. The type of trip that a visitor may want may be limited, specifically the all expense and traveling trips. This could greatly affect the visitor's ability to experience the wilderness entirely on their own terms. It is also a much more controlled experience than the non-commercial visitor, since more restrictions are in place on the commercial pack stock than the non-commercial public. The non-commercial visitor is limited by trailhead quotas, specifically designed to place the restriction on entrance to the wilderness thereby maximizing visitor freedom once inside the wilderness. For the pack stations, we are further limiting the freedom.

These restrictions on visitor freedom come as a price for maintaining natural conditions. In this regard the value of natural conditions is valued and weighed with the value of visitor freedom. Alternative 2 – Modified attempts to maintain a level of use so that the public can still enjoy a wilderness experience, though it may not be the exact location or their first choice in locations. Often the commercial pack stock visitor is merely dropped off at a point and then travels by foot without assistance or support. We considered this factor in limiting the location where the pack stock can travel, yet still allowing the less impacting use to continue.

Solitude will be protected in this alternative by the limitations on the frequency of trips to destinations and the stock at one time limitation. This will make it more likely that non-commercial visitors will not experience an amount of commercial use that is inappropriate for the capacity of the destinations and on the trails. There will still be occasions when the commercial and non-commercial visitors will be in the same locations at the same time, just as there will be times when multiple non-commercial parties will be in the same location. But the chances of commercial - non-commercial conflicts are far less in this alternative, since each destination has a certain level of use allowed, and not more. With each destination receiving a careful assessment of the desired condition, and the capacity and setting, when establishing commercial use levels, there is the greatest chance of maintain high opportunities for solitude for commercial and non-commercial visitors.

In summary, Alternative 2 – Modified preserves and protects wilderness character through various mechanisms that prevent or reduce environmental and social impacts. The diagram below expresses the relationship between public need and wilderness character, and the conditions we are maintaining by the management actions in this EIS. If one were to imagine that the threshold of preserving wilderness character is a constant, controlled through management actions, and that pack stock services will be needed at varying levels over time, depending on demographics and changing population dynamics; our management actions maintain commercial services at a level below the threshold for preserving wilderness character. This is how we perceive this relationship:

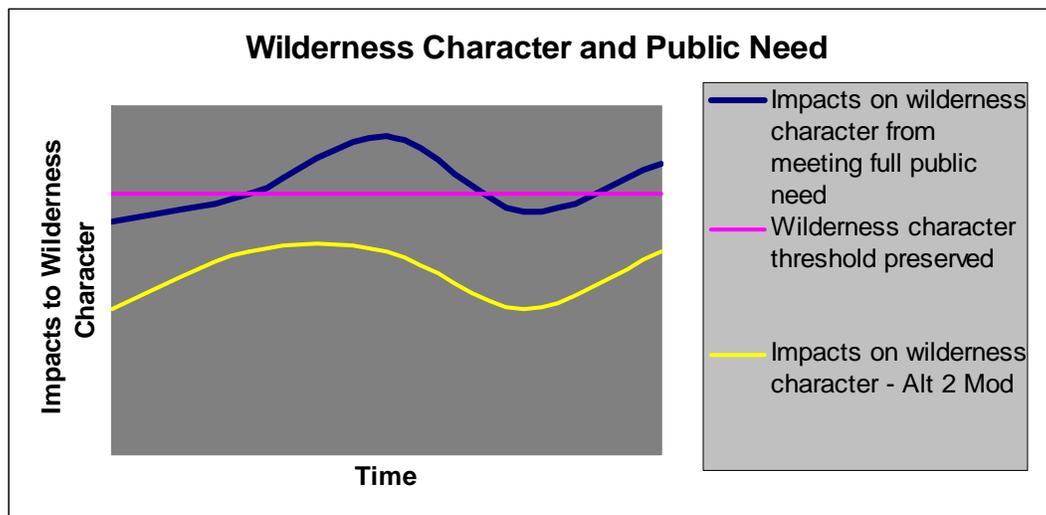


Figure 1. Effects of Alternative 2 – Modified on wilderness character and public need

In this assessment, we can demonstrate and support a finding of preserving wilderness character. Weighing together the four primary factors in relationship to each other, and in relationship to the proposed type and level of commercial pack stock uses allowed by the selected alternative, our assessment indicates that some factors are effected more than others, but all factors collectively and individually do not exceed expectations of the Wilderness Act. Figure 2 displays this finding and shows that effects of Alternative 2 – Modified do not go beyond the minimum thresholds set for the four components of wilderness character: untrammeled, natural conditions, undeveloped, and outstanding opportunities for solitude or a primitive and unconfined type of recreation.

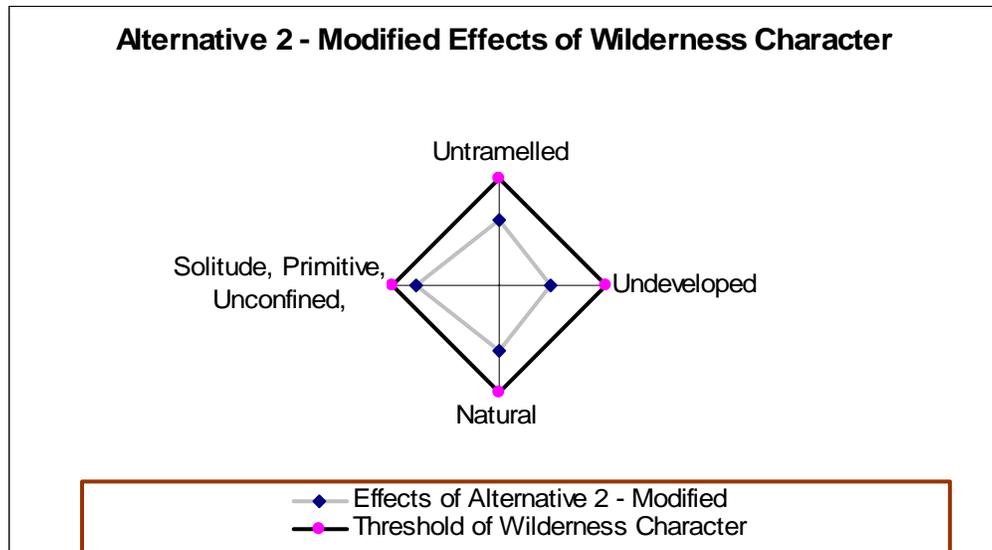


Figure 2. Effects of Alternative 2 – Modified on components of wilderness character.

National Environmental Policy Act (NEPA)

NEPA requires that Federal agencies prepare detailed statements on proposed actions that significantly affect the quality of the human environment. This requirement is designed to serve two major functions: 1) to provide decision makers with a detailed accounting of the likely environmental effects of a proposed action prior to its adoption; and, 2) to inform the public of, and allow comment on, such efforts.

The Inyo and Sierra National Forests have compiled and generated an enormous amount of information relevant to the effects of each of the alternatives considered in the FEIS. Such information builds on the data, analysis, and public involvement set forth in the documents prior to this FEIS, which include the 2001 Final Environmental impact Statement for the Management Direction for the Ansel Adams, John Muir and Dinkey Lakes Wildernesses.

All substantive comments, written and oral, made on the DEIS have been summarized and responded to in the FEIS. Over the course of analysis, this public involvement has led to changes in the alternatives including the selected alternative.

The environmental analysis and public involvement process complies with each of the major elements of the requirements set forth by the CEQ for implementing NEPA (40 CFR 1500-1508).

First, the FEIS considered a broad range of reasonable alternatives.

Second, the FEIS reflects consideration of cumulative effects of the alternatives by evaluating past, present, and reasonably foreseeable future actions in the planning area. Moreover, although non-Forest System lands are outside the scope of this decision, effects from their management have been considered in the Final EIS to a degree appropriate for a programmatic NEPA document at this scale.

Third, the FEIS makes use of the best available information. Application of a geographic information system (GIS) was used to evaluate spatial effects resulting from implementation of the alternatives. The best available science was used to help estimate environmental consequences as evidenced from the bibliography. All of these tools, taken collectively, constitute use of the best available information.

Additional site-specific decisions will be made on projects in compliance with NEPA, ESA, and other environmental laws following applicable public involvement and appeal procedures.

National Forest Management Act (NFMA)

This decision conforms to the 1982 planning regulations (36 CFR 219) that implement the National Forest Management Act. These regulations were recently changed (65 FR 67513). Transition language within the new regulations permits plan revisions and amendments, such as the amendments that are part of this decision, to be completed under the 1982 regulations. Since the rest of the LRMPs will continue to fall under the 1982 regulations, and since there is some uncertainty over the implementation of the new regulations, it is our decision to adopt these amendments under the 1982 regulations.

Diversity and Viability Provisions for Fish and Wildlife

The National Forest Management Act (NFMA) requires the Secretary of Agriculture to “specify guidelines for land management plans developed to achieve the goals of the [RPA] Program which provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives” (16 U.S.C. 1604(g)(3)(B)). In accord with this diversity provision, the Secretary promulgated a regulation that provides in part: “[f]ish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area” (36 CFR 219.19, 1982 edition).

The recently completed SNFPA Record of Decision established land allocations and standards and guidelines to meet all of the diversity and viability provisions for fish and wildlife. This FEIS is consistent with that amendment. Therefore this decision will also provide the fish and wildlife habitat and other ecological conditions necessary to maintain well-distributed viable populations of vertebrate species in the planning area, and maintain the diversity of plants and animals.

Endangered Species Act (ESA)

Consultation requirements under Section 7 of the ESA, have been completed with the Fish and Wildlife Service. The Fish and Wildlife Service reviewed the Biological Assessment for the proposed threatened and endangered species under their regulatory jurisdiction. Consistent with direction in *Memorandum of Agreement, Endangered Species Act Section 7 Programmatic Consultations and Coordination among Bureau of Land Management, Forest Service, National Marine Fisheries Service and Fish and Wildlife Service, August 30, 2000*, the Fish and Wildlife Service (FWS) concluded that this decision is “not likely to jeopardize the continued existence of

threatened and endangered species” occurring on the national forests. Copies of correspondence with the FWS are included in the planning record.

National Historic Preservation Act

Pursuant to Section 106 of the National Historic Preservation Act has been met through the Programmatic Agreement of 2001 for Controlling Impacts on Historic Properties; Management of Ansel Adams, John Muir, and Dinkey Lakes Wildernesses, Sierra and Inyo National Forests. In addition, the Forests are developing a new Programmatic Agreement for site specific actions in the Issuance of the Commercial Pack Stock Special Use Permits and will be , the Forests have consulting extensively with Indian tribes, other users of the wildernesses, the California State Historic Preservation Officer, and the Advisory Council on Historic Preservation about how best to identify and mitigate adverse effects on historic sites, structures, trails, landscapes, Native American spiritual places, and other aspects of the cultural environment, including traditional uses of the wildernesses. This resulted in a Programmatic Agreement among the consulting parties that provides for ongoing studies and consultation over at least the next five years to identify impacts and implement mitigation measures. The Forests will implement the terms of the agreement, which is believed to embrace all practicable measures to mitigate possible impacts on the cultural aspects of the wilderness environment.

Clean Water Act

Full implementation of this decision is expected to maintain and improve water quality and satisfy all State water quality requirements. This finding is based on the standards and guidelines contained in the decision, the application of State approved Best Management Practices specifically designed to protect water quality, and the discussion of water quality and beneficial uses contained in the FEIS. Examples include: (1) camp site containment, (2) destination quotas, (3) trail suitability limitations (4) rehabilitating campsites, (5) grazing strategy for commercial pack stock, and (6) incorporation of established recovery plans. Additionally, project-level analyses for activities subsequent to the decision will be required to demonstrate compliance with Clean Water Act and State water quality standards.

Clean Air Act

At the scale of a programmatic plan such as this, the overall level of activities proposed under this decision is not anticipated to violate ambient air quality standards. This finding is based on information presented in the FEIS. The Inyo and Sierra National Forests are in non-attainment for PM10 while only the Sierra N.F. is in non-attainment for Ozone. Conformity determinations will be made at subsequent levels of planning and analysis where emissions can be more accurately quantified and reasonably forecasted and local impacts assessed.

Flood Plains and Wetlands (Executive Orders 11988 and 11990)

These Executive Orders require Federal agencies to avoid, to the extent possible, short- and long-term effects resulting from the occupancy and modification of flood plains, and the modification or destruction of wetlands. The LRMPs provide standards and guidelines for soil, water, wetlands, and riparian areas to minimize effects to flood plains and wetlands. They incorporate the Best Management Practices of the Soil and Water Conservation Handbook. The standards and guidelines apply to all floodplains and wetlands where less restrictive management might otherwise occur.

Determination of Significance (NFMA)

Forest Service requirements for amending forest plans are included in agency regulations and policies. These require that land uses be consistent with forest plans and that proposed activities which would be in conflict with the forest plan either be denied or modified (so as to be consistent), or that the forest plan be amended. Regulations direct the Forest Service to consider whether a proposed amendment to a forest plan would be considered a significant change.

The Forest Service is authorized to implement amendments to forest plans in response to changing needs and opportunities, information identified during project analysis, or the results of monitoring and evaluation. Forest Service Handbook and Manual direction provides the framework for considering a forest plan amendment, reviewing it for significance, documenting the results, and reaching a decision. An assessment of a proposed amendment's significance in the context of the larger forest plan is a crucial part of this process. It is important to note that the definition of significance for amending a forest plan is not the same as the definition of significance as defined by NEPA. Under NEPA, significance is generally determined by whether a proposal is considered to be a "major federal action significantly affecting the quality of the human environment," or whether the relative severity of the environmental impacts would be significant based on their context and intensity.

The National Forest Management Act (NFMA) requires that proposed forest plan amendments be evaluated for whether they would constitute a significant change in the long-term goods, outputs, and services projected for an entire national forest. Amendments that are not significant may be adopted following disclosure and notification in an environmental document, such as an EA, an EIS, or a supplement to one of these documents. Amendments that are deemed significant must be processed under the more intensive requirements for developing and approving a forest plan, which includes preparation of an EIS.

The criteria to analyze the significance of a forest plan amendment are summarized below from Forest Service Handbook 1909.12, Chapter 5.32. Each of the four criteria for determining significance of the proposed amendment is responded to directly. **Based on an analysis of these criteria, we have determined that these Forest Plan Amendments are non-significant.**

1. Timing. Identify when the change is to take place. Determine whether the change is necessary during or after the plan period (the first decade) or whether the change is to take place after the next scheduled revision of the forest plan. In most cases, the later the

change, the less likely it is to be significant for the current forest plan. If the change is to take place outside the plan period, forest plan amendment is not required.

This action will take place within the next year, towards the end of the current planning period. The Inyo National Forest Land and Resource Management Plan was completed in 1988 while the Sierra National Forest Land and Resource Management Plan was completed in 1992. The Inyo and Sierra National Forest Land and Resource Management Plans are scheduled to be revised in 2010, putting both Forests towards the end of the Forest Plan planning cycle. This action cannot wait for the revision process to be completed, for a number of reasons. For one, the court has ordered this analysis be completed by December 2005. Also, these actions are needed now to ensure environmental protection.

2. Location and Size. Determine the location and size of the area involved in the change. Define the relationship of the affected area to the overall planning area. In most cases, the smaller the area affected, the less likely the change is to be a significant change in the forest plan.

These LRMP amendments only apply to the Ansel Adams and John Muir Wildernesses on the Inyo and Sierra National Forests. These wilderness areas total just over 800,000 acres out of the total of 3.3 million acres that make up these two national forests. This is less than one third of the total acres of both forests. Furthermore, these wilderness areas generally encompass only the higher elevations of these national forests and the area of land within these two wildernesses that are affected by this amendment amounts to approximately 9% of the 800,000 acres.

3. Goals, Objectives, and Outputs. Determine whether the change alters long-term relationships between the levels of goods and services projected by the forest plan. Consider whether an increase in one type of output would trigger an increase or decrease in another. Determine whether there is a demand for goods or services not discussed in the forest plan. In most cases, changes in outputs are not likely to be a significant change in the forest plan unless the change would forego the opportunity to achieve an output in later years.

These LRMP amendments do not alter the long-term relationships between the levels of goods and services projected by the forest plans. An increase in one type of output does not trigger an increase or decrease in another. The changes in outputs are not likely to be a significant change in the forest plan since the changes would not forego the opportunity to achieve an output in later years.

This decision is also consistent with the goals, objectives and outputs set forth in the Inyo and Sierra Forest Plans and the 2001 Wilderness Plan. These additional actions further the goals, objectives and outputs identified in the 2001 amendment and the forests' plans. In the Inyo National Forest's Forest Plan, for example, the Management Direction included in the Designated Wilderness Management Prescription (MP #1) calls for the limitation of "commercial wilderness activities under permit to those that meet public needs and cannot be provided elsewhere." Other Management Direction in this Management Prescription directs the forest to "limit party size and number of stock per party to a level that protects social and natural resource values" and to "redirect and restrict use where necessary to restore impaired wilderness." Commercial pack stock in the Ansel Adams and John Muir Wildernesses will be managed by a Destination Management regime that will provide more specific, updated, and consistent direction for these wildernesses.

4. Management Prescription. Determine whether the change in a management prescription is only for a specific situation or whether it would apply to future decisions throughout the planning area. Determine whether or not the change alters the desired future condition of the land and resources or the anticipated goods and services to be produced.

The changes in the management direction are only for a specific portion of the Forests, and will not apply to future decisions outside the planning area. The amendments do not alter the desired future condition of the land and resources or the anticipated goods and services to be produced.

Land and Resource Management Plan Amendments

Inyo National Forest Land and Resource Management Plan Non-Significant Amendment Number 10:

This amendment is for the Ansel Adams and John Muir Wildernesses only. The Trail Plan and Commercial Pack Stock Management direction contained in Alternative 2 – Modified of the Final Environmental Impact Statement (December 2005) supplements the management direction contained in the LRMP on pages 107 through 112 and the Monitoring Plan on page 257.

Sierra National Forest Land and Resource Management Plan Amendment Number 6:

This amendment is for the Ansel Adams and John Muir Wildernesses only. The Trail Plan and Commercial Pack Stock Management direction contained in Alternative 2 – Modified of the Final Environmental Impact Statement (December 2005) supplements the Standards and Guidelines contained in the Sierra LRMP on pages 4-30 through 4-31.

For both Forests, the following management direction found in the Ansel Adams, John Muir and Dinkey Lakes Wildernesses Plan (2001) is modified:

Page 11: Do not upgrade any trails from maintenance level 1 and 2 solely for the purpose of facilitating stock use. This direction will still apply to Dinkey Lakes Wilderness and will not apply to the Ansel Adams and John Muir Wildernesses.

Page 16: Prohibit wood burning stoves (including “Zip” stoves), charcoal fires, packed in firewood, or firepans within areas closed to wood campfires. This direction will still apply to Dinkey Lakes Wilderness and will not apply to the Ansel Adams and John Muir Wildernesses.

Page 21: Remove specific “Packer” quotas for Big Pine NF; Devils/Graveyard; Jackass/Norris; Walton trailheads. Commercial quotas will remain in place for outfitter guide activities.

Page 27: Identify maximum numbers of stock in the special use permit and condition by site specific needs and objectives. This direction will still apply to Dinkey Lakes Wilderness and will not apply to the Ansel Adams and John Muir Wildernesses.

Page 27: Review and adjust commercial packstock stock allocations every five years. This direction will still apply to Dinkey Lakes Wilderness and will not apply to the Ansel Adams and John Muir Wildernesses.

Page 28: Do not authorize commercial packstock on trails not recommended for stock.

This direction will still apply to Dinkey Lakes Wilderness and will not apply to the Ansel Adams and John Muir Wildernesses.

Page 28: Service days will no longer be used in the Ansel Adams and John Muir Wildernesses for “**Packstock Supported**” and “**Day Rides.**” Modify commercial allocation of service days as follows: Packstock Supported – 145. This is for the Dinkey Lakes Wilderness.

Also, The Trail Plan identified in Alternative 2 – Modified of the Final Environmental Impact Statement (2005) replaces Appendix C of the 2001 Wilderness Plan and the 1988 Inyo National Forest LRMP.

The geographic boundaries of the Recreation Categories are modified with this direction but not the desired conditions of the Recreation Categories.

Geographic boundaries of the elevational fire closure are modified in 8 locations with this direction.

Environmental Justice (Executive Order 12898)

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that Federal agencies make achieving environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health and environmental effects of their programs, policies, and activities on minority populations and low-income populations. The issue of environmental justice is analyzed within the Socioeconomic section in Chapters 3 and 4 of the Final EIS.

A qualitative assessment of environmental justice considerations was conducted based on the information in the Final EIS described above. Our conclusion is that the risk of such disproportionate effects on minority or low-income populations from implementation of this decision would be very low.

Civil Rights

The Forest Service manual defines civil rights as “the legal rights of United States citizens to guaranteed equal protection under the law” (USDA Forest Service Manual 1730). Civil rights impact analysis for environmental or natural resource actions are a necessary part of the social impact analysis package in an environmental impact statement and are not a separate report (USDA FSH 1709.11).

The Forest Service is committed to equal treatment of all individuals and social groups in its management programs in providing services, opportunities, and jobs. Because no actual or projected violation of legal rights to equal protection under the law is foreseen for any individual or category of people, no civil rights impacts are reported in the FEIS.

How this Document Relates to Special Use Permit Issuance EIS

This decision on the *Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses* project is being closely followed by a second planning effort, the *Commercial Pack Station and Outfitter/Guide Permit Issuance* project. The *Permit Issuance* project will analyze and disclose the environmental effects of reissuing permits to commercial pack stations and stock-supported outfitters and guides. It will not revisit the decisions made in this ROD for the Ansel Adams and John Muir Wildernesses. In addition, the *Permit Issuance* project will analyze and disclose the environmental effects of reissuing permits to commercial pack stations and stock-supported outfitters and guides which will include an analysis of commercial pack station operations in the front country (or non-wilderness) areas of the respective forests as well as the Golden Trout, South Sierra, Kaiser, and Dinkey Lakes Wildernesses. Unlike the Final EIS for the *Trail and Commercial Pack Stock* project which was completed as a joint effort involving both forests, each forest will issue its own Permit Issuance EIS and decision. Decisions to be made in the *Permit Issuance* project include whether to issue the permits for these operations with modified terms and conditions, or not to authorize the uses and require removal of all facilities from public land.

Implementation Plan

We are providing the following transition language and schedule for implementing the management direction in this ROD. Although the direction will become effective after publication of the Notice of Availability in the Federal Register, we are choosing to phase in this new direction. The main reason is that we will still be under injunctive relief for some elements of this direction. Where we find that new direction is necessary for wilderness protection and not in conflict with the court injunction, we are scheduling immediate implementation. It is important not to allow existing activities that have been identified to harm the environment to continue for several years after the direction is changed. Some items however, are complicated in the timing and implementation due to the time it takes to implement. When changing management direction for such a large area, it is not practical to implement everything at once. The transition period allows for an orderly adjustment that moves management of the wildernesses forward while minimizing costs and disruption.

Table 3: Transition Plan

Alternative 2 – Modified Decision Components	Timing for Implementation
Trail Plan	Immediately.
Trail suitability	2006 operating season.
Use trail authorizations*	2006 operating season. Since the use trail decisions are more refined than the annual decisions made through the Court injunction and the criteria established through Exhibit 2, there will be environmental benefits of implementing this as soon as possible.
Suitability determinations and closure of meadows	2006 operating season.

Alternative 2 – Modified Decision Components	Timing for Implementation
Stock night limits	2006 operating season.
Specific meadow grazing strategies	Work will begin in 2006 but not be fully implemented until 2009 due to the time and personnel required to complete this component.
Permanent transects	2007
Drift fences	2006
Designated stock camps	25% in 2006 and 50% in 2007 and 25% in 2008 due to time and personnel required and timing of implementation.
Campfires	Forest Orders by June 2006.
Baseline data collection	25% in 2006; 50% in 2007 and 25% in 2008 due to time and personnel required to complete this work.
Recreation category adjustments	2006
Replace service day and trailhead quotas with destination quotas*	2007 due to operating season and trip bookings already underway for 2006 season and court injunction specifying service days.
Party size, wilderness wide and site specific*	2007 operating season and end of court injunction.
Day ride control mechanism change*	2007 operating season and end of court injunction to be consistent with control mechanism changes for other services and concurrently with implementation of “stock at one time.”
Stock numbers at one time in wilderness	2007 operating season and end of court injunction to be consistent with control mechanism changes for other services.
<ul style="list-style-type: none"> • <i>All or in part these components are currently controlled by the court injunction. The court injunction must be lifted before implementation. If court injunction does not end prior to the 2007 operating season, then implementation will be the 1st season after end of court injunction.</i> • <i>All items are budget dependent,</i> 	

Appeal Rights

This decision is subject to appeal in accordance with the provisions of 36 CFR 217 by filing a written notice of appeal in duplicate within 45 days of the date of published legal notice of this decision, as provided in 36 CFR 217.5(b) and 36 CFR 217.8(a)(3). The appeal must be filed with the Reviewing Officer:

Bernie Weingardt, Regional Forester
 USDA Forest Service
 Pacific Southwest Region
 1323 Club Drive
 Vallejo, Ca. 94592

The notice of appeal must include sufficient narrative evidence and argument to show why this decision should be changed or reversed (36 CFR 217.9).

Decisions on site-specific projects are not made in this document. Decisions on proposed projects will not be made until completion of environmental analysis and documentation for the specific project, in compliance with the NEPA.

Contact Persons

If you would like more information on the Plan or the Final EIS, please contact the following officials:

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or:

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 Clovis, CA 93612
 (559) 855-5360

Signatures

/s/ Jeffrey E. Bailey 11/10/2005

JEFFREY E. BAILEY
 Forest Supervisor,
 Inyo National Forest

Date

/s/Edward C. Cole 11/10/2005

EDWARD C. COLE Date
 Forest Supervisor,
 Sierra National Forest

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Record of Decision – Appendix A: Commercial Pack Stock Monitoring, Evaluation and Adaptive Management Plan Summary

Goals and Objectives

The 2001 Monitoring Plan developed for the Ansel Adams, John Muir and Dinkey Lakes Wilderness Plan (Appendix H) previously developed monitoring objectives and elements that overlap and also provide data for use in the assessment of trails, and commercial pack stock use as part of a larger multi-user monitoring framework. This monitoring program is designed to specifically address commercial pack stock activities and implement the appropriate components of the 2001 monitoring concept.

The **Destination Management Strategy** provides a framework for viewing management actions comprehensively, organized around the destination. In this framework, the desired conditions of the destinations are articulated and management actions that are expected to maintain the desired conditions are brought forward from the selected alternative. Assumptions will need to be evaluated, and over time, actions may need to be modified to respond to changing conditions and results of monitoring. Or, if conditions that are desired are not achieved, further actions may be needed. Providing a method for managing over time is one of the goals of the monitoring, evaluation and adaptive management plan.

Adaptive management is an approach to managing resources where the planning process includes recognizing the uncertainty in existing knowledge related to the resource being managed, and treats management actions as experiments or as hypotheses to be tested using monitoring specifically designed for the particular action (Williams, 1999; Healey et al., 1998; Walters 1986).

The goal of this monitoring plan is to:

1. Describe the monitoring, evaluation and adaptive management process.
2. Prioritize data collection to validate that the management actions described in Alternative 2 - Modified are being implemented; that these actions are working as designed; that changes in management occur as resource condition assessments warrant.
3. Validate that the commercial pack stock management actions are leading to, or maintaining the desired conditions for the various wilderness resources.

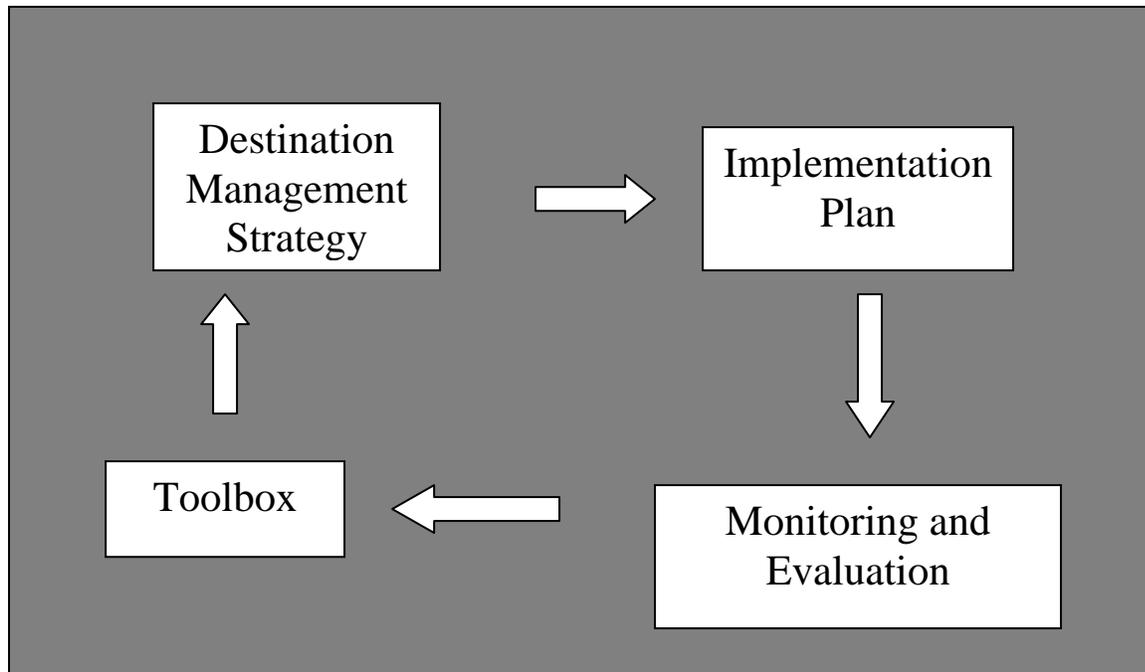


Figure 1: This diagram shows the relationship between the destination management strategy, implementation, monitoring and adaptive management (“Toolbox”).

Priorities

A comprehensive monitoring plan exists in the project files. Due to the complexity, it is not practical to include all components of the monitoring plan in this appendix. Included in the comprehensive plan is a full articulation for each variable of what, when and how to measure, and monitor if full implementation were possible. We recognize that full and extensive monitoring on every element is not realistic. So this plan was developed to provide prioritization for monitoring and evaluation. Three categories of monitoring and evaluation will be implemented.

1. Baseline data collection– acquiring baseline information on destinations, use trails, grazing areas that do not have full interdisciplinary team documentation of conditions.
2. Integrated monitoring of destinations. Locations where multiple resource concerns or risks have been identified and pack stock use is authorized.
3. Single Resource monitoring where less frequent monitoring is needed to understand the effectiveness of management actions and/or the site or feature to be monitored is representative of other sites or features in the planning area.

There are also other programmatic monitoring obligations that intersect this plan, including compliance with requirements for Heritage resource programmatic agreements, and Sierra Nevada Forest Plan Amendment requirements. Where integration with this plan is reasonable or practical, elements of these requirements will be conducted in conjunction with this monitoring.

Data Collection Process

Protocols for all the resources and/or features subject to monitoring have been developed through the interdisciplinary team process and are documented in the Evaluation of Commercial Pack Stock Operations Study Plan (2004). Conditions at meadows, on use trails and at destinations all have designed attribute rating protocols for rapid assessment. More intensive inventory needs are also identified in this study plan, such as stream condition inventory which utilize existing peer reviewed protocols. In addition to the existing protocols, a training, recordation and documentation process is being developed for consistent future applications across the planning area.

Baseline Data Collection:

Objective: To acquire baseline information on destinations, use trails, designated stock camps and grazing areas that do not have full interdisciplinary team documentation of conditions.

A full list of locations is found in the Monitoring Plan in the Project Record

Table 1: Summary of Baseline data collection needs:

Resource or Feature	Protocol	Locations
Grazing Areas	Meadow assessment and PFC (Study Plan)	170
Designated Stock Camps	Camps designed per standards and guidelines and baseline condition documented.	178
Use Trails	Rapid Assessment (Study Plan)	68
Destinations	Attribute rating (Study Plan)	53

Integrated Monitoring

Objective: To monitor and provide evaluation of management actions in locations where multiple resource concerns or risks have been identified and pack stock use is authorized. This type of monitoring will occur frequently (annually or bi-annually) until desired conditions have been reached at which point continued monitoring will be less frequent.

We have identified the following areas (Table 2) as priority monitoring for multiple resources or features. Specialists assessed priorities for range readiness, campsites, grazing, use trails, wildlife habitat critical areas, destinations, fens and sensitive plants. These priorities were then combined to determine areas of multiple concerns. Through a distillation process of evaluating needs, risk factors, use levels and geographic proximity, the following areas have been determined to be the highest need for regular monitoring for effectiveness and implementation of the decision. Where single resource issues exist, or less risk was identified, the area was considered for the ‘single resource’ category of monitoring and evaluation needs.

At each of these locations, following established monitoring protocol, data and photo documentation will be collected on an annual basis unless noted. Designated campsites, use

trails, grazing, range readiness, destinations, fens, wildlife habitat, impacts to heritage resources will be evaluated.

Table 2: Integrated Monitoring Locations

Analysis Unit	Forest	Destinations	Interval
French Canyon	SNF	French Lake; Elba, L, Moon Lakes; “Waterfall” camp, Royce Lake; Merriam Meadow.	Annual
Purple Bench	INF	Purple Lake; Ram Meadow, Purple Bench, Virginia Meadow.	Annual
Silver Divide	SNF	Grassy Lake, Jackson Meadow, Peter Pande Lake, Olive Lake, Wilbur May.	Annual
Cascade Valley	SNF/INF	Iva Belle, Island Crossing, Second Crossing, Third Crossing, Cascade/Purple Junction.	Annual
Fourth Recess	SNF	Fourth Recess Lake, Third Recess Junction, Hopkins Junction, Third Recess Trail, Third Recess Meadow.	Annual
Sadler	SNF	Sadler Lake and grazing area.	Annual
Upper Fish Creek	INF/SNF	Tully Lake, Upper Fish grazing, Horse Heaven, Tully Hole.	Every 2 years
Glacier	SNF	Golden Trout Lakes, Muriel Lake. Wahoo Lake.	Annual
Graveyard	SNF	Lower Graveyard Lake, Graveyard Meadows, Upper Cold Creek Meadows.	Annual
Rush	INF	Clark Lakes, Spooky Meadow, Weber Lake, Alger Lake, Alger Meadow.	Annual
McGee	INF	Round Lake, Martins Meadow, Baldwin, Steelhead Lake, Big McGee Lake.	Every 2 years
Sallie Keyes	SNF	Sallie Keyes Lake, Boot Meadow.	Every 2 years
Silver Peak	SNF	Mott Lake, Silver Pass Meadows, Pocket Meadow.	Annual
Thousand Island	INF	Thousand Island Lake, Meadow, Badger Lake and Meadow, Garnet Lake and inlet.	Annual
Upper Rush	INF	Davis Lake, Rogers Meadow, Marie Lake, Waugh camp, Donahue camp and meadow.	Annual
Bishop creek	INF	Marie Louise Lake, Long lake inlet, Bull Lake.	Every 2 years
Convict	INF	Genevieve/Edith Lake, Cloverleaf Lake.	Every 2 years
Hilton	INF	Second and Davis Lakes, Hilton meadow, Turk Meadow, 3 rd and 4 th Lakes.	Annual
Pine Creek	INF	Upper Pine Lake, Honeymoon Lake.	Every 2 years
Pioneer	SNF	Mudd Lake, Upper Lakes Basin.	Annual
Sabrina	INF	Moonlight Falls, Dingleberry Lake, Baboon Lake.	Every 2 years
Shadow-Ediza	INF	Shadow Trail corridor, Ediza Lake, Laura Lake.	Annual
Triple Divide	SNF	Slab Lakes, Anne Lake.	Every 2 years
Seldon	SNF	Hilgard Branch, Bear Creek, Rosemarie Meadow, Rose Lake, Lou Beverly Lake.	Annual
King Creek	INF	Anona Lake, Ashley Lake, Superior Lake, Holcomb Lake, Fern Lake.	Annual

Single Resource Monitoring

Objective: This category the third priority for monitoring. It includes three distinct purposes. 1) to monitor locations and/or resources only when triggered by certain events or activity. These locations are generally lower priority but for a variety of reasons they may become important for effectiveness or implementation monitoring. Or, 2) to acquire information in areas of low use areas, low risk areas, or areas of single resource concerns with a prediction that use levels will not cause further degradation. And 3) some of these areas have been identified as representative for other locations in the planning area.

Table 3 Single Resource Monitoring

Location	Monitoring or Evaluation Component	Trigger / Reason	Interval
Crater-Deer (INF)	Critical area management.	If use reports indicate grazing activity is occurring.	Based on reported use
Margaret (SNF)	Grazing. North of Fern Lake, Coyote Lake grazing area, north of Frog Lake.	If use reports indicate grazing activity is increasing from current use.	n/a
Minarets (INF)	PFC at Johnston Meadow.	To determine trend in conditions and effectiveness of grazing closure.	10 years
Volcanic (SNF)	Grazing/critical area management.	If use reports indicate grazing activity is substantively increasing from current use.	Evaluated based on reported use.
Glacier Divide (SNF)	Site condition monitoring.	On-going impacts, strong tribal concerns.	Annually
Second Recess (SNF)	Site condition monitoring.	On-going impacts, strong tribal concerns.	Annually
Hopkins (SNF)	Site condition monitoring.	On-going impacts, strong tribal concerns.	Annually
Lee and Cecil (SNF)	System Trail condition	To determine effectiveness of NSCS on trail condition.	3 years
Packsaddle Lake (SNF)	Use Trail	To determine if low use levels maintain low visibility use trail.	3 years
Bishop Creek (INF)	Marie Louise Lake trail	To determine if low levels of use maintain condition of trail.	3 years
Humphreys Basin (SNF)	Mesa, Tomahawk and Humphrey's Lakes	To determine if use levels maintain condition of trail (Humphreys Lake) or if use trail remains low visibility.	3 years
Lake Catherine	Stevenson Meadow	If use reports indicate grazing activity is substantively increasing from current use.	Evaluated based on reported use.
Cargyle	Stairway Meadow, 77 Corral, Middle East Fork Meadow, Cargyle North Meadow.	If use reports indicate grazing activity is substantively increasing from current use.	Evaluated based on reported use.
Emily Lake	System trail condition (trail temporarily NSCS)	To determine if adequate mitigation has been performed to allow reintroduction of commercial stock use.	After work performed, then once every 5 years.

Location	Monitoring or Evaluation Component	Trigger / Reason	Interval
Staniford Lake	Use Trail Condition (Prohibited)	Evaluate effectiveness of removing commercial stock from use trail to Staniford Lake.	3 years
Sallie Keyes – (Senger Creek)	Use Trail Condition (Hunting access)	Determine change in definition and condition of route on Senger Creek hunter route. (Approved for limited use).	3 years

Toolbox

The following table identifies potential tools for an adaptive management approach to be used over time. All the possible outcomes of actions that may need to be modified or adjusted to meet desired conditions, changing conditions or requests for changes, have been considered. The Toolbox provides guidance to staff, pack station operators, the public, and line officers to help provide consistency in approach.

Unless otherwise noted, elements in the “When to use” column do not all need to be present. They represent different situations that may occur that drive either the need for action, or the need to evaluate and consider whether the tool is appropriate. This provides guidance and is not intended to replace the role and discretion of the decision maker to provide appropriate actions.

Table 4 Toolbox for Pack Station Adaptive Management

Tools	When to Use	How to Use
Designated sites		
Additional designated stock camp. Designated spot and dunnage site. Designated temporary hitch line.	<ol style="list-style-type: none"> 1) When more than occasional competition (5 incidences a year) or conflict occur at destinations for the use of a campsite between pack stations, or between general public and pack stations. 2) When a need is identified and potential stock camps exist and no new impacts would occur OR an additional stock camp could be designed without adverse effect to resources. 3) When a need is identified and a suitable location with no identified risk factors and the use of the area would have no adverse effects to physical, biological, heritage or wilderness resources or the desired condition of the area. 4) When requested by operator. 	<p>District Ranger directs an interdisciplinary team to assess campsite, either through reports generated by wilderness ranger, or field visit.</p> <p>Evaluation must include:</p> <p>Heritage clearance,</p> <p>Assessment of trail access so that if risk factors are present they can be mitigated,</p> <p>BMP and assessment of potential compliance of BMPs with expected use levels (BMP Manual, 2000, p. 104), and</p> <p>Wilderness assessment of location's compatibility with recreation category and attributes of solitude, wilderness character and capacity.</p> <p>Designated site must be designed and inventoried according to protocol.</p> <p>Anticipated use level must be identified.</p>
Assigned site (for individual pack stations).	<ol style="list-style-type: none"> 1) When an operator requests to have an assigned site reserved for their use only and it is an existing designated stock camp. 2) When no conflicts between operators would likely result. 	Follow procedures for assigned sites in Forest Service Handbook 2709.11 Section 37.21 (h).
Remove a Designated Stock Camp from use.	<ol style="list-style-type: none"> 1) If BMP compliance cannot be met 2) If site has not been inventoried and designed within two years (2008). 	Prohibit use of site in annual operating plans.
Use Trail Management		
Stabilize use trail.	<ol style="list-style-type: none"> 1) Use trail shows signs of deterioration and instability under current use and this use is otherwise consistent with destination management. 2) Few risk factors are present that would cause continuing impacts once the trail is repaired. 3) Repairs are incidental, (such as primitive barriers and 	<p>Wilderness ranger evaluates UT during normal monitoring cycle, or reports of unusual impacts. Identify key point features or areas of impact, and the presence of risk factors as well as assessment of potential repairs.</p> <p>If repairs are of incidental scale and can be implemented without changing the general undeveloped character of the use trail and there would be minimal off-trail</p>

Tools	When to Use	How to Use
	user redirection/realignment or low-profile drainage or stabilization structures) and these would not change the generally undeveloped character of the use trail.	disturbance, wilderness manager determines prescription for repairs. If work has potential to change character of trail or may disturb off-trail resources, Wilderness Manager consults with appropriate specialists prior to implementation.
Add use trail to system inventory and maintain/manage as system trail.	<ol style="list-style-type: none"> 1) Use trail is showing signs of degradation which require more than incidental management or treatments to stabilize, but could be corrected through standard trail treatments. 2) Use trail is being used by commercial and non-commercial public at moderate to high levels, and is likely to continue. 3) Use is consistent with other management criteria at destination, and is best served with a managed transportation system. 	<p>Wilderness ranger evaluates UT during normal monitoring cycle, or reports of unusual impacts. Identify key point features or areas of impact, and the presence of risk factors as well as assessment of potential repairs.</p> <p>Appropriate specialists assesses trail issues, either through reports generated by wilderness ranger, or field visit if potentially large extent or controversial.</p> <p>Evaluate: Level of current and future work needed; whether this work may have effects on heritage or other resources (if so, conduct appropriate surveys); what level of trail development is appropriate for anticipated use type and levels, recreation category and destination management.</p> <p>Disclose intent of adding trail(s) to system to public, and conduct appropriate planning and environmental process.</p>
Approve a use trail not currently approved.	<ol style="list-style-type: none"> 1) Access is requested to an area within or in close proximity to an existing approved destination (<i>see destination boundary adjustment, below</i>); OR, access is requested on a UT which was previously prohibited. 2) Use to destination is otherwise consistent with desired conditions. 3) Conditions which originally created the need to prohibit use have changed or been corrected. 4) Route is deemed to be stable at the anticipated use level. 	<p>Wilderness ranger evaluates UT after request. Identify key point features or areas of impact, and the presence of risk factors as well as assessment of potential stabilization.</p> <p>Interdisciplinary team assesses trail issues, either through reports generated by wilderness ranger, or field visit if potentially large extent or controversial.</p> <p>Evaluate trail stability and consistency with destination management, and assign appropriate level of use at destination.</p>
Remove use trail from use by Pack Station.	<ol style="list-style-type: none"> 1) Use trail shows signs of deterioration and unacceptable impacts of resources, <i>and</i> 2) Risk factors exist which would make it highly unlikely the use trail could be stabilized without unacceptable changes in the trail character. 3) Impacts to TES, Heritage Resources, or other critical resources cannot be mitigated with continued use. 4) Removal of use by pack station will substantially 	<p>Wilderness ranger evaluates UT during normal monitoring cycle, or because of reports of unusual impacts. Identify key point features or areas of impact, and the presence of risk factors as well as initial assessment of potential mitigation.</p> <p>Interdisciplinary team assesses UT issues, either through detailed reports generated by wilderness ranger, or field visit, if potentially large extent or controversy.</p> <p>IDT evaluates: Extent of physical mitigation and</p>

Tools	When to Use	How to Use
	correct use trail issues. Other non-commercial use types and levels will not likely perpetuate continued problems if pack stock use is removed.	potential change in character needed to stabilize impacts if use were to continue, risk factors, future maintenance considerations, effects on TES, heritage, or other resources, and consistency with Recreation Categories and destination management; also, extent to which commercial stock use is creating the impacts and expectations for improvement with removal of commercial stock.
Destination Quota Adjustment		
Reduce levels of use at a destination.	Impacts at destination, including trails, use trails, grazing areas, campsite conditions etc, are deteriorating. Conflicts become apparent between commercial visitors, and /or between commercial and non commercial visitors.	District Ranger directs an assessment of the destination in question to determine if standards, guidelines and desired conditions are being met. Adjustments should be made based on this assessment. Resource impact ratings from baseline assessment should indicate conditions are deteriorating and commercial pack stock use may be a contributing factor.
Adjust destination quota upward.	Identified work is accomplished as identified in DMS (such as trail is repaired or improved). Desired condition is met and commercial operator identifies an ability to increase use and maintain condition. Requested by operator.	District Ranger directs an assessment of the destination in question to determine if standards, guidelines and desired conditions are being met. Adjustments should be made based on this assessment. Resource impact ratings from baseline assessment should indicate improved conditions.
Destination boundary adjustment.	Commercial operator demonstrates recent past use (within 10 years) occurred outside but adjacent to the current boundary of a destination.	District Ranger should direct an assessment of the locations in question and document conditions including presence of risk factors and determine if standards, guidelines and desired conditions are being met. Adjustments should be made based on this assessment.
Add a new destination.	Upon request by pack station.	Interdisciplinary team assessment, including destination attribute rating, photo-point identification, campsite inventory, and trail and/or use trail assessment.
Allow case by case destination use for hunting.	Upon request by pack station, at least two weeks prior to hunting season.	Wilderness manager assesses location and will need to determine that are no concerns with the level of use, and it will not have any adverse effects to trails, campsites, and/or cross country travel will not lead to trailing impacts.
Modification of Stock at One Time in the Wilderness.	Upon request by pack station or when the FS determines unacceptable impacts to be occurring.	District Ranger will direct an assessment of the locations affected by stock at one time and document conditions including presence of risk factors and determine if

Tools	When to Use	How to Use
		standards, guidelines and desired conditions are being met. Adjustments should be made incrementally based on this assessment.
Trail Suitability		
Designate trail that is currently available to commercial stock use as “Not Suitable for Commercial Stock”.	<ol style="list-style-type: none"> 1) Trail shows signs of deterioration and unacceptable impacts of resources, <i>and</i> 2) Risk factors exist which would make it highly unlikely the trail could be stabilized without unacceptable changes in the trail character. 3) Impacts to TES, Heritage Resources, or other critical resources cannot be mitigated under continued commercial stock use. 4) Removal of use by pack station will substantially correct issues. Other non-commercial use types and levels will not perpetuate continued problems if pack station use is removed. 	<p>Wilderness ranger or trail staff evaluates trail during normal monitoring cycle, or because of reports of unusual impacts. Identify key point features or areas of impact, and the presence of risk factors as well as initial assessment of potential mitigation.</p> <p>Interdisciplinary team assesses trail issues, either through detailed reports generated by wilderness ranger, or field visit if potentially large magnitude or controversial.</p> <p>IDT evaluates: Extent of physical mitigation and potential change in character needed to stabilize impacts if use continues, risk factors, future maintenance considerations, effects on TES, heritage, or other resources, and consistency with Recreation Categories and destination management; also, extent to which commercial stock use is creating the impacts and expectations for improvement with removal of commercial stock.</p>
Make trail which was previously designated NSCS or “NSCS until repaired” available to commercial stock.	<ol style="list-style-type: none"> 1) Use is requested for trail that was formerly designated “NSCS until repaired” or NSCS. 2) Use to destination is otherwise consistent with desired conditions. 3) Conditions which originally created the need to prohibit use have changed or been corrected. 4) Route is deemed to be stable at the anticipated use level. 	<p>Focused field assessment and report by wilderness ranger verifying that trail has been adequately stabilized. Review by IDT.</p> <p>IDT evaluates: mitigation of key impacts has occurred, impacts to TES, heritage and other resources not likely to occur by reopening trail. Limiting factors that determine level of destination use after trail is available.</p> <p>Trails which were designated as NSCS until repaired are cleared in the Operating Plan. Trails that were designated NSCS go through appropriate public process to amend current decision.</p>
Allow early season trail opening (i.e.shoveling, sanding).	<ol style="list-style-type: none"> 1) Request for shoveling, sanding . (This can occur prior to access). 2) Identified concern with trail or destination. 	<p>Identify key locations that indicate destination or trail readiness based on intended trips.</p> <p>Site visit to key locations prior to access being granted.</p>
Grazing Management		

Tools	When to Use	How to Use
Allow grazing outside of an existing key area or grazing zone.	Request by packer or nearby grazing zones at capacity or too far from destination to be used. Destination should be no greater than ½ mile.	Interdisciplinary team visits proposed grazing area, assesses condition and suitability. Team members will as a minimum be wilderness, hydrology, range, botanist, heritage, and wildlife specialist. If determined to be suitable, the IDT completes meadow evaluation, ecological status (Rapid Assessment Process from Wilderness Plan, Assessment of Benchmarks, Appendix G, page 7), Proper Functioning Condition assessment, designates any critical areas, estimates initial stock nights available, and identifies any needed mitigations.
Increase or decrease stock nights temporarily (during a season for the remainder of that season only) within an existing grazing zone.	Change in annual conditions such as wet or dry year or consecutive years indicates productivity may be higher or lower than normal or a request by packer for an increase, and adequate monitoring data shows that utilization and other standards have not yet been reached.	Adequate monitoring data includes photographs and vegetation utilization measurements for key areas (Grazing Response Index method as described in the Wilderness Plan Appendix G, page 10) and streambank alteration measurements (R5 Rangeland Analysis and Planning Guide, Point Method, pages 5-10 to 5-15). Adequate monitoring data also includes photo-points in critical areas and written critical area evaluations.
Increase stock nights in existing key area or grazing zone (long term, for more than one season).	Upon request by pack station.	If current monitoring of vegetation utilization (Grazing Response Index method as described in the Wilderness Plan Appendix G, page 10), critical area protection, stream bank alteration (R5 Rangeland Analysis and Planning Guide, Point method), and trend monitoring (see Assessment of Benchmarks, Appendix G, page 7) shows that standards for stream condition and vegetation composition are obviously being exceeded, then an interdisciplinary team (members will be hydrology, range, and wildlife specialist) re-calculates stock nights of forage available and identifies any management needed to allow allocation. “Degraded meadows and streams will have obvious upward trend in condition and function” (2001, Wilderness Plan ROD, page 17): Therefore, for vegetation, a representative sample indicates that the majority of the meadow (over 50%) must be in high seral condition and no more than some isolated, or patchy changes away from the potential natural plant community, over less than 1/3 of the area. Stream PFC analysis must show an obvious upward trend in stream functional condition. No headcuts can be

Tools	When to Use	How to Use
		deeper than the rooting depth of adjacent potentially stabilizing vegetation or in the lower 1/3 of the meadow. If there is a portion of the meadow with insufficient recovery, it can be excluded from the area able to be grazed. The area with sufficient recovery can be opened, and methods such as fencing, hobbling, etc. can be used to prevent access into the remaining degraded areas.
Reduce stock nights in existing key area or grazing zone or rest meadow.	<ol style="list-style-type: none"> 1) Monitoring shows that grazing area is not meeting standards/desired conditions. 2) More critical areas are found in grazing area. 	<p>If monitoring shows that meadow vegetation or stream condition in downward trend, or utilization or trampling standards are not being met, modify grazing management if possible, or suspend grazing if modification is not sufficient. See monitoring plan for specific monitoring protocols.</p> <p>Use the Grazing Response Index method (Wilderness Plan page 24, and Appendix G) to determine if utilization standards are being met. For trampling, use the Point Method for measuring streambank alteration. For stream condition, use the PFC protocol.</p>
Allow grazing in an area rested due to resource impacts.	Upon request by pack station.	<p>Rest continues until an interdisciplinary team establishes baseline monitoring and then accomplishes subsequent monitoring that quantifies an upward trend with resource conditions sufficient to sustain grazing and stock entry (see Assessment of Benchmarks, Appendix G, page 7). Once this monitoring confirms satisfactory rangeland condition (see Glossary) the IDT then completes a meadow evaluation (including PFC) and identifies any critical areas or mitigations needed. District Ranger reviews information and directs appropriate environmental process.</p> <p>“Degraded meadows and streams will have obvious upward trend in condition and function” (2001, Wilderness Plan ROD, page 17): Therefore, for vegetation, a representative sample indicates that the majority of the meadow (over 50%) must be in high seral condition and no more than some isolated, or patchy changes away from the potential natural plant community, over less than 1/3 of the area.</p> <p>Stream PFC analysis must show an obvious upward trend in stream functional condition. No headcuts can be deeper than the rooting depth of adjacent potentially stabilizing vegetation or in the lower 1/3 of the meadow</p>

Tools	When to Use	How to Use
		in the portion of the meadow where grazing would occur. If there is a portion of the meadow with insufficient recovery, it can be excluded from the area able to be grazed. The area with sufficient recovery can be opened, and methods such as fencing, hobbling, etc. can be used to prevent access into the remaining degraded areas.
Open meadow that is closed due to trail problems.	Trail repair or relocation is completed.	If meadow has been analyzed by ID team and found suitable except for trail issues, open meadow to grazing and calculate stock nights. If meadow has not been analyzed, interdisciplinary team visits meadow and determines suitability and capacity.
Identify additional critical areas.	Surveys, monitoring, or other reports of a previously unknown Yosemite toad population, sensitive riparian plant species population, fen, or other resource concern within a grazing area.	Appropriate specialist confirms presence of a critical area. District Ranger directs and assessment of the impacts and effects to critical areas. If no negative impacts are identified, District Ranger can direct staff to adjust estimated grazing capacity so that critical area is not included in calculation and inform permit administrator and packer(s) of presence of critical area and new capacity. If there are negative impacts, District Ranger works with permit administrator and packer(s) to develop a grazing strategy that will protect the critical area.
Use of Temporary (i.e. Electric Tape Type or “Quick Corral”, but may be barbed wire or other fence type depending upon assessment) Fence for enclosure, enclosure or drift fence.	Packer proposes to use temporary electric “Quick Corral” type fence or other temporary fencing to either exclude stock from a critical area or keep stock within a suitable area or to contain stock as in a drift fence situation. Use may be one time to the entire season.	The Permit Administrator consult with Range and Wilderness Staff and other staff to determine whether additional work is needed (such as Botanical and Heritage Resources) and documents in permit file the resulting determination of the suitability and feasibility of using temporary fence at the proposed location. The fence location and duration are detailed in the Annual Operating Plan, or in a mid-season letter amending the AOP. Staff will consider and identify the location and the shortest time period that will accomplish the stock containment or resource protection needed. Staff will consider and identify the location and the shortest time period that will accomplish the stock containment or resource protection needed. District Ranger directs analysis, evaluates assessment and makes decision. Ensure completion of Section 106 prior to approval.

Tools	When to Use	How to Use
Drift Fences		
Add drift fence.	Packer proposes new fences or, Grazing zones requires resting and fences provide protection for meadow.	District Ranger directs staff to conduct a minimum requirement analysis and appropriate environmental analysis.
Remove drift fence.	No longer serves to protect resources or fulfill stock management objectives or Fence falls into disrepair and/or has not been used for five years or Fence used only for convenience to hold stock for packer, not for resource protection.	District Ranger directs appropriate specialists and permit administrators to prepare evaluation of the effectiveness of the drift fence then determines appropriate course of action. Ensure completion of Section 106 prior to removal of drift fence.
Extend or relocate existing drift fence.	Upon request by operator, and other approved practices have failed (e.g. use of electric fence) or, Significant resource issues occur related to commercial stock grazing or, Where stock management problems lead to unsafe situations for visitors. FS determines unacceptable, unmitigatable resource impacts or conflicts at current site of drift fence and the drift fence has been determined to be necessary.	Appropriate specialists assess need for drift fence vs. other alternative stock management practices. Alternative less intrusive stock management practices have been demonstrated to be unsuccessful. Fence is shown to be last resort and compliant with all current policy and standards. Environmental analysis is completed for construction of new facility in the wilderness. Ensure completion of Section 106 prior to relocation of drift fence.
Campfires		
Allow campfires by pack stations in areas above elevational closure.	Upon request by pack station	District Ranger directs an assessment of proposed area that includes proximity to other visitors camping and potential conflicts.
Adjustments to elevational fire closure.	When firewood availability is abundant enough to support campfires above 10,000 or 10,400 foot elevational closure. When firewood is not available in enough abundance to support continued campfire use When requested by packer	If campsite inventory indicates that enough campsites (at least more than 2 sites rated at a "3" or lower for firewood availability) and no conflicts with adjacent areas or within a destination would occur. When firewood ratings from campsite inventory rate out at "4" and "5" at any given destination, area should be closed to campfire use.
Party Size		
Identify party size limitations.	When reports indicate campsite will not accommodate large number of campers or pack stock without going outside the existing site.	District Ranger directs wilderness manager or permit administrator to evaluate site during normal monitoring cycle, or as a result of reports of unusual impacts. Consider current/recent past tally sheet use reports to

Tools	When to Use	How to Use
		determine appropriate party size.
Historic Properties Management Plan (HPMP)		
Management of heritage resources.	When operations occur in the vicinity of a known heritage resource.	Direction will be provided in the HPMP for each site within the operating area.
	1) Discovery of heritage resources. 2) Inadvertent effect	Modify HPMP.

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Record of Decision – Appendix B: Destination Management

The *Destination Management Strategy* found in this section provides a summary of the management actions at destinations. It is intended to be a strategy whereby managers, field personnel, pack station operators, and other interested parties can understand the integration of actions at each destination. Also, and perhaps most important, this strategy describes conditions that we intend to maintain at each destination. Since the ability to actively manage these activities over time is at the forefront of the selected alternative, this strategy becomes the starting point intended as a working document that describes current conditions and the actions needed to achieve the desired conditions.

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Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
1. Parker				
Destination: Parker Lake	Access	Parker Bench Trail observed Trail Class 3 and generally stable. Used for day rides to wilderness boundary.	Maintain trail stability.	Trail is suitable for commercial pack stock use at proposed levels, primarily day rides and occasional overnight use with pack stock.
	Recreation Category Setting	Recreation Category 1, fair amount of private and commercial use; and in sight and sound of the highway. High day use area.	Recreation Category 2, off primary trail; manage for low levels of use of Recreation Category 2.	Change recreation category from 1 to 2 to be consistent with conditions at lake specifically day use (hiking) of area.
	Use Levels 01-04	None reported, but known use prior to 2001.		Allow up to 4 spot/dunnage trips. Use of area at high end of range during heavy snow years, and for occasional all expense trips. Use level will be consistent with maintaining setting and desired campsite conditions.
	Grazing	No grazing reported or requested.	Maintain current conditions.	No grazing.
	Campsites	Low density of sites, low to	Prevent creation of new camp	Designate 1 stock camp in

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		moderate condition class.	sites, maintain low density.	vicinity of outlet of Parker Lake.
	Other Issues	Area denuded by sheep bedding and flooding.		
2. Rush Creek				
Destination: Clark Zone (Summit Lake / Clark Lakes / Agnew Pass	Access	Summit: Clark Lake Trail observed Trail Class 3, Agnew Pass observed Trail Class 2; Clark: generally stable, Clark Lake Trail observed Trail Class 3, Agnew Pass observed Trail Class 2; Spooky-Clark cutoff observed Trail Class 2. All generally stable. Alternate route down Spooky Canyon in rough condition, too steep to practically maintain. Not safe for stock below wilderness boundary. Agnew Pass: Agnew Pass Trail observed Trail Class 2, steep, generally stable. Clark to PCT Trail Class 3, generally stable.	Summit: Ensure trail stability. Clark: Maintain condition and stability. Keep use to minimum on Spooky Trail. Agnew Pass: Maintain trail stability.	All system trails suitable for commercial stock use at levels prescribed. Minimize use of Spooky Trail to maintain trail stability.
	Recreation Category Setting	Summit Lake Recreation Category 2; low to moderate use and impact, moderate to high opportunities for solitude. Clark Lake Recreation Category 2; moderate to high recreational impacts, moderate opportunities for solitude. (Recreation Impact Rating = 1.6)	Summit: Few, low condition rating campsites, moderate to high opportunities for solitude. Clark: Maintain area as moderately used destination with moderate to high impacts concentrated at few sites. Maintain moderate opportunities for solitude.	
	Use Levels 01-04	Summit Lake: FPT: 0-1 trips, 0-3 stock Clark Lake: 7-14 trips, 62-99 Stock Agnew Pass: none reported		Summit Lake: up to 2 spot and dunnage trips (FPT) will maintain high opportunities for solitude. Clark Lake: up to 15 (FPT) spot/dunnage trips and use of area as full service all expense site, is consistent level of use with Recreation Category 2

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
				popular destination. Agnew Pass: 4 trips (Reds).
Destination: Clark Zone Cont.	Grazing	Associated grazing is in the Spooky Grazing Zone. Reported stock nights (2001/2002/2003) 197/78/119. Low to moderate localized vegetation composition alteration at both Upper and Lower Spooky. Spring with fen characteristics at Upper Spooky with moderate trampling.	Summit Lake: maintain or improve vegetative composition and cover. Maintain functioning of area with fen characteristics.	Allow grazing in Spooky Grazing Zone at 78 stock nights, Lower Spooky 25 stock nights, Upper Spooky 41 stock nights, with 30% allowable utilization, negligible stock impacts in critical area (fen).
	Campsites	Clark Lake: Large designated stock holding campsite meets BMPs. Deep manure at highline. Multiple dead trees at designated site.	Clark Lake: Designated stock holding campsite meets BMPs. Reduce manure accumulation at highline. Reduce total area of impact.	Designated 1 stock camp at Clark Lakes. Reduce total area of designated site. No stock camp at Summit Lake.
3. Rush Creek				
Destination: Alger Lakes	Access	Alger Trail observed Trail Class 2, Resource Rating 1, some instability below lakes. Trail through meadow slightly non-compliant with RCOs. Gem Pass Snow route (non-system), past maintenance as Trail Class 2, Resource Rating 1.	Maintain current stability and low resource ratings.	Trail suitable for commercial stock at use levels prescribed.
	Recreation Category Setting	Recreation Category 2; very low use and overall recreation impacts are minor. Opportunities for solitude are high. Recreation Impact Rating = 1.0.	Maintain low use and overall impacts remain minor. Maintain high opportunities for solitude.	
	Use Levels 01-04	0-6 Trips, 0-62 Stock		Up to 10 spot/dunnage trips and use for all expense trips will maintain low recreation category use levels and conditions.
	Grazing	Alger Lakes: Fen and occupied Yosemite toad habitat with slight to moderate trampling and chiseling impacts; lakeshore sensitive plant potential habitat with no noted impacts. Negligible hydrologic function alteration. Stream is at PFC. Reported use: 332/184/202. Minor localized vegetation impacts.	Maintain functioning fen; maintain good lakeshore condition. Maintain high quality Yosemite toad habitat. Negligible hydrologic function alteration. Stream is at PFC. Vegetation is at high-seral status.	Allow grazing at 332 stock nights with applicable standards, 40% AUF, 20% streambank alteration. Critical areas closed to stock entry and grazing.
	Campsites	Designated stock holding site on east side of lake meets BMPs. Campsite shows moderate compaction, vegetation	Designated stock holding sites and spot/dunnage site meets BMPs. Maintain or decrease existing camp perimeter.	Designate 1 stock camp site.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		loss and total area.		
	Other Issues		Maintain or improve firewood availability condition.	Allow case by case packing in of wood at Alger Lakes.
4. Rush Creek				
Destination: Gem / Waugh Lakes	Access	Rush Creek observed Trail Class 3, stable even with high use. Access trails to camps along primary corridor short. Some instability on inherent camp access trails. Gem Trail observed Trail Class 3, stable even with high use. Access trails to camps at Gem Lake very short. Waugh Trail observed Trail Class 3, stable even with high use. Access trails to camps along primary corridor short, with some instability. Social trails between camp and lake contributing a small amount of sediment to Waugh Lake.	Rush Creek: Ensure camp access trails are stable. Waugh Lake: Ensure camp access trails and social trails from camps are stable.	Rush Creek: Identify best route to "Tractor Camp" (vs. Bill Henry Camp) below Waugh dam.
	Recreation Category Setting	Rush Creek: Recreation Category 2. Moderate impacts at campsites; moderate opportunities for solitude. Waugh Lake: Recreation Category 2. Presence of dam and reservoir has high impact on wilderness character. Recreation impacts moderate, but negligible in comparison to dam. Recreation Impact Rating 1.2.	Maintain moderate opportunities for solitude.	
	Use Levels 01-04	Rush Creek: 23 trips; 52-158 stock Waugh FPT: 0-5 trips, 0-52 stock Reds: 0-2 trips, 0-12 stock		30 trips in zone to one operator, includes Gem Lake, Waugh Lake and Rush Creek for spot/dunnage trips and use for all expense trips consistent with primary trail corridor. Use will maintain moderate opportunities for solitude. Use levels consistent with primary trail corridor of Recreation Category 2.
	Grazing	Rush Creek: none reported Waugh Lake: none reported		Rush Creek: no grazing Waugh Lake: no grazing
	Campsites	Rush Creek: existing campsites have moderate impacts from repeated use, compaction, vegetation loss and bare core are evident.	Rush Creek: use existing campsites for spot and dunnage. Relocate all expense campsite below Waugh dam. Waugh Lake: stock holding and	Rush Creek : designate 3 stock camps. Close and rehabilitate campsite known as "Bill Henry", and relocate to "Tractor Camp". Secondary camp is "Dink's

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		Waugh Lake: 1 stock holding site meets BMPs.	spot/dunnage sites meet BMPs.	Camp". Waugh Lake: designate 1 stock camp at Waugh Lake inlet known as "Bridoff" and contain camp site.
	Other Issues			Maintain 2 high-line sites for day rides at Gem Lake (Crest Creek junction).
5. Rush Creek				
Destination: Weber Lake	Access	Weber Lake observed Trail Class 3, generally stable. Weber Spur use trail (not on system) to campsite at outlet is well-defined, steep, Resource Rating 1. Spur trail appears to be diverting surface water, near junction with system trail. Sullivan Lake use trail: Resource Rating 1, indistinct near Sullivan Lake. Not stock suitable.	Weber Spur use trail should not divert surface water. Ensure stability of Weber Spur use trail at approved use levels. Keep Sullivan use trail low profile and stable.	Weber System Trail downgrade to Trail Class 2. Add Weber Spur use trail to system (Trail Class 2). No commercial stock use on Sullivan Lake use trail.
	Recreation Category Setting	Recreation Category 2; low to moderate recreation impacts, moderate to high opportunities for solitude, low to moderate capacity for camping. Recreation Impact Rating = 1.6.	Maintain for moderate to high opportunities for solitude.	
	Use Levels 01-04	8-12 Trips, 57-84 Stock		Up to 12 spot and dunnage trips consistent with Recreation Category 2 will maintain moderate to high opportunities for solitude.
	Grazing	None reported		No grazing.
	Campsites	Some campsites show moderate to high impact, mutilations, vegetation loss.	Low condition rating at campsites.	No stock camp. Require packer to pack in firewood for clients, set back campsites from water.
6. Rush Creek				
Destination: Crest Creek	Access	Crest Creek use trail not defined, Resource Rating 0 with low-mid risk factors.	No increase in trail visibility or impacts.	Allow limited cross-country travel.
	Recreation Category Setting	No evidence of trail, no impacts visible. High opportunities for solitude.	Maintain high opportunities for solitude.	
	Use levels 01-04	None reported, but known use prior to 2001.		Up to 2 spot and dunnage trips for fall season hunting only. Utilize low stock numbers. Low use level will ensure no

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
				new trail effects and high opportunities for solitude.
	Grazing	None reported.		No grazing.
	Campsites	No visible camps.	No visible camps.	No stock camp.
7. Upper Rush				
Destination: Davis Lake	Access	Davis Lake Trail observed Trail Class 2, Resource Rating 1; Upper Davis use trail Resource Rating 1, lightly defined, light use. Risk factors present. Rodgers use trail (access to grazing) Resource Rating = 2.5, causing slight diversion of spring channel surface flow, becoming more impacted at crossings and meadows.	Prevent change on Upper Davis use trail. Rodgers use trail: remove use from the most fragile areas, stabilize trail at crossings/springs.	Prohibit stock use on Upper Davis use trail. Determine better route to Rodgers grazing.
	Recreation Category Setting	Recreation Category 2. Moderate opportunities for solitude. Recreation Impact Rating = 1.4, riparian concerns and risk factors.	Maintain Recreation Category 2 conditions for destination off primary trail.	
	Use Levels 01-04	0-6 trips, 0-54 stock		Up to 6 spot and dunnage trips and use of designated site for all expense trips will maintain Recreation Category 2 conditions for destination off primary trail.
	Grazing	Davis Rodgers Zone: reported stock nights: 126/168/104. Localized minor vegetation alteration. Yosemite toad breeding habitat critical area in Upper Davis and Rodgers Lakes meadows with light to moderate trampling and chiseling impacts from grazing. Lakeshore potential habitat for Tioga sedge has trampling impacts at Marie and Rodgers Meadows. Streams at PFC and hydrologic function alteration only at the benches east of Davis Lake.	Streams at PFC and no hydrologic function alteration in meadows/grazed areas. Maintain vegetation at desired condition. Maintain high quality Yosemite toad habitat. Maintain Tioga sedge habitat in good condition.	Allow grazing in zone at 128 stock nights 3-year rotation between Davis, Davis benches and Rodgers. Packer manages stock to keep out of critical areas. Critical areas closed to stock entry and grazing.
	Campsites	One stock holding site at the north tip of Davis Lake meets BMPs.	Stock holding and spot/dunnage sites meet BMPs. Contain campsite impacts.	Designate 1 stock camp at Davis Lake. Contain campsite impacts.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
8. Upper Rush				
Destination: Donahue (includes Marie Lake)	Access	PCT Primary access, generally stable. Camp access trail crosses creek at hardened ford. Mountain yellow-legged frog stream habitat critical area in Rush Creek at stock crossing to camp with loss of undercut bank habitat from stock chiseling of streambanks.	Ensure camp access (Donahue) trail stability. No additional undercut streambank habitat loss, maintenance or restoration of existing habitat condition.	Marie Lake Trail NSCS. Stock prohibited on Marie Lakes Meadow use trail (URU02). Monitor stream crossing at Donahue stock to ensure no additional undercut bank loss, implement additional management measures such as re-location if crossing continues to exacerbate undercut bank loss.
	Recreation Category Setting	Recreation Category 2, low to moderate opportunities for solitude.	Maintain moderate opportunities for solitude.	
	Use Levels 01-04	0-2 trips., 0-10 stock		Up to 2 trips for spot and dunnage and use of site for all expense trips. Low commercial use for a Recreation Category 2 primary trail corridor.
	Grazing	Meadow between camp and the creek is severely compacted and stream bank has trampling over about 10% of its length in the meadow. Mountain-yellow-legged frog streambank habitat has collapsed undercut bank areas from stock crossing. Meadows east of camp have good hydrologic function. Localized minor vegetative alteration. Reported grazing: 45/127/36.	Meadow between camp and the creek has only slight compaction and stream bank trampling remains below 20%. Maintain high quality mountain yellow-legged frog undercut streambank habitat. Maintain meadow at vegetative desired condition.	Allow grazing at 127 stock nights, creek crossing and associated meadow identified as a critical area. Apply 40% AUF and 20% streambank standard. Critical areas closed to stock entry and grazing.
	Campsites	Campsite is moderate impact, large barren core area and vegetation loss, moderate in total area.	Contain size of campsite.	Designate 1 stock camp at Marie Meadow and 1 stock camp Donohue. Manage Donahue camp for traveling trips, and Marie for operator at Silver Lake.
9. Upper Rush				
Destination: Lost Lake	Access	Lost Lake use trail: Resource Rating 0, not visible (cross country route).	Ensure trails do not become evident.	Allow limited cross-country travel.
	Recreation Category Setting	Recreation Category 1. No evidence of trail use, high opportunities for solitude.	No visible trail or impacts.	
	Use Levels 01-04	None reported, but known use prior to 2001.		Up to 2 spot and dunnage trips for fall hunting season only. Low use, and season of use, is consistent with Recreation Category 1 and will maintain

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
				high opportunities for solitude and no evidence of trail.
	Grazing	No grazing reported.		No grazing.
	Campsites	No stock camps.	No stock camps.	No stock camps.
10. River				
Destination: River Trail	Access	River Trail observed Trail Class 3, recently repaired, generally stable.		River Trail to Garnet Lake NSCS.
	Recreation Category Setting	Recreation Category 2, high use trail corridor with low opportunities for solitude while traveling, moderate to high while camping.	Maintain for low impacts outside of trail and campsites. Manage for moderate opportunities for solitude while traveling and moderate to high opportunities for solitude while camping.	
	Use Levels 01-04	No reported use.		Up to 10 spot and dunnage trips, relatively low use for Recreation Category 3 high use trail corridor.
	Grazing	PCT junction River Trail and Olaine Meadows have potential habitat for sensitive species. Reported grazing in zone: 0/46/50.	At desired high-seral vegetative condition.	Allow grazing in zone at 78 stock nights, with 30% allowable utilization, 20 percent stream bank alteration, Critical areas closed to stock entry and grazing.
	Campsites	No stock camp.	No stock camp.	No stock camp.
11. Thousand Island				
Destination: Garnet Lake	Access	Garnet Lake camps use trail from PCT observed Trail Class 2, Resource Rating 2.5, awkward, unstable, heavily used by commercial stock and hikers. Garnet-Emerald Trail observed Trail Class 2, Resource Rating 4, (abandoned JMT) poorly maintained, moderate to severe erosion. Garnet grazing use trail, Resource Rating 4, poorly located, through lake, creeks. Meadow between Garnet and Emerald Lakes has local moderate hydrologic function alteration which may be result of trail location.	Reduce erosion and effects of the un-maintained Garnet-Emerald trail. Ensure stable access to camps from PCT. Prevent impacts from grazing trail.	Garnet Lake - Emerald Lake Trail NSCS; Trail Class 1. Install some basic drainage, stabilization structures. Improve trail to camps from PCT.
	Recreation Category Setting	Recreation Category 3. High level of recreation use impact. Recreation Impact Rating = 2.8. Low to moderate opportunities for solitude.	Allow for high levels of use by concentrating impacts and managing sites. Manage for lowering overall resource rating by containing impacts.	

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Use Levels 01-04	11-30 trips, 40-296 stock		Up to 20 spot and dunnage trips and use for all expense trips. Decrease commercial use to lower impacts in Recreation Category 3.
	Grazing	Stream determined functional at-risk with a downward trend. Meadow has slight hydrologic function alteration. Localized vegetative composition alteration in lakeshore meadows. Riparian habitat at west shore in fair condition; with current stock trampling and chiseling impacts including fragmented sod and reduced vegetative cover. The majority of the meadows never reach range readiness. Area with fen characteristics at risk due to stream incision.	Condition of the stream improves toward proper functioning with stable banks. No alteration of meadow hydrologic function with no sod fragmentation. Protect wet soils from trampling and sod fragmentation. Vegetative cover increases. Improve habitat condition by reducing trampling and chiseling impacts in wet meadow/wetland types. Fen in functioning condition.	Unsuitable, no grazing allowed.
	Campsites	Stock holding site at the north side of the lake is within 100 feet of water and is causing sediment to enter water.	Stock holding site should be over 100 feet from water, and should not cause sediment to enter water.	Designate 1 stock camp at Garnet Lake. Contain and set back camp site from lake and meadow.
	Other Issues			Implement grazing action.
12. Thousand Island				
Destination: Thousand / Upper San Joaquin	Access	Thousand Island Lake: trail observed Trail Class 2, Resource Rating 3, incised along lakeshore, few to no structures. Badger Lake Spur (to camps): observed Trail Class 2, Resource Rating 1. Stable w/ no risk factors. Badger Meadow grazing use trail, steep, some erosion.	Thousand Island: Stabilize access to approved camps. Badger Lake: ensure stability of grazing access trail from lake. Emerald Lake: meadow should have negligible hydrologic function alteration.	Badger Lake use trail add to system as Trail Class 2.
	Recreation Category Setting	Thousand Island: Recreation Category 3 with crowding and high use. Low opportunities for solitude. Recreation Impact Rating = 2.0. Upper San Joaquin: Recreation Category 3. Badger Lake: Recreation Category 3, moderate impacts, Recreation Impact Rating = 1.8. Emerald Lake: Recreation Category 3. Low opportunities for solitude.	Reduce crowding conflicts and trail encounters in zone. Thousand Island: concentrate and contain recreational impacts. Badger Lake: reduce overall impact rating by improving campsite conditions. Emerald Lake: maintain high use with moderate recreation impacts.	
	Use Levels 01-04	Thousand Island: Reds: 26-58 trips, 150-398 stock. FPT: 0-2 trips, 0-15 stock. Upper San Joaquin: Reds: 0-6 trips, 0-53		Up to 45 trips spot and dunnage to one operator, to 3 destinations within this high use Recreation Category 3 area.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		stock. Badger: 8-13 trips, 28-63 stock Emerald Lake: no data for "Emerald Lake".		Maintain current levels of use at Badger Lake.
	Grazing	Thousand Island: Two streams in meadows were found to be functional at-risk, one with a downward trend, one with a non-apparent trend, with slight overall hydrologic function alteration. See Garnet-Thousand Island Grazing Zone. Yosemite toad and mountain yellow-legged frog breeding habitat critical area in meadows west of Thousand Island Lake with light to moderate trampling and chiseling impacts from grazing. Reported grazing: 390/204/127. Local moderate vegetative composition alteration, moderate to severe alteration at meadows between Garnet and Thousand Island. San Joaquin Grazing Zone: reported stock nights: 0/46/50. Badger Lakes Meadow: minor vegetation alteration, fen with some trampling, stream is functional at-risk with a non-apparent trend, slight hydrologic function alteration meadow-wide. Emerald Lake: wet conditions, low percentage of area reaches range readiness.	Thousand Island: Streams should move toward proper functioning condition, with an upward trend. Meadows should have negligible hydrologic function alteration. Locally increase vegetative cover. Maintain high quality Yosemite toad and mountain yellow-legged frog habitats. Badger Lake: Fen in functioning condition. Stream has an upward trend in functional condition. No hydrologic function alteration. At desired high-seral status. Emerald Lake: At desired vegetative condition.	Thousand Island: allow grazing 127 stock nights available in zone, mostly on benches north of Thousand Island Lake. Critical areas closed to stock entry and grazing. Upper San Joaquin: allow grazing with applicable standards (including a 40% allowable utilization factor), 84 stock nights available in the zone in alternative 2,3; 65 in alternative 4 with a 30% AUF. Badger: allow grazing with applicable standards (including a 40% allowable utilization factor), 84 stock nights available in the zone, 19 stock nights at Badger Lake Meadow, in alternative 2,3; 65 in alternative 4 with a 30% AUF. (Emerald Lake) No grazing.
	Campsites	Thousand Island: one stock holding site at the north end of Thousand Island Lake meets BMPs.	Thousand Island: stock holding and spot/dunnage sites meet BMPs.	Designate 1 stock camp at Thousand Island Lake and 1 in the vicinity of Badger Lake.
	Other Issues	Badger Lake: Mountain yellow-legged frog re-introduction habitat, no current impacts. Emerald Lake: Pack stock trail contours above shoreline of mountain yellow-legged frog unnamed pond between Garnet and Emerald Lakes with minor sedimentation input.	Badger Lake: maintain good condition habitat Emerald Lake: maintain habitat conditions and continue to ensure minimal trail sediment input into pond.	Badger Lake: monitor if stock holding camp is identified. Emerald Lake: monitor and take remedial action if trail erosion increases such as trail re-location.
13. Shadow/Ediza				
Destination: Clarice Lake	Access	Clarice Lake use trail (SHE01), lightly defined, minimal use. Slight risk factors.	Prevent further trail development.	Approve Clarice Lake use trail SHE01.
	Recreation Category	Recreation Category 2 with destination off primary trail. High opportunities for	Maintain high opportunities for solitude,	

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Setting	solitude.	lightly defined trail.	
	Use Levels 01-04	0-4 trips, 15-39 stock		Up to 2 spot and dunnage trips for light use to maintain high opportunities for solitude with less than 10 stock a year will not increase visibility of trail.
	Grazing	No grazing.		No grazing.
	Campsites	No stock camps.	No stock camps.	No stock camps.
14. Shadow-Ediza				
Destination: Ediza Lake	Access	Ediza Camp access trail observed Trail Class 1, Resource Rating 3, well-defined, moderate to high use by commercial and public. Issues at creek crossing and incision near camp. Iceberg Lake Trail: Resource Rating 5, causing sediment to enter Ediza Lake; Ediza grazing trail Resource Rating 4.	Ediza camp access trail: Resource Rating 2, Ediza grazing trail: Resource Rating 1.	Stabilize creek crossings; Ediza grazing use trail: prohibit stock use. Mitigate damage when possible.
	Recreation Category Setting	Recreation Category 3; moderate to high use levels; moderate opportunities for solitude; Resource Rating 2.6.	Low-moderate opportunities for solitude during peak season; reduce overall impacts at destination by containing and concentrating impacts.	
	Use Levels 01-04	19-30 trips; 65-137 stock		Limit spot and dunnage trips to 24 trips and do not increase stock numbers.
	Grazing	Closed to grazing above outlet; unsuitable for grazing.	Maintain existing condition.	Maintain grazing closure.
	Campsites	Large impacted camping area at inlet; includes small spot dunnage site at outlet below lake.	Maintain existing condition; no stock holding.	To concentrate stock use in area, designate spot and dunnage site at inlet, set back campsites too close to water.
	Other Issues			No stock camps.
15. Shadow-Ediza				
Destination: Laura Lake	Access	Laura Lake (former "Altha Lake"): Trail observed Trail Class 2, Resource Rating 4, impacts to small meadow, riparian, erosion.	Reduce erosion and impacts on riparian section of trail and stabilize and contain extent of impact on steeper sections that are widening.	Stabilize trail.
	Recreation Category	Recreation Category 2. Recreation Impact Rating = 1.8. Moderate to high	Maintain high opportunities for solitude	

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Setting	opportunities for solitude.	and low to moderate impacts at few sites.	
	Use Levels	3-5 trips, 15-39 stock		Up to 3 spot and dunnage trips. Manage for low stock numbers, not more than 15 stock. Up to 5 trips and 20 stock when trail is improved. This use level will maintain high opportunities for solitude and ensure no additional degradation of trail corridor.
	Grazing	Small meadow with some areas never reaching range readiness. In good condition. Reported grazing 0/0/40	Maintain good meadow condition.	Allow grazing, 10 stock nights available.
	Campsites			Designate 1 stock camp.
16. Shadow-Ediza				
Destination: Nydiver Creek	Access	Nydiver Trail observed Trail Class 1.5, Resource Rating 1, generally stable with low use.	Maintain low use and trail stability.	Nydiver Trail Trail Class 1.
	Recreation Category Setting	Recreation Category 1-2. Lakes are Recreation Category 1. Pack station use occurs in Recreation Category 2. Low impact, high opportunities for solitude.	Maintain low impact high opportunities for solitude.	
	Use Levels 01-04	0-2 trips. 0-8 stock		Up to 2 spot/dunnage trips to maintain trail stability and high opportunities for solitude.
	Grazing	No grazing reported.	At desired vegetative condition.	No grazing.
	Campsites	No stock camps.	No stock camps.	No stock camps.
17. Shadow-Ediza				
Destination: Rosalie / Gladys Lakes	Access	JMT(Trail Class 3) provides generally stable access. Short camp access trail - dry/stable. Grazing access use trail is Resource Rating 1, some slight erosion, generally contours dry slope.	Ensure grazing use trail remains stable.	
	Recreation Category Setting	Recreation Category 3. Low to moderate opportunities for solitude.		
	Use Levels 01-04	0-4 trips, 0-38 stock		Up to 6 spot/dunnage trips and use of area for all expense or traveling trips.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Grazing	Possible fen above Rosalie with slight trampling. See Shadow Ediza Grazing Zone. Reported stock nights: 27/0/167 in zone, 0/0/27 at Rosalie/Gladys. Local minor vegetative composition alteration.	Fen trampling <5%. Local minor vegetative alteration is within desired condition.	Allow grazing at 30% AUF and 109 stock nights. Rosalie/Gladys 29 stock nights.
	Campsites	Moderately high impact to stock campsites.	Contain stock campsite and reduce total area.	Designate 1 stock camp at Rosalie Lake and 1 stock camp at Gladys Lake.
18. Shadow-Ediza				
Destination: Shadow Creek	Access	Shadow/Ediza Trail: Trail Class 3, stable. Camp access trail crosses Shadow Creek, some streambank impacts, path in meadow with trampling.	Stabilize camp access trail.	Reroute camp access trail out of meadow. Assess whether structure at creek would improve crossing.
	Recreation Category Setting	Recreation Category 3, low to moderate opportunities for solitude and moderate impacts.	Maintain moderate opportunities for solitude with low to moderate impacts.	
	Use Levels 01-04	4-15 trips, 20-93 stock		Up to 16 spot and dunnage trips and use of area for all expense trips.
	Grazing	Stream in Shadow/Nydiver confluence meadow is functional at-risk. Local moderate to minor vegetative species composition change. Reported stock nights: 27/0/167 in zone. 27/0/110 at Shadow Creek.	Stream should move toward PFC. Vegetation is at desired condition.	Allow grazing at 109 stock nights at Shadow Creek near PCT junction 30 stock nights @ 30% AUF.
	Campsites	Campsite in the Shadow Creek corridor south of Shadow Creek did not meet BMPs, as it was within 50 feet of water and depositing sediment and manure into water. Another nearby stock holding site did meet BMPs.	Stock holding and spot/dunnage sites should meet BMPs.	Designate 1 primary stock camp and 1 secondary for low capacity stock camp. Set campsite back from water.
19. Minarets				
Destination: Trinity Lakes	Access	JMT		
	Recreation Category Setting	Recreation Category 2 along JMT, not a popular destination, high opportunities for solitude while camping low to moderate while traveling.	Maintain current conditions.	
	Use Levels 01-04	0-2 trips, 0-20 stock ("Vivian")		Up to 2 spot and dunnage trips to maintain current low use.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Grazing			Part of the Minaret Creek Grazing Zone.
	Campsites	No stock camp.	No stock camp.	No stock camp.
20. Minarets				
Destination: Emily Lake	Access	Emily Trail observed Trail Class 2, Resource Rating 4. Trail through possible fen with trampling impacts. System trail crossing at Emily Lake outlet appears to be causing unstable banks and sediment to enter the creek. Through meadow, trail is diverting seep flow.	Limit use to reduce deterioration until trail can be stabilized. Fen in functioning condition. Trail should not allow excessive sediment to enter the creek (though some will always enter at stream crossings) or divert seep flow.	NSCS until trail is fixed.
	Recreation Category Setting	Recreation Category 2. Moderate impacts, moderate opportunities for solitude. Recreation Impact Rating = 2.4.	Maintain moderate for solitude and lower reduced recreation impact rating.	
	Use Levels 01-04	0-8 trips, 0-58 stock		No trips until trail is fixed; Up to 8 spot and dunnage when trail is improved.
	Grazing	No grazing reported.		No grazing proposed.
	Campsites	Stock holding campsite at Emily Lake outlet is 100 feet from water, but is allowing sediment to enter the creek and does not meet BMPs.	Stockholding and spot/dunnage sites should meet BMPs.	Prohibit stock use of site on north side of lake; establish (on the east side of creek) 1 stock camp.
21. Minarets				
Destination: Minaret Creek (includes Johnston Meadow)	Access	Minaret Creek Trail and JMT Trail Class 3, generally stable. No use trails, other than grazing-trailing. Minaret Creek Trail: Trail Class 3, generally stable. Short access trails to spot and dunnage campsites.		
	Recreation Category Setting	Recreation Category 2. Moderate impacts and moderate solitude along trail corridor. High capacity for camping and high solitude while camping.	Maintain current conditions.	
	Use Levels 01-04	Johnston: 0-2 trips, 0-60 stock (party size exemption 2003) Minaret: 2-11 trips, 18-45 stock		Up to 20 spot and dunnage trips will maintain experiential qualities. High potential for dispersing use while camping to avoid crowding and maintain high solitude.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Grazing	Johnston Meadow with potential habitat for sensitive species at risk. One reach of stream was found to be functional at-risk with a downward trend. Meadow has overall moderate hydrologic function alteration. Reported grazing: 0/20/12. Local moderate vegetative composition alteration.	Meadow stream move toward PFC. Meadow has negligible hydrologic function alteration. At desired vegetative condition. Improve sensitive plant potential habitat condition.	Rest Johnston Meadow pasture. Re-evaluate in 8-12 years.
	Campsites			Designate 1 stock camp at Minaret Creek and 1 stock camp at Johnston Meadow.
22. King Creek				
Destination: Anona Lake	Access	Fern/Anona Trail observed Trail Class 2&1, Resource Rating 1, lightly defined on mostly dry slopes. One small stream crossing has moderate headcut. Some erosion in steep area near lake.	Ensure trail stability.	
	Recreation Category Setting	Recreation Category 2. Moderate impacts, moderate to high opportunities for solitude. Recreation Impact Rating = 1.8	Maintain at high opportunities for solitude.	Party size limit of 10/20.
	Use Levels 01-04	0-5 trips, 0-28 stock		Up to 6 spot and dunnage trips and use of area for all expense trips.
	Grazing	Meadows are potential habitat for sensitive plants. Meadow stream is at PFC with no hydrologic function alteration. Minor vegetative alteration. Reported grazing: 130/94/42 in King Creek Grazing Zone, 44/0/0 at Anona.	Meadow should remain in good hydrologic condition, at desired vegetative condition.	Allow grazing at outlet, 25 stock nights.
	Campsites	Spot and dunnage site on the benches east of Anona Lake does not meet BMPs. Too close to water.	Stockholding and spot and dunnage sites meet BMPs.	Designate 1 stock camp.
23. King Creek				
Destination: Ashley Lake	Access	Ashley Trail observed Trail Class 2, Resource Rating 1 - rocky and rough, but stable. Some sections ill-defined, but low risk factors.	Current	
	Recreation Category Setting	Recreation Category 2 off primary trail. Moderate impacts and opportunities for solitude. Recreation impact rating = 1.6.	Manage for moderate to high opportunities for solitude of Recreation Category 2 destination off primary trail.	

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
Destination: Ashley Lake	Use Levels 01-04	2-14 trips, 14-84 stock		Up to 7 spot and dunnage trips and use of designated site for all expense trips. Limits use to manage for higher opportunities for solitude than current conditions.
	Grazing	Meadow stream is at PFC and overall meadow with no hydrologic function alteration. Poor, steep, erosive soils along access to grazing area.	Meadow stream remains at PFC and in good hydrologic condition. Prevent soil loss along access route.	No grazing approved due to access issues.
	Campsites	Stock holding site on the northeast side of Ashley Lake does not meet BMPs.	Stockholding and spot/dunnage sites should meet BMPs.	Designate 1 stock camp.
24. King Creek				
Destination: Fern Lake	Access	Fern Trail (Trail Class 2 - 1/4 mile) stable, except creek crossing near camp. Slight bank impacts.	Ensure stable crossing and access to camp.	
	Recreation Category Setting	Recreation Category 2 area off primary trail, moderate to high opportunities for solitude but low capacity area. Impacts concentrated at campsites. Recreation Impact Rating = 1.2.	Maintain a low capacity area, minimal party size. Maintain moderate opportunities for solitude.	Party size limit of 10/20.
	Use Levels 01-04	2-8 trips, 12-80 stock		Up to 10 spot and dunnage trips and use of area for small all expense trip parties. Maintain for current stock numbers. This, combined with party size, will ensure continued moderate to high opportunities for solitude.
	Grazing	Meadows are potential habitat for sensitive plants. No grazing reported.		No grazing.
	Campsites	Spot and dunnage site on the northwest side of Fern Lake does not meet BMPs.	Stockholding and spot and dunnage sites meet BMPs.	Designate 1 stock camp at north side of outlet.
25. King Creek				
Destination: Holcomb Lake	Access	Holcomb Trail observed Trail Class 2, Resource Rating 2 to outlet, rocky, rough, but generally stable. Use trail continues on south side of lake. Resource Rating 3.5 with multiple trails, incision. Use trail accessing grazing area above Holcomb lake has caused some soil loss.	Stabilize use trails.	Prevent degradation on use trails until stabilized or rerouted. Prohibit use of Holcomb use trail.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Recreation Category Setting	Recreation Category 2 destination off of primary trail. Moderate to high opportunities for solitude. Moderate impacts that are recovering with elimination of pack stock use at inlet of lake. Recreation Impact Rating = 1.6.	Maintain moderate to high opportunities for solitude. Impacts should be low.	
	Use Levels 01-04	0-6 trips, 0-26 stock		Up to 6 spot and dunnage trips, manage for current levels of stock. This level of use will maintain high opportunities for solitude.
	Grazing	Meadow stream is at PFC and overall meadow has no hydrologic function alteration. Minor local loss of vegetative cover along access trail. Current closure to grazing, no grazing reported.	Meadow stream should remain at PFC and meadow should remain with no hydrologic function alteration. Vegetation at desired condition.	No grazing approved because of access issues.
	Campsites			Designate 1 stock camp north of outlet.
26. King Creek				
Destination: King Creek	Access	Access on King Creek Trail: Trail Class 3, generally stable.		
	Recreation Category Setting	Recreation Category 2, trail corridor with low to moderate use. Moderate to high opportunities for solitude while camping and traveling. Moderate to low impacts.	Maintain moderate to high opportunities for solitude and low impacts.	
	Use Levels 01-04	0-4 trips, 0-14 stock		Up to 8 spot and dunnage trips. Use can be dispersed and will not likely have effects on solitude or camping impacts. Good area for more use to take pressure off Ashley, Anona, Fern, Holcomb and Superior Lakes.
	Grazing			
	Campsites			Designate 1 stock camp at north end of King Creek destination area.
	Other Issues			

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
27. King Creek				
Destination: Lion Point	Access	Lion Point Trail (system) observed Trail Class 1, Resource Rating 0. Use trail from Lion Point to River Resource Rating 0, less than 10% visible.	Keep current primitive condition of system trail with low resource rating. Keep CCD 04 less than 10% visible.	CCD04 use trail for hunting use only.
	Recreation Category Setting	Recreation Category 1. High opportunities for solitude. Impacts not evident.	Maintain current condition.	
	Use Levels 01-04	0-2 trips, 0-18 stock		Up to 2 spot and dunnage trips for fall hunting only. This will ensure no trail becomes visible and high opportunities for solitude are maintained.
	Grazing	No grazing reported.	At desired vegetative condition.	Allow grazing, up to 2 trips annually, as part of Stairway-Cargyle Zone. 25 stock nights available.
	Campsites	No stock camp.	No stock camp.	No stock camp.
28. King Creek				
Destination: Superior Lake	Access	Superior Trail observed Trail Class 2, Resource Rating 3, incision, multiple trailing before lake. Camp access at inlet of lake has bank damage, headcutting.	Stabilize trails - route away from meadow/riparian where possible.	Limit use until both trails are improved.
	Recreation Category Setting	Recreation Category 2, off primary trail, moderate to high opportunities for solitude. Moderate impacts. Recreation Impact Rating = 1.8.	Reduce overall impacts.	
	Use Levels 01-04	7-14 trips, 44-121 stock		Up to 8 spot and dunnage trips. Consider increasing to 14 trips when both trails are improved. Interim use level will ensure no further degradation of trail resources and will maintain moderate to high opportunities for solitude.
	Grazing	Meadow has some local sod fragmentation and compaction, but overall no hydrologic function alteration and stream is at PFC. Local minor vegetative alteration. Reported grazing: 0/12/42.	Meadow should remain without hydrologic function alteration and stream should remain at PFC.	Allow grazing, 87 stock nights.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Campsites	Access to campsites causing soil loss, some alteration of meadow hydrologic function alteration.	Access to campsites should not affect soil or hydrologic function beyond the trail tread.	Designate 1 stock camp at existing site north of inlet. Improve access to stabilize creek crossing.
29. Crater Creek Drainage				
Destination: Deer Creek (includes Deer Lake)	Access	Deer Creek Trail observed Trail Class 2-1 from PCT. Lightly defined in places. Steep sections have slight incision and erosion. Also accessed via Mammoth Crest Trail Class 2 from George Lake. Trail Class 1 trail from lakes to Duck Pass - impractical for stock, ill-defined.	Maintain stability of trails.	Deer Lake to Duck Pass NSCS.
	Recreation Category Setting	Recreation Category 2, very low use for Recreation Category along primary trail (PCT). High opportunities for solitude while camping, moderate while traveling.	Maintain low to moderate use and high opportunities for solitude while camping, low to moderate opportunities while traveling.	
	Use Levels 01-04	Reds: 0-2 trips, 0-18 stock MLPO: 4-12 trips, 27-106 stock McGee: 0-2 trips, 0-16 stock		Up to 14 trips spot and dunnage for two operators and use for all expense trips. This will maintain trails.
	Grazing	Many meadows, most are in good hydrologic condition, one has a stream that was rated non-functional (unknown cause). No to moderate meadow hydrologic function alteration. Local minor vegetative composition alteration. Deer Creek Zone Reported grazing: 60/42/95. Yosemite toad breeding habitat critical areas in meadows with light trampling and chiseling impacts from grazing. Impacts to fens associated with grazing meadows CCD 15, 19a.	All meadows have streams trending toward proper functioning condition. All meadow with negligible hydrologic function alteration. At or trending toward desired conditions. Maintain high quality Yosemite toad breeding habitat.	Allow grazing: 572 stock nights in the zone, with applicable standards; 40% AUF, 20% streambank alteration, critical areas closed to stock entry and grazing. Meadows (CCD 1, 12, 18a, 19a and 15) identified critical areas.
	Campsites			Designate 1 stock camp at Deer Creek and 1 camp at Deer Lakes.

ANSEL ADAMS WEST

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
1. Chiquito/Triple Divide/Sadler				
Destination: Chiquito Pass, Fernandez Pass, Post Peak Pass and Isberg Pass to Yosemite National Park				
	Access	Chiquito: Chiquito Pass (23E01), Chiquito Lake Access (23E02) and Quartz Mountain - Chiquito (23E08) observed Trail Class 2.		
	Recreation Category Setting	Chiquito: Recreation Category 2, moderate to high opportunities for solitude.	Maintain moderate opportunities for solitude.	
	Use Levels 01-04	Data from YOSE 2003-2004: YTPS: spot/dunnage: 2-11 trips, 5-20 stock. MPS: spot/dunnage = 5-20 trips, 15-25 stock.	Use assigned commensurate with actual YOSE use in 2003-2004 and amount of use approved in Incidental Business Permits (IBP) issued by YOSE.	Both operators are authorized by YOSE for all expense/traveling trips. YTPS = 11 trips; or 293 visitor use nights and 457 stock nights. (as authorized by YOSE) MPS = 20 trips; or 250 visitor use nights and 247 stock use nights (as authorized by YOSE). Trips are an estimate of use. Actual use into YOSE will be regulated by NPS.
	Grazing	Chiquito: No grazing requested, no grazing reported. Other passes addressed in corresponding analysis unit.		Chiquito: Do not approve grazing.
	Campsites	Chiquito: Camping only available within YOSE. Other passes addressed in		Chiquito: No stock camps.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		corresponding analysis unit.		
	Other Issues			The use prescribed in this destination will include other access (through use) to YOSE: Isberg, Post Peak, Fernandez and Chiquito.
2. Jackass				
Destination: Jackass Lakes	Access	Norris Lake Trail: sections below standard, but main access to Jackass Lakes. Jackass Lakes Trail: old 4X4 road, erosion, degraded, creek crossings generally stable.		Designate Norris Lake trail as Trail Class 3, Jackass Lake as Trail Class 2, Trail Class 1.
	Recreation Category Setting	Recreation Category 2, moderate opportunities for solitude.	Maintain moderate opportunities for solitude.	
	Use Levels 01-04	2-4 trips, 9-21 stock		Up to 6 spot and dunnage trips will maintain Recreation category opportunities for solitude. Only 4 of the 6 trips to the upper lake.
	Grazing	No grazing reported/requested.		No grazing.
	Campsites	5 sites, some too close to water.	Maintain BMP standards.	No stock camp.
3. Staniford Lakes				
Destination: Staniford Lakes (including Chittenden Trail)	Access	Lillian Lake Loop Trail has awkward section just before lake so use trail STA01 bypasses it, over saddle south of lake. Resource Rating 2+, steep, erosion, no structures, creek crossing has slight bank damage, moderate to high risk factors. Chittenden Lake Trail: Trail Class 1, mostly across bedrock, cairned route, becomes steep extremely awkward for stock at	Stop use of use trail, ensure adequate access to camps without creek crossing.	Prohibit use trail STA01. Identify an interim alternate route into campsites at Staniford Lake, until the Lillian Lake trail is repaired, and permanent access into lakes is established.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		mid-point (before lake).		
	Recreation Category Setting	Recreation Category 2, low to moderate recreation impacts.	Maintain moderate opportunities for solitude.	
	Use Levels 01-04	MPS: 5-23 trips, 23-117 stock High Sierra: 0-3 trips, 0-11 stock		Staniford Lakes: MPS: Limit trips to 14 spot and dunnage trips until trail is fixed and then allow up to 24 spot and dunnage trips. Chittenden Trail: Up to 4 spot and dunnage trips.
	Grazing	No grazing requested. None reported.		No grazing.
	Campsites	Staniford: Trail does not connect to camping opportunities. Chittenden: Very limited camping capacity.	No stock camp.	No stock camp.
4. Staniford Lakes				
Destination: Vandeburg / Lady Lakes	Access	Lillian Loop Trail crosses outlet stream to east. Vandeburg access trail, Resource Rating 2, short cuts across same creek, different crossing, through camps. Moderate impacts at creek crossing. Lady Lake Trail: observed Trail Class 2, Resource Rating 1, appears to have moderate to heavy use, low risk factors, except along creek.	Limit use to Lillian Trail for through trips, allow access to camping from north side of shortcut. Lady Lake Trail: Stabilize trail for current use level, realign away from banks where possible.	South half Vandeburg Lakes access trail is NSCS.
	Recreation Category Setting	Recreation Category 3, moderate opportunities for solitude, low to moderate impacts.	Maintain moderate opportunities for solitude.	Change to Recreation Category 2.
	Use Levels 01-04	Vandeburg Lake: 1-6 trips, 4-88 stock Lady Lakes: 4-18 trips, 10-70 stock		Up to 32 spot and dunnage trips with no more than 12 trips to Lady Lakes.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Grazing	No grazing requested. None reported.		No grazing approved.
	Campsites	Limited capacity for camping at Lady Lakes.		Close sites that do not meet BMPs. No stock camps.
5. Lillian Lake				
Destination: Fernandez Lakes	Access	Fernandez Lakes use trail: LIL02, Resource Rating 1, faint/dispersed, generally low angle, low to moderate risk factors at creek crossings and meadows.	Prevent use trail becoming more obvious and impacted.	Approve use trail (LIL02) for low use only.
	Recreation Category Setting	Recreation Category 2 off of primary trail corridor. High opportunities for solitude. High risk factors (riparian) with recreation use/impact.	Maintain high opportunities for solitude, reduce recreation impacts.	
	Use Levels 01-04	0-1 trips, 0-6 stock		Up to 2 spot and dunnage trips to maintain high opportunities for solitude and to reduce risk factors.
	Grazing	Local moderate alteration of vegetative composition. Meadow northwest of Fernandez Lakes. No grazing reported, grazing requested. Low productivity. Stream rated functional at-risk, and is incised.	Increase recruitment and establishment of late-seral vegetation. Stream moves toward PFC.	Rest until resource recovery.
	Campsites	Low capacity for camping.		No stock camps.
6. Lillian Lake				
Destination: Fernandez Meadow	Access	CAR&H Trail (Fernandez Pass), Trail Class 3 and Post Peak Pass trail, degraded at Jct. Incised, multi-trailing, bank damage.	Repair/reroute	
	Recreation Category	Recreation Category 2, moderate	Maintain moderate to high	

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Setting	to high opportunities for solitude.	opportunities for solitude.	
	Use Levels 01-04	0-4 trips, 0-26 stock		Up to 6 spot and dunnage trips and use of area for all expense and traveling type trips, will maintain moderate to high opportunities for solitude.
	Grazing	Local moderate alteration of vegetative composition. Stream rated functional at-risk. Stream is incised, causing severe meadow hydrologic function alteration. Grazing requested, no grazing reported.	Increase recruitment and establishment of late-seral vegetation. Stream moves toward PFC.	Allow light grazing: 24 stock nights.
	Campsites	High density of campsites and high impact campsites.	Reduce campsites development and impacts.	Designate 1 stock camp. Remove/restore stock camp southeast of junction.
7. Lillian Lake				
Destination: Flat / Monument Lakes	Access	Flat Lake Trail: observed Trail Class 1, Resource Rating 1, generally stable, with slight effects at creek crossing, few risk factors. Monument Lake use trail LIL04, Resource Rating 1, not continuous, barely visible, rock slabs, and few risk factors.	Maintain stability with minimal development.	Allow use of use trail LIL04.
	Recreation Category Setting	Recreation Category 2 off of primary trail. High opportunities for solitude; low to moderate impacts associated with camping.	Maintain low use and high opportunities for solitude and low impact.	
	Use Levels 01-04	2-4 trips, 9-38 stock		Up to 6 spot and dunnage trips and use of area for all expense trips will maintain low use and impact and high opportunities for solitude.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Grazing	Flat Lake Meadow: Grazing requested, no grazing reported. Small (1 acre) meadow. Slight soil compaction and local hydrologic function alteration.	Meadow moves toward no hydrologic function alteration.	No grazing.
	Campsites	Low capacity for camping. Campsites impacted and developed.	Reduce campsite development.	Designate 1 stock camp at Flat Lake.
8. Lillian Lake				
Destination: Lillian Lake	Access	Lillian Lake Trail: obvious access trail around north side of lake, few risk factors until near end.	Ensure stability with moderate to high use.	Add to System as Trail Class 2.
	Recreation Category Setting	Recreation Category 2; low to moderate opportunities for solitude.	Maintain moderate opportunities for solitude.	
	Use Levels 01-04	5-21 trips, 33-148 stock		Up to 25 spot and dunnage trips will maintain moderate opportunities for solitude. Use of area for all expense/traveling trips.
	Grazing	No grazing requested. No grazing reported.		Do not approve grazing.
	Campsites	Existing closure: No overnight camping within 400' of the lakeshore outlet northward approximately 1/4 mile. Limited camping capacity. Camping is concentrated into one area. Very intensive camping impacts.	Reduce campsite development.	Designate 1 stock camp. Prohibit spot and dunnage camps within established closure.
9. Triple Divide				
Destination: Anne Lake	Access	Anne Lake Trail: observed Trail Class 2, Resource Rating 3, stable until top of hill, then descends thru small meadow with incision, multi-trails. Steep	Stabilize Anne Lake Trail for moderate use. Allow light use to grazing north of Anne Lake.	Allow use of use trail TRD01.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		section above lake, moderate erosion, sediment to creek. Anne Lake grazing use trail TRD01: Resource Rating 2, continues around lake, then to grazing in "avalanche meadow". Slight impacts on meadows at lakeshore, and slight erosion climbing toward meadow. Risk factors if use increases.		
	Recreation Category Setting	Recreation Category 2, moderate opportunities for solitude, moderate recreation impacts (1.8).	Maintain moderate solitude and reduce overall recreation impacts.	
	Use Levels 01-04	1-4 trips, 12-48 stock		Up to 4 spot and dunnage trips and use of area for all expense traveling trips. Limit stock numbers to 24 stock per season until trail resource issues are addressed.
	Grazing	Meadow north of Anne Lake: Stream rated functional at-risk with an upward trend. Some soil compaction. Minor local alteration of vegetative composition. Reported grazing: 54/0/28	Stream should continue to move toward PFC. Maintain existing vegetative seral status.	Allow Grazing: 46 stock nights available.
	Campsites	Spot/dunnage site on the north side of Anne Lake is in slight non-compliance with BMPs due to access trails causing sedimentation into streams.	All campsites should meet BMPs.	Close sites that do not meet BMPs. Designate 1 stock camp.
10. Triple Divide				
Destination: Rutherford Lake	Access	Rutherford Lake Trail: observed Trail Class 2, Resource Rating 1, trail stable, well-graded to lake, slight impacts to lakeshore in narrow corridor south side lake.		

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Recreation Category Setting	Recreation Category 2, moderate opportunities for solitude,	Maintain moderate to high opportunities for solitude.	
	Use Levels 01-04	0-2 trips, 0-14 stock		Up to 4 spot and dunnage trips.
	Grazing	No grazing requested. None reported.		No grazing.
	Campsites	Spot and dunnage site on the southeast shore of Rutherford Lake does not meet BMPs. Less than 50 feet from water and causing sediment to enter lake. Limited camping opportunities.	All campsites should meet BMPs.	Close campsites that do not meet BMPs. Designate 1 spot and dunnage camp. No stock camp.
	Other Issues	Very sparse downed firewood availability.		Close area to campfires.
11. Triple Divide				
Destination: South of Slab Lakes	Access	Primary access via Slab Lakes Trail: observed Trail Class 1+. Moderately defined with slight erosion and low-mod risk factors up to meadows about 1/2 way to lake. Becomes ill-defined, sporadic to lake. Low grades, slight risk factors, hard to follow upper section.	Do not increase definition of trail above meadows. Maintain stability of lower segment.	Designate trail as Trail Class 1.
	Recreation Category Setting	Recreation Category 2, moderate opportunities for solitude.	Maintain moderate to high opportunities for solitude.	
	Use Levels 01-04	0 trips 1992-95: 0-4 trips to Slab Lake 2-14 stock		Up to 2 spot and dunnage trips and use of area for occasional all expense/traveling trips.
	Grazing	No grazing requested. None reported.	-	No grazing approved.
	Campsites			Designate 1 stock camp.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
12. Triple Divide				
Destination: Isberg Meadow	Access	Primary access via Post Peak Pass Trail: observed Trail Class 2 & 3. Generally stable, substandard maintenance, steep terrain.		Maintain Post Peak Pass trail as Trail Class 3.
	Recreation Category Setting	Recreation Category 2, moderate opportunities for solitude.	Maintain moderate to high opportunities for solitude.	
	Use Levels 01-04	0 trips 1992-97: 1-2 trips to Slab Lake 2-10 stock		Up to 2 spot and dunnage trips and use of area for all expense/traveling trips.
	Grazing	Moderate hydrologic function alteration throughout the meadow and the stream was rated functional at-risk with a non-apparent trend. The effects are attributable to cattle grazing, and likely not associated with commercial pack stock.		Allow grazing; 76 stock nights available.
	Campsites	2 camps requested by packers. None yet analyzed for BMP compliance.		Designate 1 stock camp.
13. Triple Divide				
Destination: Post Creek	Access	Access is via the Post Creek Trail - 24E17 (Trail Class 1)		-
	Recreation Category Setting	Recreation Category 2, moderate opportunities for solitude, mostly hunting use.	Maintain moderate to high opportunities for solitude.	
	Use Levels 01-04	0 trips, 1992-97: 0-2 trips, 0-9 stock		Up to 2 spot and dunnage trips and use of area for all expense/traveling trips.
	Grazing	No grazing requested. None reported.		No grazing approved.
	Campsites	Essentially all of the camping in	No stock camp.	No stock camp.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		this zone is related to hunting. There are at least two large camps that require frequent attention to remove constructed features.		
14. Cora				
Destination: Cora Lakes	Access	Cora Lakes Trail: observed Trail Class 1.5, Resource Rating 1, generally low angle, slight incision at seep crossing westside of lake and at meadows north side. Fades on west side near camps, more pronounced near Isberg.	Maintain stability.	Add to system - Trail Class 1.
	Recreation Category Setting	Recreation Category 2 off of primary trail corridor. Moderate opportunities for solitude, moderate to high recreational impacts. Recreation Impact Rating = 2.0.	Maintain moderate opportunities for solitude.	
	Use Levels 01-04	2-18 trips, 26-93 stock		Up to 18 spot and dunnage trips.
	Grazing	Very small meadow. Local moderate sod fragmentation along trail through meadow. Some trailing through meadow may be affecting local hydrologic function. Grazing reported: 0/15/0.	Increase vegetative cover. Meadow should move toward no hydrologic function alteration.	No grazing (access issues).
	Campsites	Stock holding site on the north side of Lower Cora Lake meets BMPs. Existing closure: No overnight camping within 400' of the lakeshore from the outlet northward approx 1/4 mile.	All campsites should meet BMPs. Avoid campsites with specific resource sensitivity.	No stock camp. Prohibit spot and dunnage camps on south side of Middle Cora Lake, and within established closure.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
15. Cora				
Destination: Chetwood Zone (including Knoblock Meadow and Detachment Meadow)	Access	Primary access via Isberg Trail (observed Trail Class 3) and Chetwood Trail (observed Trail Class 2), generally stable, slight erosion.		
	Recreation Category Setting	Recreation Category 2, low to moderate use, moderate to high opportunities for solitude.	Maintain moderate to high opportunities for solitude.	
	Use Levels 01-04	0-6 trips, 0-48 stock		Up to 12 spot and dunnage and use of area for all expense/traveling trips.
	Grazing	Detachment Meadow has severe hydrologic function alteration, incised channel, and active headcuts remaining. Knoblock Meadow has severe hydrologic function alteration and the stream in the meadow was rated functional at-risk with an upward trend. Chetwood Cabin Meadow also has severe hydrologic function alteration and stream rated functional at risk (non-apparent trend). Condition of meadows likely attributable to recent cattle grazing and not related to commercial pack stock use.	Allow recovery of streams and meadows toward functional condition.	Allow Grazing: 243 stock nights available (in Chetwood, Detachment and Knoblock Meadows combined).
	Campsites		One stock camp is located at Knoblock Meadow and the other is located at Chetwood Meadow or at a suitable site at Detachment Meadow. The purpose of this second stock camp is to support the Cora destination which does not have a designated stock camp.	Designate 2 stock camps.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
16. Cora				
Destination: Cora Creek (includes Lilly Lake, NF San Joaquin River)	Access	Access is via Cora Creek Trail - 25E04 (Trail Class 2). Trail is steep and generally in poor condition for approximately one mile above the North Fork of the San Joaquin River Crossing.		-
	Recreation Category Setting	Recreation Category 2, low to moderate use moderate to high opportunities for solitude	Maintain moderate opportunities for solitude.	
	Use Levels 01-04	0 trips 1997-2000: 0-1 trips, 0-5 stock		Up to 2 spot and dunnage and use of area for all expense/ traveling trips.
	Grazing	No grazing requested. None reported.		No grazing.
	Campsites	The campsite at Cora Crossing is well developed.	Reduce campsite development.	Designate 1 stock camp at Cora Crossing.
17. Cora				
Destination: Lost Lake	Access	Access is via the use trail COR01.		Use trail COR01 is approved.
	Recreation Category Setting	Recreation Category 1, high opportunity for solitude.	Maintain high opportunity for solitude.	-
	Use Levels 01-04	0 trips, 1992-97= 0-1 trips, 0-5 stock		Up to 2 spot and dunnage.
	Grazing	No grazing requested. None reported.		No grazing.
	Campsites	-	No stock camp.	No stock camp.
18. Bench Canyon				
Destination: Long Creek	Access	Unconstructed trail on section from ridge to river.		
	Recreation Category	Recreation Category 1, high opportunities for solitude, low	Maintain high opportunities for solitude.	

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Setting	use low impact		
	Use Levels 01-04	0-2 trips 10 stock (1 year of use, 2004)		Up to 4 spot and dunnage trips.
	Grazing	No grazing requested. None reported.		No grazing.
	Campsites			Designate 1 stock camp.
19. Sadler				
Destination: Isberg Lake	Access	Isberg Pass Trail: observed Trail Class 3 (slightly lower at top of pass), generally stable, slight impacts at creek crossings. Accesses YOSE.		
	Recreation Category Setting	Recreation Category 2, moderate to high opportunities for solitude.	Maintain high opportunities for solitude.	
	Use Levels 01-04	0-3 trips, 0-40 stock		Up to 6 spot and dunnage trips only at Lower Isberg Lake.
	Grazing	Minor, local, alteration of vegetative composition. Reported grazing: 0/6/0	Maintain existing vegetative seral status. Fen area in functioning condition.	Allow grazing; 14 stock nights available.
	Campsites			No stock camps.
20. Sadler				
Destination: Joe Crane Lake	Access	Joe Crane Lake Trail: observed Trail Class 2, stable on dry slope, disperses at lake.		
	Recreation Category Setting	Recreation Category 2 off of primary trail. Moderate to high opportunities for solitude.	Maintain high opportunities for solitude.	
	Use Levels 01-04	0-7 trips 0-58 stock		Up to 8 spot and dunnage trips and use of area for all expense

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
				and traveling trips.
	Grazing	Moderate local alteration of vegetative composition. Meadows west of Joe Crane Lake and at Joe Crane Lake: Stream functional at-risk. Severe local hydrologic function alteration due to stream incision.	Streams should move toward PFC and meadows should move toward no hydrologic function alteration. Increased vegetation seral-status.	West of Joe Crane Lakes: Allow grazing, 98 stock nights available. Joe Crane Lake: Allow grazing; 9 stock nights available. Joe Crane zone 178 stock nights.
	Campsites	Stock requested campsite on the southwest shore of Joe Crane Lake does not meet BMPs, within 50 feet of water. Limited capacity for camping.	All campsites should meet BMPs.	Designate 1 stock camp.
21. Sadler				
Destination: Sadler / McClure Lakes	Access	McClure Lake Trail: observed Trail Class 2, Resource Rating 3, accesses camp on south side of Sadler Lake and grazing area below McClure, moderate to severe impacts on south side of lake - multi-trail, incision, stream diversion.	Stabilize trail to camps, south side of Sadler Lake.	Stabilize trail between campsites and small meadow at base of McClure moraine. Repair and restore campsite access trails through meadows along south shore of Sadler Lake.
	Recreation Category Setting	Recreation Category 2 off of primary trail moderate opportunities for solitude, moderate to high recreation impacts (2.2)	Maintain moderate solitude, reduce overall impacts.	
	Use Levels 01-04	MPS Use: Sadler 2-14 trips, 28-141 stock McClure 0-5 trips 0-32 stock HSPS Use: McClure 0-5 trips, 0-32 stock Sadler 0 trips		MPS: Up to 19 spot and dunnage trips with no more than 10 trips to Sadler Lake. Use of area for all expense/traveling trips.
	Grazing	Meadow between Sadler and McClure: Stream rated functional at-risk. Sod fragmentation throughout meadow. Severe to moderate	Increased vegetative cover and seral status. Streams, meadows, and fens should be in PFC.	Sadler to McClure meadow allow 12 stock nights with protection of riparian/spring area. Monitor exclosure. Sadler Lake north meadows, allow grazing,

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		<p>alteration of vegetative composition. Access to meadow has extensive sod fragmentation. Sadler Lake Meadows: On south side of lake, meadow is compacted and has soil erosion related to trails through meadows. Severe to moderate local alteration of vegetative composition. North side of lake is in good hydrologic condition, and with little or not alteration of vegetative composition. Area with fen characteristics in McClure to Sadler Meadow has heavy trampling. Sadler Pond meadow, minor alteration of vegetative composition. Reported grazing: 35/59/0.</p>		<p>53 stock nights available. Sadler Pond meadows, allow grazing, 45 stock nights available.</p>
	<p>Campsites</p>	<p>Existing closure: No overnight camping within 400 ' of the lakeshore from the junction of the Isberg & McClure trails northward approx 1/4 mile. One major stock holding campsite on the south side of Sadler Lake does not meet BMPs. This camp has drainage that was dug to drain the water from the camp into a nearby ephemeral stream, carrying sediment and high flows into the stream. The camp is in the meadow. The stock holding area associated with this camp is in a good location and meets BMPs.</p>	<p>All campsites should meet BMPs.</p>	<p>Close site described in current condition column (on the south side of Sadler Lake) to avoid conflict with ephemeral stream. Prohibit spot and dunnage camps within established closure. Designate 2 stock camps, one at Sadler Pond. .</p>

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
22. Lake Catherine				
Destination: Hemlock / Stevenson (Stevenson Creek, Meadow and Canyon)	Access	LAC01 very steep, followable, no other risk factors besides steep slopes.		Approve use trail to Dike Creek (LAC01).
	Recreation Category Setting	Recreation Category 2, off primary trail, high opportunities for solitude.		
	Use Levels 01-04	MPS: 1-9 trips 0-77 stock Reds: 1 trips -0-5 stock High Sierra: 0-2 trips 0-24 stock		MPS: Up to 10 spot and dunnage trips and use of area for all expense/traveling trips.
	Grazing	Stevenson Meadow stream is at PFC; high production meadow; livestock should be managed to avoid the southwestern portion of the meadow (fen); trail crossing at base of meadow needs some rock armoring; Pond Meadow (2 acres) high forage production; Upper Stevenson (aka. Barrel Camp) is low production; Falls Meadow is a dry meadow with moderate forage production; conifer encroachment evident, Upper Falls Meadow moderate production; Hemlock Meadow has scattered forage amidst dense shrub cover.		For the zone 488 stock nights. Stevenson Meadow: 175 stock nights, Upper Stevenson 28, Pond Meadow 58 stock nights, Falls 126 stock nights. Upper Falls Meadow 70 Stock nights. Hemlock Crossing 31 stock nights.
	Campsites			Designate 1 stock camp at Stevenson Meadow and 1 south of Stevenson Meadow.
	Other Issues	Drift fence in place.		Retain drift fence.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
23. Iron Creek				
Destination: Iron Creek	Access	Access is via the Iron Creek Trail - 25E02 (Trail Class 2)		
	Recreation Category Setting	Recreation Category 2, very low use, high opportunities for solitude.	Maintain high opportunities for solitude.	
	Use Levels 01-04	0-2 trips 20 stock		Up to 4 spot and dunnage trips
	Grazing	None reported, none requested.		No grazing.
	Campsites			No stock camp.
24. Cargyle				
Destination: 77 Corral Zone (77 Corral and Upper and Lower Stairway Meadows)	Access	Mammoth Trail: Trail Class 3. Iron Creek Trail: Trail Class 2. Summit Meadow Trail: Trail Class 3.		Prohibit use of CAR02.
	Recreation Category Setting	Recreation Category 2, low impacts, high opportunities for solitude	Maintain high opportunities for solitude.	
	Use Levels 01-04	Reds 0-3 trips, 0-40 stock MPS 0 trips, 0 stock HSPS: 0-2 trips, 0-22 stock		Reds: Up to 4 spot and dunnage trips and use of area for all expense/traveling trips. MPS: up to 2 spot and dunnage and use of area for all expense/traveling trips.
	Grazing	Fenced public pasture, MPS use limited to one night/trip within fenced pasture.-unknown if same restriction is applied to east side packers, some meadow surface erosion and old headcuts on stream. Likely never reaches range readiness in wet years. Fens present in several meadows.		Cargyle/Stairway Zone = 267 stock nights. 50 stock nights for commercial use in the 77 Corral public pasture.
	Campsites	3 existing campsites, historically used site is too close to water,	All campsites should meet BMPs.	Designate 3 stock camps. Consider additional camp at

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		but is best overnight stock camp		Stairway Meadow. Make sure location of stock camp in section 19 does not impact arch site.
25. Cargyle				
Destination: Spano / Straube Lakes	Access		Maintain low definition of CAR01.	Approve CAR01 for low levels of use.
	Recreation Category Setting	Recreation Category 1, high opportunities for solitude, low impacts.	Maintain high opportunities for solitude.	
	Use Levels 01-04	0-4 trips, 0-28 stock		Up to 4 spot and dunnage trips to maintain high opportunities for solitude. More use allowed if valid state game tag holder requests commercial services. Additional use requires case by case approval. Use of area for all expense/traveling trips.
	Grazing			Part of Cargyle/Stairway Grazing zone.
	Campsites			Designate 1 stock camp at Straube Lake.
26. Cassidy				
Destination: Miller / Cassidy / Rattlesnake (includes Pine Flat)	Access			Approve Pine Flat use trail (JUN01)
	Recreation Category Setting	Recreation Category 1, high opportunities for solitude, low issues and risk factors. Four distinct locations within the zone.	Maintain low use levels, high opportunities for solitude.	
	Use Levels 01-04	2-19 trips, 6-125 stock		Up to 25 trips to the zone, no more than 6 trips to any of one of

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
				the four distinct locations within the zone per year. Use of area for all expense/traveling trips.
	Grazing	Grazing requested. No grazing use reported.	Maintain or improve meadow conditions.	Grazing at Rattlesnake; 25 stock nights.
	Campsites	Campsites limited at Cassidy, Miller and Pine Flat as these are relatively small flat areas surrounded by steep cliffs along the San Joaquin River.		Designate 1 stock camp at Rattlesnake Lake, and 1 at Pine Flat.
27. Bridge Crossing				
Destination: Junction Buttes	Access	Junction Butte Trail Trail Class 1.	Insure stability.	
	Recreation Category Setting	Recreation Category 1 primary trail low to moderate use moderate to high opportunities for solitude.	Maintain low use recreation category.	
	Use Levels 01-04	0-6 trips, 0-26 stock		Up to 6 spot and dunnage trips.
	Grazing	None reported, none requested.		No grazing.
	Campsites	2 campsites on JB flat at river, drop point on trail ~3/4 miles from JB flat, clients may walk to campsites at flat due to poor trail condition. -	-	No stock camp.
	Other Issues	Area not surveyed for Heritage Resources, however area possibly has high archeological sensitivity due to flat topography adjacent to the San Joaquin River. Area is very remote, access is difficult.	Address in programmatic agreement.	

BISHOP/HUMPHREYS

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
1. Horton				
Destination: Horton Lake	Access	Horton Lake Trail observed Trail Class 3, old mining road. No resource concern, stable. Use trail to Upper Horton, along creek, high risk factors. Multiple old mining roads (non-system) on Mt. Tom. Cheatgrass on lower slopes along trail.	Use is low, low development trail. Prevent degradation of use trail HOR03. Prevent spread of cheatgrass.	Maintain trail as Trail Class 2. Prohibit use to Upper Horton. Allow use on old mine roads - Sonny Boy Mine use trail. Maintain low use to minimize cheatgrass spread.
	Recreation Category Setting	Recreation Category 2, low to moderate use and impact, moderate to high opportunities for solitude.	Horton Lake: Maintain for moderate to high opportunities for solitude.	
	Use levels 01-04	Pine Creek: 0-2 trips, 0-11 stock BPO: 0-2 trips, 0-12 stock		Up to 6 spot and dunnage trips to 2 operators. Use primarily as an early season destination. Use level consistent with Recreation Category 2 and will maintain high opportunities for solitude.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status.	No grazing.
	Campsites		No stock camp.	No stock camp.
2. Pine Creek				
Destination: Pine Creek Zone (not including Honeymoon Lake)	Access	Upper Pine Lake Trail above lake crosses at 200'+ wide ford in poor condition, causing stock to get out of trailway. Occupied Yosemite toad habitat at inlet with observed trampling and chiseling impacts apparently associated with poor trail design at inlet crossing of Upper Pine Lake. Pine Creek Pass Trail Trail Class 3, generally stable, except	Maintain high quality Yosemite toad habitat. Repair and stabilize ford. Ensure trail stability at Lower Pine Lake trail. Prevent development of visible trail to Birchim Lake.	Prohibit use to Birchim Lake on use trail PIN01. Lower Pine Lake use trail PIN05 approve to camp.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		creek crossings, few meadows near pass. Birchim Lake use trail (PIN01) less than 10% visible, steep terrain to lake.		
	Recreation Category Setting	Recreation Category 2 along trail corridor and campsites in drainage. Moderate recreational impacts, moderate opportunities for solitude. Recreation Impact Rating = 1.8.	Pine Creek: Maintain moderate opportunities for solitude.	
	Use levels 01-04	Upper Lake: 2-7 trips, 8-45 stock Pass/Golden Pond: 2-5 trips, 2-60 stock. Lower Pine Lake: 3-8 trips, 14-42 stock		Up to 30 spot and dunnage trips, consistent with primary trail corridor in a Recreation Category 2, multiple destinations within this zone.
	Grazing	Occupied Yosemite toad habitat in meadow with observed trampling and chiseling impacts. No grazing reported, grazing requested at meadows east of pass. Local sod fragmentation, intermingled wetland complex, much of meadow never reaches range readiness. East of Pine Creek Pass meadow has fen characteristics, in good condition.	Maintain moderate to high seral vegetative status. Maintain wetland hydrologic functional condition. Maintain high quality Yosemite toad habitat.	Unsuitable, do not allow grazing.
	Campsites	Stock holding site on the west side of Upper Pine Lake meets BMPs.	All campsites should meet BMPs.	Designate 1 stock camp at Upper Pine Lake.
	Other Issues	Drift fences - one at Pine Lake and one at Pine Creek Pass.	Drift fences allowed for resource protection and not for convenience of packer.	Drift fences - remove drift fence at Lower Pine Lake, maintain drift fence at Pass.
3. Pine Creek				
Destination: Honeymoon Lake	Access	Short spur to Honeymoon Lake observed Trail Class 2, stable. Camp access trails to camp on	Maintain high quality Yosemite toad habitat. Ensure that sensitive areas above	Allow use of Honeymoon Lake spur and access to approved campsites at lake. Designate

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		north/west side near lake, slight incision. Occupied Yosemite toad habitat in meadow may overlap with access routes to camps. Italy Pass Trail continues west from lake - Resource Rating 2+ with many risk factors. Becomes indistinct in Granite Park, extremely awkward west of Pass. Chalfant Lakes use trail GRP01 not found, unlikely that stock route exists - severe terrain.	Honeymoon Lake are not impacted by high risk Italy Pass system trail. Prevent the development of visible trails into Chalfant Lake.	Italy Pass Trail NSCS from Honeymoon to Lake Pass (also designated NSCS west of pass in Italy AU). Prohibit use of GRP 01 Chalfant Lakes use trail.
	Recreation Category Setting	Honeymoon Lake: Recreation Category 2; moderate to high recreation impacts, Recreation Impact Rating = 2.0. Moderate opportunities for solitude.	Honeymoon Lake: Maintain for moderate opportunities for solitude, reduce recreation impacts.	
	Use levels 01-04	14-28 trips, 53-90 stock		Up to 28 spot and dunnage trips, consistent with primary trail corridor destination. Occupy no more than two campsites at one time. This will maintain moderate opportunities for solitude.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status. Management direction is to not approve grazing where it was not requested.	Do not approve grazing.
	Campsites	Dense campsites on the northeast side of Honeymoon Lake. One spot/dunnage site does not meet BMPs.	All campsites should meet BMPs.	Do not allow spot and dunnage trips to access site on the NE side of lake that does not meet BMPs. Designate 2 campsites for spot and dunnage, will reduce recreation impacts.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
4. French Canyon				
Destination: French Canyon (Moon / L Lake junction to Merriam Confluence)	Access	French Trail observed Trail Class 3, Resource Rating 3.5, severely degraded for primary corridor trail.	Improve system trail to reduce off trail impacts associated with degraded trail.	
	Recreation Category Setting	French Canyon Recreation Category 2 on primary trail corridor with moderate opportunities for solitude while traveling and camping. Recreation impact rating = 2.0.	French Canyon: Maintain moderate to high opportunities for solitude along trail corridor while traveling, high opportunities while camping.	
	Use levels 01-04	High Sierra: 0-1 trips, 0-8 stock Pine Creek: 3-5 trips, 18-44 stock McGee: 0-2 trips, 0-10 stock (tribal trip)		Up to 12 spot and dunnage trips to two operators (10 Pine Creek, 2 High Sierra) will maintain moderate to high opportunities for solitude along a primary trail corridor.
	Grazing	Intermingled wetland complex along entire creek corridor. Meadows at confluences are consistently wetlands that never reach range readiness. Meadows above 10,760 feet remain very wet and never reach range readiness. Creek corridor and adjacent forest understory wet to moist meadows do reach range readiness. Overall vegetation is in mid-seral or late-seral condition. Moderate to minor and localized trampling of vegetation and sod fragmentation in wet areas. Occupied Yosemite toad habitat in meadow below Merriam confluence with minor trampling and chiseling impacts observed. Fen with severe trampling	Maintain vegetation at moderate to high seral status. Increase vegetative cover at wetland below "Waterfall" campsite. Prevent alteration of wet meadow/wetland hydrologic function. Improve/maintain fens in functioning condition. Maintain high quality Yosemite toad habitat.	Approve grazing, 735 stock nights available in the French Canyon zone, 40% AUF. No grazing allowed above 10,760 feet. Designate critical areas (for no grazing) at "Waterfall" camp, the Merriam Creek confluence and the Chevaux Creek confluence. Critical areas closed to stock entry and grazing.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		impacts near Waterfall Camp; several other meadows with fen characteristics are in good condition. Reported grazing in French Canyon Zone: 0/13/203.		
	Campsites	"Waterfall" camp covers approximately 4 acres and is within 10 feet of perennial and intermittent streams. The wetland/fen downstream from the camp has been trampled by stock. Sediment and manure found entering intermittent stream.	Reduce area of bare soil to only what is needed. Prevent trampling of wetland downstream of "Waterfall" camp campsite.	Designate "Waterfall" camp as stock holding site. Contain site at least 100 feet from streams. Reduce size of camp. Designate 1 stock camp at Merriam Creek Junction.
	Other Issues	Stock trample fen below waterfall camp during grazing, but do not graze in the fen.	Protect fen from trampling and stock entry.	Use temporary drift fence to protect critical area below "waterfall" camp.
5. French Canyon				
Destination: Elba / Moon / L Lakes	Access	"L" Lake Trail, observed Trail Class 2, Resource Rating 4, two possible routes. Both have moderate to severe incision, multi trailing, and diversions. Various use trails above to Steelhead Lake, Puppet Lake, etc. less than 10% visible. Use trail to Alsace shows some resource concerns.	Stabilize L Lake trail. Select best route. Prevent visible trails to upper basin (Puppet, Alsace, Star Lakes etc).	Identify best route for stock so there's only one route. Stabilize. Prohibit use of use trail FRE27 and others to benches, lakes above. Low use until system trail is repaired and stabilized. Steelhead Lake use trail FRE18 from French Canyon prohibited.
	Recreation Category Setting	Elba/Moon/L Lakes: Recreation Category 2, 1 moderate opportunities for solitude. Recreation Impact Rating = 2.6.	Elba/Moon/L Lakes: Maintain for moderate to high opportunities for solitude. Reduce recreational impacts.	
	Use levels 01-04	2-11 trips, 6-51 stock		Up to 2 spot and dunnage trips until the system trail is repaired to standard.
	Grazing	Moderate to minor and localized trampling of vegetation and sod	Maintain vegetation at moderate to high seral status.	Approve grazing, 735 stock nights available in the French

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		fragmentation in wet areas, along the trail to Elba Lake. Meadows between Elba Lake and Alsace Lake remain wet and do not reach range readiness. These meadows also have local areas of reduced vegetative cover. Reported grazing: 2001/2002/2003 is 0/0/23.		Canyon zone, 40% AUF. Limit planned grazing to 25 stock nights in the Elba/Moon destination and a 30% AUF. Meadows between Elba Lake and Alsace Lake are unsuitable; do not allow grazing. Meadows above the 10,760 foot elevation are unsuitable; do not allow grazing.
	Campsites	Stock holding site on the southeast shore of Elba Lake meets BMPs.	All campsites should meet BMPs.	Designate 1 stock camp between L and Moon Lake.
6. French Canyon				
Destination: French Lake	Access	Cross country travel from Pine Creek Pass to lake. Less than 10% visible. Other use trails from other directions.	Prevent a use trail from becoming defined.	Allow use of FRE60 at low levels. Prohibit other use trails to Lake from Canyon.
	Recreation Category Setting	French Canyon: Recreation Category 1, very low use high opportunities for solitude. Recreation Impact Rating = 0.8.	French Lake: Manage for low use and high opportunities for solitude.	
	Use levels 01-04	0-2 trips, 0-10 stock		Up to 2 dunnage trips with less than 6 stock per season.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status. Management direction is to not approve grazing where it was not requested.	Do not approve grazing.
	Campsites	No stock camp.	No stock camp.	No stock camp.
7. French Canyon				
Destination: Merriam Meadow	Access	Two trails one on each side of creek. Trail north of creek Resource Rating 3, steep, risk	Limit use to one trail.	Allow use of trail south of creek. Designate as Trail Class 2 system trail, stabilize. Prohibit

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		factors. Trail south of creek, Resource Rating 2, steep, risk factors, but higher stability. Use trails continue north to lake and La Salle. Use trail FRE07 to Shepherder Lake less than 10% visible.		use of trail north of creek. Prohibit use trails above meadow. Prohibit use on use trail FRE07 to Shepherder Lake.
	Recreation Category Setting	Merriam Meadow: Recreation Category 2; above Merriam Meadow is Recreation Category 1, very low use high opportunities for solitude. Recreation Impact Rating at Merriam Meadow = 2.0.	Merriam Meadow: Manage for low use and high opportunities for solitude.	
	Use levels 01-04	2-7 trips, 6-40 stock		Up to 4 spot and dunnage trips to maintain trail stability and high opportunities for solitude.
	Grazing	Occupied Yosemite toad habitat in meadow at desired condition. Vegetation overall at high-seral status. Some local fragmentation of sod and reduced vegetative cover near trail in lower section of meadow. Area with fen characteristics in good condition. Much of the meadow never reaches range readiness. Reported grazing: 2001/2002/2003 is 0/0/5.	Maintain high quality Yosemite toad habitat. Maintain vegetation in moderate to high seral status and increase vegetative cover in lower meadow. Maintain fen in good condition.	Approve grazing, 35 stock nights available, in the Merriam zone, including the lodgepole understory, limit grazing at Merriam Lake meadow to 15 stock nights, 30% AUF. Critical areas closed to stock entry and grazing.
	Campsites	Campsites generally far from water, on bench above meadow, and meeting BMPs.	All campsites should meet BMPs.	Designate 1 stock camp on rocks adjacent to meadow east of Merriam Lake.
8. French Canyon				
Destination: Royce Lakes	Access	Lightly defined/sporadic use trail from Pine Creek Pass, Resource Rating 1. Slight erosion near pass, dispersed and no impacts,	Keep trail in lightly defined condition.	Allow use at low levels.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		few risk factors.		
	Recreation Category Setting	Recreation Category 1, very low use high opportunities for solitude. Recreation Impact Rating = 1.0.	Royce Lakes: Manage for low use and high opportunities for solitude.	
	Use levels 01-04	0-2 trips, 0-12 stock		Up to 2 spot and dunnage trips with current stock levels to maintain high opportunities for solitude and to keep trail from being defined.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status.	Do not approve grazing.
	Campsites			No stock camp.
9. Glacier Divide				
Destination: Hutchinson Meadow	Access	Piute Canyon Trail, observed Trail Class 3, Resource Rating 3, severely degraded for primary corridor trail. Slender moonwort population documented near Piute Canyon Trail below Hutchinson Meadow.	Maintain moonwort habitat near trail.	Primary trail needs to be stabilized.
	Recreation Category Setting	Recreation Category 2, moderate opportunities for solitude, used for stock camps and grazing. Recreation Impact Rating = 2.0.	Reduce overall impacts. Maintain moderate opportunities for solitude.	
	Use levels 01-04	BPO: 0-6 trips, 0-86 stock High Sierra: 0-3 trips, 0-28 stock McGee: 0-2 trips, 0-26 stock (tribal trip) Pine Creek: 0-3 trips, 0-34 stock Rainbow: 0-1 trip, 0-11 stock		Up to 22 spot and dunnage trips to three operators (12 BPO, 6 HS 4 PC). Use of area for all expense type trips.
	Grazing	Area adjacent to large packer camp with altered vegetative species composition, reduced vegetative vigor, and reduced vegetative cover. Reported use:	Increased vegetative cover and vigor in meadow near packer camp.	Approve grazing, 133 stock nights available in the Piute Creek zone. Limit grazing at Hutchinson to 73 stock nights available, 30% AUF.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		2001/2002/2003 is 121/163/290 in Piute Creek zone.		
	Campsites	One stock holding site at Hutchinson Meadow has access trails allowing sediment and manure to enter surface water. A high density of hiker or spot/dunnage camps along creek just downstream from meadow, many do not meet BMPs.	All campsites should meet BMPs.	Designate 3 stock camps.
	Other Issues	Drift fence above Hutchinson Meadow - large and extensive.		Reduce size of drift fence above (east of) Hutchinson meadow
10. Glacier Divide				
Destination: Golden Trout Lakes (including Wahoo Ck, Golden Trout Ck)	Access	Golden Trout Lake system trail from Piute Trail: observed Trail Class 3, Resource Rating 3, highly degraded, formerly primary trail to Piute Canyon, now heavily used to access lakes. Poorly maintained for level of use. Trails east of lake incised and diverting intermittent streams through some meadow areas. Multiple use trails to campsites at lake.	Stabilize system trail. Limit number and extent of use trails at lake. Reduce total number of use trails near Golden Trout Lakes.	Designate camp access routes only. Commercial pack stock would be required to use the Golden Trout Lake spur to access the lake, from the Piute Canyon Trail. Currently used Golden Trout Lake trail NSCS (eventually would be removed from the system and rehabilitated). Designate access routes to camps.
	Recreation Category Setting	Golden Trout Lakes Recreation Category 2, low to moderate opportunities for solitude, moderate to high recreation impacts. Recreation Impact Rating = 2.4.	Golden Trout Lakes: Reduce overall impacts. Maintain use level consistent for Recreation Category 2.	
	Use levels 01-04	31-58 trips, 193 - 388 stock		Up to 40 trips and 300 stock annually.
	Grazing	Occupied Yosemite toad habitat in meadow at desired condition. Vegetation overall at high-seral status. Meadows near Golden	Maintain high quality Yosemite toad habitat. Maintain vegetation in moderate to high seral status and increase vegetative cover in	Meadows near Golden Trout Lakes, to the west and north and to Summit Lake are unsuitable; do not allow grazing. Critical

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		Trout Lakes, immediately to the north and to Summit Lake never reach range readiness. Some local fragmentation of sod and reduced vegetative cover near trails in lower meadows. Reported grazing: 2001/2002/2003 is 0/0/0.	lower meadows, along trail.	areas closed to stock entry and grazing.
	Campsites	Spot/dunnage sites only. Directly adjacent to lake, most sites meet BMPs and are far enough from water, although some hiker sites are on pond shorelines.	All campsites should meet BMPs.	Designate 4 spot and dunnage sites. No stock camps. Prohibit use of the two camps along Piute Creek where access is through wet meadows. Contain "Sierra Club" camp to be over 100 feet from water.
11. Glacier Divide				
Destination: Honeymoon Creek / Lake	Access	Honeymoon Lake Trail, observed Trail Class 1, Resource Rating 1, lightly defined with some slight incision, moderate risk factors - steepness.	Keep trail stable with minimal development.	Low use.
	Recreation Category Setting	Recreation Category 2; low recreation impacts, moderate opportunities for solitude.	Maintain for moderate to high opportunities for solitude.	
	Use levels 01-04	0-4 trips, 0-34 stock		Up to 4 trips at destination, which includes Honeymoon Lake and the junction of Honeymoon Creek and Piute trail. At Honeymoon Lake, only 2 spot and dunnage trips and 10 total stock per year.
	Grazing	No grazing reported or requested. Meadows near confluence with Piute Creek remain wet, very small and fragile lakeshore riparian vegetation areas at lake are at high-seral vegetative condition.	Maintain vegetation at moderate to high seral status.	Unsuitable; do not allow grazing.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Campsites	One spot/dunnage site on the north end of Lower Honeymoon Lake found to meet BMPs.	All campsites used for spot and dunnage should meet BMPs.	No stock camp. Designate spot and dunnage site north of lake, and access route.
12. Glacier Divide				
Destination: Muriel Lake	Access	Muriel Trail, observed Trail Class 2, Resource Rating 2.5, well-defined from just west of Piute Pass, goes through wet meadow benches, moderate risk factors. GLA17 less than 10% visible.	Stabilize Muriel Trail. GLA17 should remain less than 10% visible.	Realign/stabilize trail. Low use until stabilized to prevent further degradation. Approve GLA17 for very low levels of use.
	Recreation Category Setting	Recreation Category 2, moderate to high opportunities for solitude. Recreation Impact Rating = 1.6.	Muriel Lake: Manage area for moderate use destination with moderate impacts to few sites.	
	Use levels 01-04	7-14 trips, 28-74 stock		Up to 4 spot and dunnage trips and limit to 24 stock until the trail is realigned/stabilized. Up to 14 spot and dunnage trips after the trail is repaired. No more than occasional use with low stock numbers to Wahoo Lake.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status.	No grazing.
	Campsites		No stock camps.	No stock camps.
13. Glacier Divide				
Destination: Packsaddle Lake	Access	Packsaddle Lake use trail GLA02: Resource Rating 1, sporadic, mostly undefined. Moderate risk factors if use increased.	Maintain trail less than 10% visible.	Approve GLA02 to Packsaddle Lake for very low use.
	Recreation Category Setting	Recreation Category 1, low use and high opportunities for solitude. Recreation Impact Rating = 1.4.	Packsaddle Lake: Manage for high opportunities for solitude, low impacts.	

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Use levels 01-04	1-4 trips, 2-24 stock		Up to 2 spot and dunnage trips to maintain high opportunities for solitude and trail-less conditions consistent with a Recreation Category 1.
	Grazing	Grazing requested. Meadows near confluence with Piute Creek remain wet; very small, wet, and fragile lakeshore riparian vegetation areas at lake outlet are at high-seral vegetative condition. Reported: 2001/2002/2003 is 12/0/0.	Maintain vegetation at moderate to high seral status.	Unsuitable; do not allow grazing.
	Campsites		No stock camp.	No stock camp.
14. Humphreys				
Destination: Desolation Creek / Lake	Access	Desolation Lake Trail, observed Trail Class 1, Resource Rating 1, low development trail. Portions of trail below Lower Desolation Lake incised through meadows.	Keep stable without changing character, or increasing development.	
	Recreation Category Setting	Desolation Creek/Lake: Recreation Category 2, low to moderate use and impacts, moderate to high opportunities for solitude. Recreation Impact Rating = 0.8.	Desolation Creek/Lake: maintain area as low to moderately used destination with limited sites.	
	Use levels 01-04	4-13 trips, 28-53 stock		Up to 14 spot and dunnage trips. Keeping stock numbers at current levels will maintain moderate to high opportunities for solitude and keep trail with primitive character.
	Grazing	Grazing requested. Wet meadows near and above Desolation Lake to Humphreys Lakes remain too wet to reach range readiness. Upland	Maintain vegetation at moderate to high seral status.	Approve grazing, 60 stock nights available, 30% AUF.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		vegetation low productivity over a large area. Some loss of vegetative cover near and along trails.		
	Campsites		No stock camp.	No stock camp.
15. Humphreys				
Destination: Humphreys Lakes	Access	Humphreys Trail, observed Trail Class 1, Resource Rating 1, lightly defined trail. Visible up to Marmot Lake, and then becomes less defined.	Keep stable without changing character, or increasing development.	Keep use levels low.
	Recreation Category Setting	Recreation Category 1 at upper lakes, Recreation Category 2 at Marmot Lake. Low use and high opportunities for solitude. No Recreation Impact Rating.	Humphreys Lakes: maintain for low use and high opportunities for solitude.	
	Use levels 01-04	3-15 trips, 9-113 stock		Up to 10 spot and dunnage trips. No more than 4 of these trips to Upper Humphreys Lake to be consistent with Recreation Category 1 and to maintain high opportunities for solitude.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status.	Do not approve grazing.
	Campsites		No stock camps.	No stock camps.
16. Humphreys				
Destination: Tomahawk / Mesa Lakes	Access	Undefined use trail HUM35 to Mesa Lake, Resource Rating 0, slight risk factors. Undefined use trail HUM30 to Tomahawk Lake, Resource Rating 0, slight	Keep undefined, stable without changing character.	Allow cross country travel to Tomahawk Lake until or unless trail becomes defined, then must stay on user trail to Mesa Lake and down to Tomahawk Lake.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		risk factors.		
	Recreation Category Setting	Recreation Category 1, low to moderate use, low to moderate opportunities for solitude.	Mesa Lake: maintain for moderate to high opportunities for solitude. Tomahawk Lake: Maintain as Recreation Category 1 high opportunities for solitude.	
	Use levels 01-04	0-2 trips, 0-6 stock to Mesa 1-8 trips, 3-22 stock to Tomahawk		Up to 4 spot and dunnage trips to each lake. 25 stock per year to Mesa and Tomahawk Lakes, combined. This will maintain high opportunities for solitude in trail-less area.
	Grazing	Grazing Requested. No grazing reported 2001-2003. Thin soil, low productivity, sparse vegetation, easily eroded soil.	Maintain vegetation at moderate to high seral status. No accelerated soil erosion.	Unsuitable; No grazing allowed.
	Campsites		No stock camps.	No stock camps.
17. Lamarck				
Destination: Lamarck Lakes	Access	Lamarck Trail observed Trail Class 3, Resource Rating 1 to Grass Lake, Trail Class 2, Resource Rating 1 above Grass to just below Upper Lake. 1/8 mile below lake, trail in stream channel, potential instability. Lamarck Col trail crosses creek below lake, observed Trail Class 2 & 1, Resource Rating 3, moderate to severe impacts at lower meadows, and meadow below col. Many constructed features in steep sections.	Keep trails stable without changing character or adding substantial structures.	NSCS above Upper Lamarck Lake to Col and on 1/8 mile section below Upper Lamarck Lake.
	Recreation Category Setting	Lamarck Lakes and Col: Recreation Category 2, moderate impacts. Recreation Impact Rating = 1.4.	Lamarck Lakes: Reduce overall impacts; manage for moderate to high opportunities for solitude	

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Use levels 01-04	0-6 trips, 0-21 stock (includes Lamarck Lakes and Lamarck Col)		Up to 5 spot and dunnage trips to campsites just above Upper Lamarck Lakes.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status. Management Direction is no grazing allowed when not requested.	No grazing.
	Campsites	Limited camping at Lower Lamarck Lake.		No stock camps. Designate spot and dunnage campsite just above Upper Lamarck Lake.
18. Piute				
Destination: Piute Corridor	Access	Piute Pass Trail: Trail Class 3, generally stable, except at meadow, small stream crossings. Yosemite toad critical area along system trail with minor trampling, water diversion effects from close proximity to trail. Piute Camp Access, use trail PIU01, Resource Rating 1, slight incision, low risk factors. Use trail to snow survey cabin at Loch Leven, short, stable.	Minimal trail effects to Yosemite toad breeding habitat.	Repair trail. Allow use of PIU01.
	Recreation Category Setting	Piute Corridor Recreation Category 3, low to moderate opportunities for solitude. Limited camping within fire closure. Recreation Impact Rating = 1.6.	Piute Lake: Manage as Recreation Category 3 with concentrated impacts areas away from lake and main trail corridor.	
	Use levels 01-04	BPO: 0-4 trips, 0-13 stock		Up to 20 spot and dunnage trips (anywhere in the destination zone), consistent with a Recreation Category 3 high use corridor with adequate capacity.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status.	Do not approve grazing.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Campsites	Spot/dunnage sites only. Two spot and dunnage sites on the north shore of Piute Lake do not meet BMPs. High density of spot and dunnage and hiker campsites on north side of lake. Spot/dunnage site at the outlet of Loch Leven on the North side of the lake does not meet BMPs, as some tent pads are within 5 feet of water.	All campsites should meet BMPs.	Allow spot and dunnage only at sites that meet BMPs and are over 100 feet from surface water. Designate 1 site for spot and dunnage at Piute Lake and 1 at Loch Leven. Contain the spot and dunnage site at the outlet of Loch Leven away from the lake, do not use this site as a spot and dunnage site.
19. Sabrina				
Destination: Baboon Lake	Access	Baboon Lake Trail: observed Trail Class 1, Resource Rating 2, moderately defined, some incision at seeps, moderate risk factors.	Keep trail stable with minimal development.	
	Recreation Category Setting	Baboon Lake: Recreation Category 2, moderate to high opportunities for solitude.	Baboon Lake: Maintain moderate to high opportunities for solitude.	
	Use levels 01-04	0-1 trip, 0-6 stock		Up to 3 spot and dunnage trips, up to 10 stock per year, consistent with a low use Recreation Category 2, primitive trail. This will maintain high opportunities for solitude.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status.	No grazing.
	Campsites		No stock camp.	No stock camp.
20. Sabrina				
Destination: Blue Lake	Access	Sabrina Lake Trail: Trail Class 3, steep, stable. Blue Lake camp access trail SAB09, short, stable to upper camp, moderate incision with high risk factors beyond. Inyo beardtongue along Sabrina	Maintain Inyo beardtongue habitat.	Allow use to upper camp only.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		Lake Trail outside wilderness.		
	Recreation Category Setting	Blue Lake: Recreation Category 3, moderate to high opportunities for solitude. High day use area. Recreation Impact Rating = 1.4.	Blue Lake: Manage for low to moderate opportunities for solitude.	
	Use levels 01-04	0-3 trips, 0-9 stock		Up to 6 spot and dunnage trips. Limit trips into this very high use Recreation Category 3 area with limited camping and crowding.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status.	Do not approve grazing.
	Campsites	Spot/dunnage site near the lake inlet does not meet BMPs, as it is closer than 50 feet to surface water. Sediment from campsite-related social trail entering Blue Lake.	All spot and dunnage and stock holding sites should meet BMPs.	Designate 1 spot and dunnage site on benches above Blue Lake. No stock camps. Prohibit use of campsite at inlet of Blue Lake.
21. Sabrina				
Destination: Dingleberry Lake	Access	Sabrina Lake Trail: Trail Class 3, stable. No use trail found to Fishgut Lake above Dingleberry.	Prevent development of use trail to Fishgut Lake.	Prohibit use to Fishgut Lake (SAB01).
	Recreation Category Setting	Dingleberry Lake: Recreation Category 3, low to moderate opportunities for solitude. Recreation Impact Rating = 1.8	Dingleberry Lake: Manage area for low to moderate opportunities for solitude.	
	Use levels 01-04	4-13 trips, 16-67 stock		Up to 16 spot and dunnage trips. This will maintain opportunities for solitude in Recreation Category 3 primary trail corridor.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status.	Do not approve grazing.
	Campsites	Spot/dunnage site at the system trail crossing near Dingleberry	All spot and dunnage and stock	Designate 1 spot and dunnage site. Set back campsite from

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		Lake is too close to water and does not meet BMPs.	holding sites should meet BMPs.	water and contain site. No stock camps.
22. Sabrina				
Destination: Emerald Lakes	Access	Emerald Lake Trail: observed Trail Class 1.5 - 2, well-defined, few structures, appears heavily used. Isolated moderate risk factors at stream crossings, short steep sections near lake.	Stable trail.	Maintain trail as Trail Class 2.
	Recreation Category Setting	Emerald Lake: Recreation Category 3, low to moderate opportunities for solitude. Recreation Impact Rating = 1.8.	Emerald Lakes: Manage area for low to moderate opportunities for solitude.	
	Use levels 01-04	15-19 trips, 104-140 stock		Up to 25 spot and dunnage trips consistent with high use Recreation Category 2 area. This will maintain moderate opportunities for solitude.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status.	No grazing.
	Campsites		No stock camp.	No stock camp.
23. Sabrina				
Destination: Upper Sabrina Basin (includes Hungry Packer, Hell Diver, Moonlight, Midnight, Sailor, Topsy Turvy and Pee Wee)	Access	Topsy Turvy Lake Trail: observed Trail Class 2, Resource Rating 2, ends well below lake at camp near falls. Alternate access to lake via use trail on slabs near Hungry Packer trail. Moonlight Falls Camp trail, observed Trail Class 1, Resource Rating 3, moderate impacts at creek crossing before camp. No trail to Moonlight Lake.	Ensure stability of trail to Moonlight Falls camp. Prevent further expansion of use trails in basin.	Find best alignment for Moonlight Falls trail, add structures to stabilize creek crossing. Allow access to camps along Topsy Turvy Lake trail below falls, but not to lake.
	Recreation Category	Upper Sabrina: Recreation	Upper Sabrina: Manage area for	

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Setting	Category 2, low to moderate opportunities for solitude. No Recreation Impact Rating.	moderate opportunities for solitude while camping, low to moderate while traveling.	
	Use levels 01-04	0-33 trips, 0-186 stock		Up to 40 spot and dunnage trips, consistent with high use primary trail corridor. Multiple destinations in this zone will disperse the trips to various locations and maintain moderate opportunities for solitude while camping.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status.	Do not approve grazing.
	Campsites		No stock camp.	No stock camps.
24. Sabrina				
Destination: Donkey Lake	Access	Donkey Lake Trail observed Trail Class 1.5, Resource Rating 2, well-defined until split with hiker trail, awkward, minimal development, but mostly stable at current use. Risk factors if use increases. Use trails from Baboon Lake to Blue Lake are not evident or likely.	Stable access without adding many structures.	Keep use low. Prohibit use trail from Blue Lake.
	Recreation Category Setting	Donkey Lake: Recreation Category 2, low to moderate opportunities for solitude. Recreation Impact Rating = 1.0.	Donkey Lake: Manage area for moderate to high opportunities for solitude.	
	Use levels 01-04	none reported		Up to 6 spot and dunnage trips, will maintain high opportunities for solitude in Recreation Category 2 area with limited capacity for camping.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status.	Do not approve grazing.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Campsites	Limited capacity for camping.	No stock camps.	No stock camps.
25. Tyee				
Destination: Tyee Lakes	Access	Tyee Lake Trail: observed Trail Class 2-3 to Tyee Lakes, low Trail Class 2 or Trail Class 1 over Table Mountain, then steep and more developed again into George Lake and Sabrina Lake. Some erosion, mostly stable at current use. Hunting trips on undefined routes on Table Mountain.	Maintain stability without changing trail development.	Allow only low use above Tyee Lakes, limited hunting on Table Mountain.
	Recreation Category Setting	Tyee Lakes: Recreation Category 2, moderate to high opportunities for solitude. No Recreation Impact Rating.	Tyee Lakes: Manage area for moderate to high opportunities for solitude.	
	Use levels 01-04	0-2 trips, 0-9 stock		Up to 2 spot and dunnage trips
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status.	No grazing.
	Campsites		No stock camps.	No stock camps.
26. Treasure				
Destination: Treasure Lake	Access	Treasure Lake: observed Trail Class 3, generally stable, some widening, moderate bank impacts at creek ford, short section steep w/ slight erosion below lakes. Terminates at creek between two lowest lakes. Evident use trail continues up along stream above.	Stable trail. Ensure no expansion of use trails.	No commercial stock use beyond lower lakes.
	Recreation Category Setting	Recreation Category 2, low to moderate opportunities for solitude (day hikers). Recreation Impact Rating = 1.6.	Manage area for moderate to high opportunities for solitude. Reduce overall impacts.	

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Use levels 01-04	0-5 trips, 0-25 stock		Up to 8 spot and dunnage trips.
	Grazing	No grazing reported or requested.	No grazing.	No grazing.
	Campsites			No stock camps. Close campsite near Treasure Lake bench.
	Other Issues	Mountain yellow-legged frog reintroductions occurring in Upper Treasure Lakes.	Commercial pack stock use is coordinated with Mountain Yellow Legged Frog habitat and population recovery objectives.	
27. Bishop Pass				
Destination: Long Lake	Access	Bishop Pass Trail observed Trail Class 3, generally stable. Use trail BIS04, Resource Rating 1, to camps near outlet, slight incision around lake, stable, defined.	Maintain stability of use trail without changing character of trail.	Allow use of use trail at low to moderate levels.
	Recreation Category Setting	Recreation Category 3, high use area both overnight and day hikers. Low opportunities for solitude. Recreation Impact Rating = 2.0.	Manage as a Recreation Category 3 with concentrated impact areas on trails and at lakes.	
	Use levels 01-04	2-6 trips, 4-31 stock		Up to 10 spot and dunnage trips.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status.	No grazing.
	Campsites	Spot/dunnage site at the outlet of Long Lake is closer than 100 feet to water, and the hillside between camp and lake is denuded of vegetation, allowing sediment to erode off-site into water. Site currently does not meet BMPs.	All spot and dunnage and stock holding sites should meet BMPs.	If the site at the outlet of Long Lake is to continue to be used, a trail around the steep hillside should be designated to access the lake from the site. Otherwise, do not allow spot and dunnage at this site. No stock camps.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Other Issues	Day use tie up site is close to trail and surface water.		Day use tie-up site will be designated on the north side of Long Lake, away from trail.
28. Bishop Pass				
Destination: Bull Lake	Access	Bull Lake Trail: observed Trail Class 2, Resource Rating 1 to inlet. Climbs steeply in riparian habitat, Trail Class 2 & 1, Resource Rating 3 with very high risk factors to Chocolate Lakes. Observed Trail Class 1 above Chocolate Lakes to Ruwau Lake, steep with slight-mod erosion. Congdon's sedge population bisected by Chocolate to Ruwau trail.	Prevent impacts to riparian and at creek crossings near Chocolate Lakes without adding substantial development. Maintain Congdon's sedge population in good condition.	Chocolate Lake Trail NSCS above Bull Lake inlet to Ruwau Lake outlet.
	Recreation Category Setting	Bull Lake: Recreation Category 2, low to moderate opportunities for solitude. Recreation Impact Rating = 1.	Bull Lake: Manage area for moderate opportunities for solitude. Reduce overall impacts around lake.	
	Use levels 01-04	0-2 trips, 0-6 stock		Up to 10 spot and dunnage trips.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status.	Do not approve grazing.
	Campsites		No stock camps.	No stock camps.
29. Bishop Pass				
Destination: Hurd Lake	Access	Hurd Lake: use trail BIS02, Resource Rating 0, short trail to camps. Stable, no risk factors.	Same.	
	Recreation Category Setting	Hurd Lake: Recreation Category 3, low opportunities for solitude. Recreation Impact Rating = 1.2.	Hurd Lake: Manage area for moderate to high opportunities for solitude (isolated area away from primary trail).	
	Use levels 01-04	0-2 trips, 0-9 stock		Up to 10 spot and dunnage trips. Use of area for all expense/full

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
				service trips.
	Grazing	No grazing reported or requested. Some areas of the meadow have fen characteristics.	Maintain vegetation at moderate to high seral status. Maintain fen in functioning condition.	No grazing.
	Campsites	Good location for campsites. Has been used as a base camp location but not in the past few years.	Maintain campsites proper distance from water.	Designate a campsite with no stock holding for spot and dunnage or all expense type camp.
30. Bishop Pass				
Destination: Marie Louise Lake	Access	Marie Louise Trail: observed Trail Class 2, Resource Rating 2, slight impacts at creek crossing, few structures, moderately steep on dry slope, slight erosion with current use (low).	Maintain character of trail, minimal development.	Allow use compatible with low development trail.
	Recreation Category Setting	Marie Louise Lake: Recreation Category 2, low to moderate opportunities for solitude due to low capacity and high day use. Recreation Impact Rating = 1.8.	Marie Louise Lake: Manage area for moderate opportunities for solitude. Reduce overall impacts around lake.	
	Use levels 01-04	0-2 trips, 0-6 stock		Up to 2 spot and dunnage trips.
	Grazing	No grazing reported or requested.		No grazing.
	Campsites	Current spot and dunnage site meets BMPs. Limited camping, low capacity area.	No stock camps.	No stock camps.
31. Bishop Pass				
Destination: Upper Bishop Creek (Bishop Lake, Saddlerock Lake)	Access	Timberline Tarns use trail BIS08, Resource Rating 0, undefined route, slight risk factors at meadows, seeps if much use. Saddlerock Lake use trail BIS09 to campsites from outlet, lightly defined, few risk factors. Ledge Lake use trail	Limit impacts and expansion of use trails.	Approve use trail BIS09. Prohibit use of use trails BIS08, BIS03, BIS06.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		BIS03 risk factors near tarns, wet areas. Margaret Lake use trail BIS06, Resource Rating 1.5, lightly defined, slight impacts at creek crossing, slight incision in meadow, moderate risk factors if use increased.		
	Recreation Category Setting	Upper Bishop Creek: Recreation Category 3, low opportunities for solitude. Recreation Impact Rating = 2.0.	Upper Bishop Creek: Manage as a Recreation Category 3 with concentrated impact areas on trails and at lakes.	
	Use levels 01-04	10-19 trips, 30-88 stock		Up to 25 spot and dunnage trips.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status.	No grazing.
	Campsites		No stock camps.	No stock camps.
32. Bishop Pass				
Destination: Bishop Pass to SEKI	Access	No trail issues.		
	Recreation Category Setting	Bishop Pass to SEKI: Recreation Category 3, low opportunities for solitude. Recreation Impact Rating = 2.0.	Bishop Pass to SEKI: Manage as a Recreation Category 3 with concentrated impact areas on trails and at lakes.	
	Use levels 01-04	RPO: 48-58 trips, 180-232 stock MLPO: 0-1 trip, 0-4 stock		Up to 58 spot and dunnage trips.
	Grazing			
	Campsites		No stock camps.	No stock camps.

FISH CREEK/CONVICT/MCGEE

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
1. Cold Duck				
Destination: Coldwater Corridor	Access	Duck Pass: observed Trail Class 3, heavy stock and public use, generally stable. Snow bypass north of pass - duplicate, stable. Emerald to Skelton Trail: observed Trail Class 2, Resource Rating 3, moderate erosion, incision, high risk factors. Sky Meadows trail observed Trail Class 2 & 1, Resource Rating 4, moderate-severe impacts to stream and riparian, high risk factors. Woods Lake Trail: observed Trail Class 2 to first lake, Trail Class 1 to upper lake, Resource Rating 3 with risk factors.	Prevent further impacts to degraded trails.	Emerald to Skelton NSCS. Sky Meadow Trail NSCS. Allow use of Duck Pass snow bypass only when snow blocks main trail. Limit use to low numbers on Woods Lake trail.
	Recreation Category Setting	Recreation Category 3.	Day rides to Emerald, Barney, Heart, Crystal Lakes manage for moderate levels of use to these locations. Woods Lake, Skelton use for spot and dunnage.	
	Use Levels 01-04	MLPO: 1-8 trips, 4-39 stock McGee: 0-4 trips, 0-50 stock		Up to 12 spot and dunnage trips to two operators to maintain low commercial pack stock use relative to Recreation Category 3. Crowding occurs with high levels of day hikers, day rides, and overnight use in basin. Good alternative for early season use. Woods Lake - manage for infrequent use to lower lake only.
	Grazing	Not reported or requested.		No grazing.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Campsites			No stock camps.
2. Purple Bench				
Destination: Purple Lake	Access	Purple/Ram Lake Trail observed Trail Class 2, (high impacts in 2001, mostly stabilized in 2003) to camps. Use trail short cuts between PCT/Cascade trail near outlet. Camp access issues at Purple Bench camps - creek crossing with moderate impacts. There are areas with fen characteristics near High Camp and Ram Camp.	Stabilize trail to camps. Reduce unnecessary use trails. Maintain functioning fens.	Stabilize crossing at Purple Bench camp access. Prohibit use on PPB08.
	Recreation Category Setting	Recreation Category 2.	Reduce impacts associated with use trail proliferation and campsite impacts.	
	Use Levels 01-04	13-31 trips; 61-126 stock		Up to 24 spot and dunnage trips a year. Use of area for moderate to high level of all expense type trips.
	Grazing	2001: Moderate altered vegetative composition, bare areas (dusting pits), reduced vegetative cover, fragmented sod, PFC at risk with downward trend on local stream segments, with a few headcuts. 2004 and 2005: A few stream segments remain functional at-risk, but with an upward trend, due to revegetation after 2 years of rest. stream segment nearest camp remains straightened relative to other segments. Reported stock nights in 2001/2002/2003/2004: 218/438/47/0. Purple Bench Meadow has some areas with fen characteristics.	Provide adequate vegetation species and cover to protect from soil and stream bank erosion. All streams move toward proper functioning condition (PFC). Do not exceed more than 20% stream bank trampling in reach near camp.	Purple Lake Zone: Allow grazing, 90 stock nights. Enforce all applicable standards but especially readiness and streambank trampling limits. Repair headcut above Ram Tarn pond, protect springs at Ram Tarn pond. Utilize existing crossing of Deer Creek. Prohibit impacts along stream across meadow from "Deer Camp" and along stream at "Deer Camp". Purple Bench: approve grazing. 12 stock nights available.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Campsites	Three high impact sites with access concerns. One old highline location near water, so site not meeting BMPs, but highline has been moved.	Sites meet BMPs.	Maintain and contain 3 stock camps at Purple Lake. Improve and stabilize access to sites. Rehabilitate old highline near water to prevent sediment entry into water. Limit camping when not with clients to no more than 5 nights a year. Designate 1 stock camp at Purple Bench.
	Other Issues	Campfires - lake is just at 10,000 feet, some sites below some above the fire closure	Reduce confusion of various fire closures.	Open to campfires, modify elevational boundary.
3. Purple Bench				
Destination: Ram Bench	Access	Ram Lake Trail (from Purple Lake camps) observed Trail Class 1, no structures, some headcuts entering meadow. Risk factors in meadows. Light stock use, high risk factors. Use trails from Ram Lake to Virginia (PPB14) & Franklin (PPB13). Subalpine fireweed along trail near Purple Bench.	Stable trail with minimal structure/development. Stabilize headcuts entering meadow. Maintain population of subalpine fireweed.	Limit commercial stock on segment to bench to low numbers. NSCS from bench to Ram Lake. Prohibit use on PPB14 & PPB13.
	Recreation Category Setting	Recreation Category 2.		
	Use Levels 01-04	0-4 trips; 0-10 Stock		Up to 4 spot and dunnage trips only with low stock numbers (10), consistent with a low visibility trail in Recreation Category 2. Limit use to bench below Ram Lake.
	Grazing	Reported grazing, likely in zone but actually occurs closer to Purple Lake. Low vegetative productivity and resiliency and poor access to grazing at Ram lake.	Vegetation is likely at desired condition but with low productivity and low resiliency. Limit trampling in fen.	Unsuitable, prohibit grazing.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Campsites	Ram Camp site causing sediment entry into Purple Creek, not meeting BMPs.	All campsites meet BMPs.	No stock camps.
4. Purple Bench				
Destination: Lake Virginia	Access	PCT observed Trail Class 3, generally stable. Use trail PPB14 (see Ram Destination). Camp access routes generally dry/stable.	Prevent expansion of new use trails.	Prohibit use of use trail past grazing zone (PPV14) to Franklin, Glennette Lakes.
	Recreation Category Setting	Recreation Category 2, low to moderate opportunities for solitude along primary trail corridor, moderate opportunities for solitude while camping.	Maintain moderate opportunities for solitude for camping.	
	Use Levels 01-04	0-4 trips; 0-24 stock		Up to 10 spot and dunnage trips. Consistent with high use corridor Recreation Category 2. Encourage use shift from Purple to Virginia. Use of area for occasional all expense trips and traveling trips.
	Grazing	Low productivity, thin easily fragmented sod, highly erosive soils, and low resiliency. Sod fragmentation, decreased vegetative cover. Reported grazing: 24/60/0.	Increase and maintain vegetative soil cover and litter.	Allow 20 stock nights of grazing.
	Campsites	Low to moderate impacted sites.	Maintain low impact sites.	Designate 2 stock camps in durable areas.
5. Purple Bench				
Destination: Duck Lake / Pike Lake / Duck Creek	Access	Duck Pass observed Trail Class 3, heavy stock and public use, generally stable. Duck Pass to Deer Lake Trail observed Trail Class 1, lightly defined, rocky awkward conditions.	Ensure stability of Duck/Deer trail without adding structural development.	Duck Pass to Deer Lake Trail NSCS.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Recreation Category Setting	Recreation Category 3. Camping closure in effect at outlet.		Maintain camping closure, allow commercial pack stock use at Duck Creek.
	Use Levels 01-04	MLPO: 6-21 trips; 18-87 stock Reds: 0-1 trips; 0-5 stock		Allow up to 20 spot and dunnage trips to Duck Lake, consistent with Recreation Category 3, no overnight stock. Allow up to 6 trips to Pika Lake with no more than 10 stock. Allow low use for all expense trips below outlet area.
	Grazing	Minor and localized reduced cover especially on access slopes between lake-side trail and benches to the north-northeast of lake. Overall moderate productivity. Streams and meadow at PFC. Reported grazing stock nights: 12/16/0, likely on benches rather than lakeshore terraces. Occupied Yosemite toad habitat in meadow along northeast shore in desired condition.	Adequate vegetative cover with desired species to protect meadow and streambanks. Maintain streams and meadow at PFC. Maintain high quality Yosemite toad habitat.	North of Duck Lake: Allow grazing, at high recent historical levels, 16 stock nights. Critical areas closed to stock entry and grazing.
	Campsites	Small capacity site at Duck Creek.	Maintain existing size of site, do not allow site to expand.	Designate 1 stock camp below Duck Lake outlet along Duck Creek. Do not hold more than 20 stock. No stock camp at Pika Lake.
6. Silver Divide				
Destination: Grassy Lake	Access	Minnow Creek Trail: observed Trail Class 3, slight to moderate erosion & degraded conditions in steep areas. Slight instability, diversions at creek crossing. Use trail SIL16 accesses grazing in box canyon above Grassy Lake, Resource Rating 3,	Keep use light on use trail SIL04, to prevent degradation.	Stabilize access on use trail SIL16.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		moderate to severe headcutting, incision. Brave Lake use trail (SIL04) Recreation Category 2, lightly defined at first, but more evident closer to lake. Many small ephemeral streams, some slight-moderate risk factors.		
	Recreation Category Setting	Recreation Category 2, high impacts from recreation use, primarily grazing and campsite impacts. Access from west and east, popular for traveling and all expense trips.	Recreation Category 2. Moderate impacts that are not easily noticeable.	Cap use levels for all expense trips and consider reductions if high impacts to sites persist. One night stay only in Silver Divide.
	Use Levels 01-04	D&F: 0-2 trips; 0-20 stock MLPO: 0-1 trips; 0-3 stock		Up to 8 spot and dunnage trips. D&F= 2 trips. MLPO= 4 trips. HS=2 trips
	Grazing	Moderate altered vegetative composition, active unstable banks, active headcuts, reduced vegetative vigor, abundance, and cover. Stream reaches assessed are functioning at risk with downward trend. Reported grazing: 306/447/199 stock nights. Occupied Yosemite toad habitat has associated hydrologic instability associated with headcuts. Unstable access to box canyon above Grassy Lake.	Stream moves toward PFC. Provide adequate vegetative cover, composition, and vigor to provide watershed protection, to trap and hold sediment, and to stabilize stream banks. Reduce sediment input (upstream trail erosion sites are the likely sources). Stabilize and maintain toad habitat area hydrologic condition. Stable conditions along access to box canyon.	Grassy Lake Meadow, rest from grazing. Establish both Stream Condition Inventory (SCI) and vegetation baseline monitoring; re-assess within 5 or fewer years with repeated monitoring to determine if grazing may be resumed. Limit use of grazing in Box Canyon to 2 trips to limit use of trail.
	Campsites	BMP analysis completed on three stock holding campsites. One site, on northeast shore of lake is a good location for stock holding. Other two, one on the northwest side of lake, and one along the inlet stream south of the meadow, do not meet BMPs.	All campsites should meet BMPs.	Designate 2 stock camps, over 100 feet from water and the meadow. The designated site along the inlet stream needs to be contained so it does not contribute sediment to water.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
7. Silver Divide				
Destination: Chief / Papoose / Lone Indian / Squaw Lakes	Access	Minnow Creek Trail: observed Trail Class 3, generally stable, confusing creek crossing at Papoose. Goodale Pass Trail observed Trail Class 2, Resource Rating 2, awkward, unstable in places. Goodale Pass use trail SIL15, steep, awkward with erosion near Lake of Lone Indian. Papoose to Lone Indian use trail SIL17 steep, eroded, parallels creek - short cuts system trail.	Increase stability of system trails. Reduce impacts on riparian from use trail.	Only approve use of Goodale use trail SIL15 during snow blockage on system trail. Prohibit use of use trail SIL17.
	Recreation Category Setting	Recreation Category 2 along a primary trail corridor (PCT/JMT).	Allow for moderate to high use and contained impacts along trail corridor.	
	Use Levels 01-04	HSPS: 0-3 trips; 0-20 stock MLPO: 0-1 trips; 0-7 stock		Up to 6 spot and dunnage trips to two operators. Allow occasional use of Chief Lake for all expense trips. Use of area for all expense/traveling trips with a one night stay only in Silver Divide.
	Grazing	Reported grazing: 9/0/0 stock nights. Fragmented sod, reduced vegetative cover, associated with trailing and trail erosion especially between Warrior Lake trail junction and Grassy Lake Meadow, also including the along the trail to Peter Pande on the Minnow Creek side of the hill. Occupied Yosemite toad habitat at Papoose, Lone Indian, and Squaw Lakes meadows in desired condition.	Increase vegetative cover, decrease bare soils and erosion, especially at the outlet of Squaw Lake, in the meadows between the Warrior Lake junction and Papoose Lake, at the inlet side of Papoose, between Papoose and Lone Indian and between Lone Indian and Grassy Lake Meadow. Maintain high quality Yosemite toad habitat.	No grazing. Unsuitable.
	Campsites	Few campsite with moderate	Contain campsites and insure	Designated 1 stock camp at

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		impacts.	proper distance from water.	Chief Lake.
8. Silver Divide				
Destination: Wilbur May Lake	Access	Wilbur May Trail observed Trail Class 2, Resource Rating 1, stable with current use.	Maintain current condition.	No remedy needed if use levels remain low.
	Recreation Category Setting	Low capacity for camping.		Limit party size of 8 persons suitable to capacity of camping.
	Use Levels 01-04	MLPO: 0-2 trips, 0-18 stock HSPS: 0-2 trips, 0-18 stock		Up to 4 trips shared between two operators. Olive, Long Canyon, Wilbur May, Grassy, Jackson will be managed as a zone for westside packers.
	Grazing	No grazing requested.	Management direction is no grazing approved where not requested.	No grazing approved.
	Campsites	No stock camp.	No stock camp.	No stock camp.
9. Silver Divide				
Destination: Olive Lake	Access	Olive Lake Trail observed Trail Class 2, Resource Rating 1, generally stable with low risk factors. Use trail SIL08 grazing access to benches, lightly defined, Resource Rating 1.	Maintain existing trail conditions without excessive structural development.	No remedy needed if use levels remain low.
	Recreation Category Setting	Recreation Category 2 moderate to high opportunities for solitude. Low capacity for camping.	Maintain existing conditions.	
	Use Levels 01-04	0-2 trips, 0-40 stock		Up to 6 spot and dunnage and use of area for all expense/traveling trips no more than 2 times a year. Olive, Long Canyon, Wilbur May, Grassy, Jackson will be managed as a zone for westside packers.
	Grazing	At Olive Lake: Very small and	Olive Lake: Protect wet	Olive Lake: Unsuitable, prohibit

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		wet meadows on Olive Lakeshore. Benches west of Olive Lake: Rocky, moist to dry meadows. No water, soil, or vegetation changes observed.	meadows along lakeshore. Benches west of Olive Lake: Maintain current good vegetation condition and good soil condition.	grazing. Benches west of Olive Lake: Allow grazing 40% vegetation utilization for 114 stock nights.
	Campsites	Stock holding site east of Olive Lake near the outlet does not meet BMPs because the hitch-line is within 10 feet of the stream. Site at inlet site meets BMPs.	All campsites should meet BMPs.	Obliterate stock holding site at outlet. Designate 1 stock camp.
10. Silver Divide				
Destination: Peter Pande Lake	Access	Peter Pande Trail, observed Trail Class 2, Resource Rating 4, degraded, incision, affecting hydrology. Peter Pande Tarn use trail (SIL13) lightly used, slight incision in meadows, risk factors. There are areas of Peter Pande Tarn with fen characteristics.	Reduce rate of degradation. Limit fen trampling.	Limit stock numbers until trail can be repaired or rerouted. Approve use trail SIL13
	Recreation Category Setting	Recreation Category 2, off primary trail. High impact along trail to lake.	High opportunities for solitude. Improve trail.	Limit party size to 10/15.
	Use Levels 01-04	0-4 trips; 0-26 stock		Until Peter Pande Trail is repaired, allow 1 trip each to MLPO and HSPS. Allow up to 3 trips each when trail is fixed.
	Grazing	Fragmented sod, low productivity, low resiliency, active headcuts, meadow damage along access trail. Reported grazing: 92/14/26 stock nights. Yosemite toad critical area below Peter Pande Lake in desired condition. Un-named tarn on bench above Peter Pande Lake has Occupied Yosemite toad	Stabilize headcuts, increase vegetative cover. Maintain high quality Yosemite toad habitat.	

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		habitat in meadow with observed trampling and chiseling impacts.		
	Campsites	Limited camping. One stock-related site (likely spot/dunnage) does not meet BMPs; sediment reaching lake.	Campsites meet BMPs.	No stock camps.
11. Silver Divide				
Destination: Long Canyon	Access	Long Canyon Trail to Beetlebug Lake (last 1/2 mile) has large jump offs, awkward, has sections that are incised and unstable.	Prevent further degradation.	Trail to Beetlebug Lake(last 1/2 mile) NSCS.
	Recreation Category Setting	Recreation Category 2, high opportunities for solitude.	Maintain high opportunities for solitude.	
	Use Levels 01-04	Minarets: 0-2 trips, 0-34 stock. Use of area for occasional all expense/traveling trips.		Up to 4 spot and dunnage trips per year and use of area for all expense/traveling trips. Olive, Long Canyon, Wilber May, Grassy, Jackson will be managed as a zone for westside packers.
	Grazing	Stream was assessed to be at PFC. Moderate productivity. Some trampling of springs, headcuts in spring channels, and a few headcuts within dry forested area near meadows . High utilization (estimated near 40%) in some portions of the meadow in 2004 with 140 reported stock nights. Grazing reported 2001-2004: 130/68/0/140.	Allow headcuts in spring and stream channels to revegetate and stabilize. Protect springs and wet areas.	Allow grazing. 130 stock nights available. Springs are critical areas where negligible trampling is allowed.
	Campsites	One stock holding site below Beetlebug Lake does not meet BMPs, too close to stream and meadow.	All campsites must meet BMPs.	2 stock camps: 1 at the lower part of Long Canyon, 1 approximately one mile up the canyon.
12. Silver Divide				

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
Destination: Jackson Meadow	Access	Minnow Creek Trail, Trail Class 3, generally stable. Pick & Shovel Mine use trail (SIL14) low risk factors, lightly defined but evident to old cabin.		
	Recreation Category Setting	Recreation Category 2 along primary trail corridor. Impacts to riparian, and risk factors. Used for all expense/traveling trips.		One night stay only in Silver Divide.
	Use Levels 01-04	none reported		All expense and use of stock camp for 2 day spot and dunnage trips, with clients dropped elsewhere. Allow up to 5 spot and dunnage trips (MLPO). Olive, Long Canyon, Wilber May, Grassy, Jackson will be managed as a zone for westside packers.
	Grazing	Vegetative composition varies from high to low similarity to desired composition. Reduced vegetative cover, especially associated with active headcuts and channel incisement. Reduced vegetative cover, vigor associated with stock trails in upper end of meadow along Minnow Creek. Active headcuts and stream channel incision with collapsing banks in upper meadow. Two of 3 stream reaches assessed were rated functional at-risk with a downward trend. Lower west portion of meadow has vegetation and soil condition near desired condition. Reported grazing: 318/168/363 stock nights.	Increased vegetative cover, especially in the vicinity of active headcuts and along streambanks. Streams and meadow move toward PFC.	Develop an annual grazing management plan for Jackson meadow. Establish SCI and vegetation monitoring to confirm trend. Allow grazing in western portion between trail and creek (15 acres), 300 stock nights available. Enforce range readiness. Limit to one night grazing per trip.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Campsites	One stock holding campsite on the east side of Jackson Meadow is not meeting BMPs. It is 70 ft from water and rills are carrying sediment from the site to water.	All campsites should meet BMPs.	Designate 3 stock camps on west side of meadow, both at least 100 feet from water. Rehabilitate sites on east side of meadow near Lagoon Lake.
13. Silver Divide				
Destination: Lost Keys Lake	Access	Lost Keys Trail observed Trail Class 1, lightly defined, with some slight erosion.	Maintain trail stability without adding substantial structures/development.	Managing low use at destination.
	Recreation Category Setting	Recreation Category 1. Low impact and low use.	Maintain low use/impact.	
	Use Levels 01-04	None reported.		Up to 2 trips spot and dunnage.
	Grazing	None reported.		
	Campsites	No stock camps.	No stock camps.	No stock camps.
14. Cascade Valley				
Destination: Cascade Valley	Access	Fish Creek Trail observed Trail Class 3, generally stable. Camp access trail at Second Crossing use trail CAS04 stable, dry. Grazing access to meadow at 2nd crossing has moderate to severe impacts and high risk factors.	Reduce resource impacts of use trails.	Allow use of use trail CAS04 to campsite only. Prohibit grazing access use trail.
	Recreation Category Setting	Recreation Category 2 along primary trail corridor.	Maintain use levels consistent with Recreation Category 2 along primary trail corridor.	
	Use Levels 01-04	MLPO: 3-4 trips; 4-28stock Reds: 0-1 trips; 0-2 stock		Up to 10 spot and dunnage trips to two operators and use of areas as all expense/traveling trips.
	Grazing	Meadows near Purple and Minnow Creeks have been closed to grazing and exhibit low vegetative cover and altered vegetative composition. There are locations with understory	Retain annual vegetative growth to maximize vegetative growth, vigor, and restoration potential at confluence of Purple Creek and Minnow Creek. Maintain existing conditions at Third	Rest every other year. 20 stock nights at Purple Creek/Minnow Creek. Allow grazing, 214 stock nights in zone (between Sharktooth and Third), with one night grazing per trip. Allow

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		<p>vegetation and available forage for grazing between and including Sharktooth Creek confluence and Third Crossing. High gradient wetland at Second crossing is at risk due to stock use trails channeling water and associated headcuts. Meadow vegetation is moderately affected by trampling, compaction and reduced in size by a landslide at Island Crossing. Reported stock nights in zone: 293/271/447. Second Crossing grazing area is a large fen. Third Crossing: Small stream through meadow assessed to be in PFC. Fish Creek is incised through the meadow. A large portion of the meadow never reaches range readiness and has fen characteristics. Some sod fragmentation and spring trampling.</p>	<p>Crossing. Improve vegetative cover and vigor at Island Crossing. Maximize vegetative growth and retention at Second Crossing. Third Crossing: Reduce spring trampling and sod fragmentation, especially in wet portions of the meadow.</p>	<p>grazing and limit planned grazing at Third Crossing, 52 stock nights and Island Crossing, 12 stock nights, remainder of grazing is in the Cascade Valley Grazing Zone between and Sharktooth Confluence and Third Crossing. Prohibit grazing at 2nd crossing. Third Crossing: Allow grazing. 52 stock nights available. Avoid very wet areas and fragile Fish Creek streambanks.</p>
	Campsites	<p>Campsite at Third Crossing large total area and high level of impact. Second Crossing campsite moderate impact close to trail.</p>	<p>Reduce impacts at campsites at both Second and Third Crossing. Reduce overall total area of Third Crossing.</p>	<p>Designate 3 stock camps in Cascade Valley including Third Crossing. Designate 1 stock at Second Crossing.</p>
15. Cascade Valley				
Destination: Lower Fish Creek	Access	<p>Use trail issues at Iva Belle Hot Springs, mostly from public, but exacerbated by spot/dunnage drops at springs. Use trail CAS01 to Pond Lily Lake, lightly defined, Resource Rating 1, mostly in low risk factor areas.</p>	<p>Reduce contributing impacts at Iva Belle Hot Springs. Keep current trail stability of use trail CAS01 without increasing structures/development.</p>	<p>Prohibit commercial stock use at Iva Belle Hot Springs. Approve use trail CAS01 with low use levels.</p>
	Recreation Category Setting	<p>Recreation Category 2. Use concentrated at Iva Belle Hot</p>		

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		Springs, low opportunities for solitude at Iva Belle.		
	Use Levels 01-04	HSPS: 0-2 trips, 0-12 stock Reds: 13-22 trips, 86-149 stock To Pond Lily Lake: 0-1 trips, 0-6 stock		No spot and dunnage trips to Iva Belle Hot Springs (Sharktooth Creek camp okay). Up to 20 trips to other destinations in Lower Fish Creek. Maintain low use to Pond Lily Lake.
	Grazing	Grazing currently not allowed near Iva Bell Hot Springs. Fox Meadow/Island Crossing reported grazing 40/159/99. Moderate vegetation composition alteration.		Prohibit grazing at Iva Bell Hot Springs. Fox Meadow limit to 12 stock nights in meadow and 100 stock nights in zone. Remove deteriorated drift fence.
	Campsites			Designate 3 stock camps. 2 stock camps in vicinity of Island Crossing and 1 at Sharktooth Creek.
16. Upper Fish				
Destination: Tully Hole	Access	McGee Pass Trail & PCT primary access, both observed Trail Class 3, stable. Use trail UFC01 accesses camp on north side of Tully Hole. Generally stable, with one creek crossing.	Ensure camp access trail remains stable, if camp approved.	Prohibit use trail on north side of Tully Hole.
	Recreation Category Setting	Recreation Category 2 along primary trail corridor. Low capacity for camping.	Maintain use levels consistent with low capacity of the area.	
	Use Levels 01-04	0-2 trips; 0-12 stock		Up to 6 spot and dunnage trips. Manage for occasional use of stock camp.
	Grazing	Vegetation exhibits good vigor, mid-seral composition, with low cover. Moderate to high productivity and resiliency. Stream assessed to be functional at-risk with a non-apparent trend.	Maintain or improve vegetation composition. Stream should move toward PFC.	Allow grazing, 72 stock nights available.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		Grazing reported: 30/105/0.		
	Campsites	Stock holding campsite at east side of Tully Hole Meadow does not meet BMPs; within 50 feet of water.	Campsites should meet BMPs.	Designate 1 stock camp.
17. Upper Fish				
Destination: Horse Heaven	Access	McGee Pass Trail observed Trail Class 3, primary access mostly stable.	Ensure camp access trail is stable.	
	Recreation Category Setting	Recreation Category 2. Along main trail corridor.	Maintain use level consistent with Recreation Category 2 along primary trail.	
	Use Levels 01-04	MLPO: 0-3 trips; 0-9 stock McGee: 2-6 trips; 19-36 stock		Up to 9 spot and dunnage trips to two operators and use of area as all expense traveling trips.
	Grazing	Vegetative cover and composition mid-seral. Some hummocks and stream bank trampling, but stream at PFC. Marshy area has extensive hoof punching. Reported grazing: 156/56/36 stock nights.	Vegetation is at desired condition. Stream should remain at PFC. Reduced sod fragmentation in marshy area.	Allow grazing, 65 stock nights estimate for wet years and 150 in normal and dry years. Replace drift fence with drop fence.
	Campsites	High impact stock camp, large area of impact, fence present.	Reduced size of stock camp impact.	Designate 2 stock camps, contain impacts and reduce size of northern site. Establish a secondary site at southeast end of meadow.
18. Upper Fish				
Destination: Tully Lake	Access	McGee Pass Trail primary access, stable. Two spur trails to lake, one at outlet, one from northeast -- both have risk factors, unclear which is managed as system. Outlet trail use trail UFC08, Resource Rating 2.5 with many risk factors	Reduce multiple routes to lake. Stabilize camp access trail.	Define one route from McGee Pass Trail north/east to lake. Make this the system trail (Trail Class 2), stabilize at high risk areas. Remove sign from outlet trail to discourage use.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		does not access main pack camp. Trail from northeast, not developed, moderate risk factors, accesses pack camp.		
	Recreation Category Setting	Recreation Category 1, moderate to high opportunities for solitude	Manage for high opportunities for solitude with use levels consistent with Recreation Category 1.	
	Use Levels 01-04	0-3 trips, 0-16 stock		Up to 4 spot and dunnage trips consistent with a Recreation Category 1 area. Reduce use if trail access issues not improving.
	Grazing	None reported or requested.	Management direction is no grazing approved where not requested.	No grazing approved.
	Campsites	Low capacity camp sites.	No stock camp.	No stock camp. Party size limit of 8 people.
19. Upper Fish				
Destination: Upper Fish	Access	McGee Pass Trail Primary access, stable. Lee Creek Trail observed Trail Class 2, Resource Rating 5, severe degradation in meadows in trail corridor. Cecil Lake use trail UFC02 from Lee Lake, low-angle, through meadows near lake, but slight impacts. Accessed from Lee Creek Trail. Use trail UFC07 to Red and White Lake, short trail lightly defined.	Remove use (and grazing) from the Lee Creek trail. This precludes use of sue trail UFC02 to Cecil Lake. Ensure that UFC07 does not become more defined or degraded.	Lee Creek trail NSCS. UFC02, prohibited. Prohibit use on Red and White use trail.
	Recreation Category Setting	Recreation Category 2 along main trail corridor. Use of this area as overnight location for long spot and dunnage trips over McGee pass.	Manage for moderate opportunities for solitude along trail corridor and high opportunities while camping. Manage for no visible trail to Red and White Lake.	

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Use Levels 01-04	6-14 trips, 63-109 stock		Up to 18 spot and dunnage trips. Low to moderate use of stock camps for traveling trips or overnight spot and dunnage trips.
	Grazing	See Horse Heaven, and Tully Hole. Tully Lake Meadow, adjacent to Upper Fish Creek near trail junction to Tully Lake. High-seral vegetation with localized sites of altered vegetation, primarily associated with stock watering access from trail to and including the right bank of Fish Creek. Impacts to riparian vegetation associated with active erosion and incisement of access trail to Lee and Cecil Lakes include reduced cover, bare areas, altered vegetative species composition, and adjacent water table lowering and water capture. High elevation meadows immediately west of McGee Pass exhibit low productivity and low resiliency.	Vegetation overall at desired condition, with localized moderate to severe, mostly associated with access and trailing impacts. Trails should not capture surface or ground water flow.	Allow grazing in Tully Lake Meadow 60 stock nights in lower most meadow between system trail and Fish Creek. Prohibit grazing at meadows near Lee and Cecil Lakes, the Lee Cecil trail junction meadow, and the higher elevation meadows immediately west of McGee Pass.
	Campsites	Moderate impacts at stock camps in area. One site has some development.	Reduce impact and development at campsites.	Designate 3 stock camps.
20. McGee				
Destination: Big McGee Lake	Access	McGee Canyon Trail primary access, generally stable. Camp access at Big McGee Lake Trail Class 2, former Hopkins Pass Trail, slight incision, moderate risk factors. Hopkins Pass trail not maintained many years, still defined, steep, rocky, no risk factors. "CCC Camp" trail access	Ensure stability on camp access trails. Maintain primitive condition of Hopkins Pass Trail.	Add Big McGee camp trail to system (Trail Class 2) ensure stable alignment. (MCG08). Hopkins Pass Trail Class 1, NSCS.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		(MCG08) Resource Rating 2, steep, but dry/rocky, low risk factors.		
	Recreation Category Setting	Recreation Category 2 along primary trail corridor.	Big McGee Lake: Manage for moderate opportunities for solitude while hiking and camping.	
	Use Levels 01-04	5-15 trips, 16-60 stock		Up to 20 spot and dunnage trips consistent with recreation category area along primary trail corridor. Monitor occupied campsites and reduce use if crowding is facilitated by pack stock dunnage trips.
	Grazing	Low productivity, low resiliency. Stream was assessed to be functional at-risk with a non apparent trend in 2001. Reported grazing in Big McGee Meadow 7/0/0. Occupied Yosemite toad breeding habitat in desired condition.	Vegetation is at desired condition. Stream channel needs to move toward PFC. Maintain high quality Yosemite toad habitat.	Allow grazing. 20 stock nights available. Critical areas closed to stock entry and grazing.
	Campsites	Concentration of campsites due to low capacity of accessible areas. "CCC Camp" has concerns with access.		Designate 1 stock camp. Relocate "CCC Camp".
21. McGee				
Destination: Grass Lake	Access	Steelhead Lake Trail, observed Trail Class 2, Resource Rating 2, lower section in steep riparian. Then Grass Lake Spur observed Trail Class 2, Resource Rating 1, short, flat, stable.	Keep Grass Lake Trail stable.	
	Recreation Category Setting	Recreation Category 2 along lower use trail corridor.	Low to moderate use and impacts at camping areas. Moderate to high opportunities for solitude.	

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Use Levels 01-04	3-10 trips, 8-46 stock		Up to 10 spot and dunnage trips consistent with a Recreation Category 2 off of primary trail corridor.
	Grazing	Wet meadow associated with lake remains wet throughout summer (fen characteristics). Occupied Yosemite toad habitat in desired condition.	Vegetation is at desired condition. Maintain high quality fen and Yosemite toad habitat.	Unsuitable, prohibit grazing.
	Campsites		No stock camp.	No stock camp.
22. McGee				
Destination: Meadow Lake (Golden)	Access	Use trail MCG04, Resource Rating 3, goes west from Steelhead Trail toward Golden Lake - high risk factors (meadows, seeps, creeks), ill-defined, steep with many risk factors above Meadow Lake.	Prevent impacts to high risk areas near Meadow Lake. Prevent further development of use trails toward Golden Lake.	Allow use on MCG04 only to Meadow Lake. Stabilize or reroute where possible. Keep use low. Prohibit use to Golden Lake.
	Recreation Category Setting	Recreation Category 2. High opportunities for solitude, low recreation impacts.	Maintain high opportunities for solitude.	
	Use Levels 01-04	0-2 trips, 0-6 stock		Up to 2 trips with no more than 6 stock. Manage for use not occurring every year.
	Grazing			
	Campsites	No stock camp.	No stock camp.	No stock camp.
23. McGee		(Including a portion of Baldwin Canyon)		
Destination: McGee Canyon	Access	McGee Pass Trail, observed Trail Class 3, some moderate impacts to Yosemite toad habitat and meadow/hydrology at Martin's Meadow. Use trail MCG03 Accesses Campsite at Round Lake. Causing	Keep use to most stable trails. Stable trail at Martin's Meadow, with reduced effects on Yosemite toad and hydrology. Ensure trail is in good location and stable to approved site. Stabilize trail and resource	Keep stock on trail, stabilize trail. Reroute use trail MCG03 to Round Lake site. Baldwin Trail: Trail Class 1 NSCS above pond, (1/2 mile above Cutoff junction). Encourage use on Baldwin

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		disturbance to meadow from trampling. Baldwin Canyon Trail, observed Trail Class 2 to lower meadow, Trail Class 1 to mine, Resource Rating 3. Former road, degraded, rocky but generally stable to pond below meadow. Above, overgrown, severe incision, affecting Yosemite toad habitat. Baldwin Cutoff use trail MCG02, Resource Rating 3, impacts at creek crossing, duplicates McGee Pass trail, accesses camp from both north and south.	degradation on upper Baldwin Trail. Keep stock to one trail or other on Baldwin Cutoff or McGee Canyon.	Canyon Trail and Baldwin Cutoff rather than McGee Pass Trail to just above Steelhead junction. Stabilize creek crossing on Baldwin Cutoff.
	Recreation Category Setting	Recreation Category 2 along primary trail corridor. Steep and long canyon accessing Fish creek drainage and multiple destinations. Baldwin Canyon: Recreation Category 1.	Manage for moderate opportunities for solitude while hiking and moderate to high opportunities for solitude while camping.	
	Use Levels 01-04	McGee Canyon: 2-9 trips, 11-65 stock Round Lake: 7-20 trips, 68-159 stock Baldwin: 0-2 trips, 0-19 stock		Up to 20 spot and dunnage trips in McGee Canyon. Use level is not expected to cause crowding or overuse of any destinations, as use will disperse. Round Lake: Allow 12 spot/dunnage trips until access to camp is improved, then allow up to 20 spot and dunnage trips.
	Grazing	All meadows: Little to no grazing reported 2001-2003 due to Yosemite Toad Habitat Management. Chute meadow: Vegetation in high-seral status. No recent use. Occupied Yosemite toad habitat in desired condition. Much of the meadow never reaches range readiness.	Vegetation remains at desired condition. Hydrologic and soil condition should remain good. Protect wet areas from trampling. Maintain high quality Yosemite toad habitat in Chute Meadow. Martin's Meadow: Vegetation is at desired condition. Stream should move toward proper	Allow grazing, 30 stock nights at Chute Camp Meadow in wet years (150% of normal precipitation at nearest snow sensor site), 90 stock nights in normal or dry years. Critical areas closed to stock entry and grazing. No grazing at Cable Meadow. Martin's Meadow:

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		No known soil or hydrologic effects. Cable Meadow, a turn-around point for day rides, is flooded by a beaver pond. No grazing reported. Martin's Meadow: Vegetation is mid-seral to high-seral. Stream incisement and severe active headcuts (4 feet deep) in lower meadow. Headcuts possibly trail related. Reported grazing: 5/0/0. Occupied Yosemite toad habitat in desired condition. Baldwin Canyon: No grazing reported. Round Lake: Martin's meadow sediment deposition, mid-seral to low-seral vegetative status. Reported grazing: 15/0/0.	functioning condition, with headcuts stopping their advance. Maintain high quality Yosemite toad habitat. Baldwin Canyon: Vegetation is at desired condition. Round Lake: Stable soils, increased vegetative cover and improved composition toward high seral.	Rest from grazing until headcuts stabilize. Stabilization will likely require active rehabilitation, including structures. Critical areas closed to stock entry and grazing. Baldwin Canyon: Prohibit grazing due to access issues (gullied trail). Re-assess if access issues resolved. Round Lake: Unsuitable, prohibit grazing.
	Campsites	Round Lake: stock holding camp within 15 feet of creek, does not meet BMPs.	All campsites should meet BMPs.	Designate 1 stock camp at Round Lake. Improve access and BMP compliance with Round Lake campsite.
	Other Issues	Round Lake: Occupied Yosemite toad habitat with observed sediment deposition problems related to trail impacts at Martins Meadow.	Round Lake: Restore high quality Yosemite toad habitat.	Stabilize Martin's Meadow headcuts and reduce or eliminate unacceptable sediment transport.
24. McGee				
Destination: Steelhead Lake	Access	Steelhead Trail observed Trail Class 2, Resource Rating 2, lower section in steep riparian, above two routes because of poor alignment on a reroute. Steep, erosion, but mostly dry slopes.	One stable route to Steelhead Lake.	Keep use on western of two routes to Steelhead Lake, stabilize with structures.
	Recreation Category Setting	Recreation Category 2 off main trail corridor. Moderate to high opportunities for solitude. Low capacity for camping.	Manage for low to moderate use levels to maintain opportunities for solitude and not facilitate crowding.	

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Use Levels 01-04	2-12 trips, 8-70 stock		Up to 16 spot and dunnage trips. Manage so not more than 1 party at one time.
	Grazing	None reported or requested.	No grazing.	No grazing.
	Campsites	Two spot/dunnage camps where BMPs were evaluated. One caused sediment to reach Steelhead Lake and does not meet BMPs.	All campsites should meet BMPs.	No stock camp. Spot and dunnage sites must meet BMPs.
	Other Issues	Moderate downed firewood available around lake.		Modify elevational closure to allow campfires at Steelhead Lake.
25. Convict				
Destination: Cloverleaf Lake	Access	Convict Canyon trail destroyed by landslides, not passable to stock, difficult to hikers. All destinations in Convict Canyon accessed by Laurel Lake Trail, observed Trail Class 2, Resource Rating 3, stable, dry until above Genevieve Lake, moderate impacts near Edith Lake, along stream. Mapped system not consistent with ground. Two trails from near Edith Lake to Cloverleaf Lake, both with high resource impacts and risk factors.	One stable trail from Edith Lake to Cloverleaf Lake. Correct map and inventory inconsistencies.	Keep commercial stock to system trail on south/east side of creek. Limit stock numbers until trail can be repaired. Designate use trail to Genevieve via Edith as system trail. Abandon trail east of Genevieve Lake. Designate Convict Creek Trail below Mildred Lake as NSCS.
	Recreation Category Setting	Recreation Category 1, off primary trail, high opportunities for solitude.	Manage for high opportunities for solitude and infrequent use.	
	Use Levels 01-04	MLPO: 0-2 trips, 0-12 stock McGee: 2-10 trips, 6-103 stock		Up to 4 (2 McGee/2 MLPO) spot and dunnage trips and party size limit of 8 head of stock to maintain low use, low impact to trail.
	Grazing	Inlet meadow at high-seral	Vegetation is at desired	No grazing.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		vegetative status. Localized trail impacts along lakeshore terraces include compaction and reduced vegetative vigor and reduced cover. Never reaches range readiness. None reported. Occupied Yosemite toad habitat in desired condition.	condition. Maintain high quality Yosemite toad habitat.	
	Campsites	No stock camp.	No stock camp.	No stock camp.
	Other Issues			
26. Convict				
Destination: Genevieve / Edith Lakes	Access	See "Cloverleaf" for general Convict trail info. Laurel-Genevieve Trail observed Trail Class 2, Resource Rating 3 mod resource impacts at Edith Lake, and creek crossings. Use trail CON04 accesses camp at Genevieve Lake outlet. Slight meadow impacts, mod risk factors. Trail on map east of Genevieve Lake unmaintained, abandoned trail.		Designate use trail to Genevieve Lake via Edith as system trail. Abandon old system trail east of Genevieve. Prohibit use of CON04 (camp not approved).
	Recreation Category Setting	Recreation Category 1. Not a primary trail. Low use and high opportunities for solitude.	Maintain low end of recreation Category 2 conditions, moderate to high opportunities for solitude, some impacts at primary campsites.	Change to Recreation Category 2 at Genevieve and Edith Lakes.
	Use Levels 01-04	MLPO: 0-4 trips, 0-30 stock McGee: 0-5 trips, 0-45 stock		Up to 20 trips for Edith Lake Genevieve Lakes: 6 trips to MLPO, 14 trips to McGee.
	Grazing	Two ponds and adjacent marsh near stock holding site. Associated wet meadow remains wet season long. Reported grazing: 0/14/0. Occupied Yosemite toad habitat at Edith	At desired vegetative condition. Maintain high quality Yosemite toad habitat.	Unsuitable, prohibit grazing.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		Lake inlet meadow with observed trampling and chiseling impacts.		
	Campsites	Moderate impact at campsites, particularly Genevieve Lake.	Reduce impacts at campsites and insure proper distance form water.	Designate 1 stock camp at Edith Lake and 1 at Genevieve Lake.
	Other Issues			Modify elevation closure to allow campfires at Genevieve and Edith Lakes.
27. Convict				
Destination: Dorothy Lake	Access	See Cloverleaf Destination for general Convict trail info. Access to this destination via Laurel Lake Trail, then segment of Convict Creek Trail. Camp accessed by Dorothy Lake Spur, observed Trail Class 1.5, Resource Rating 2, slight incision, moderate risk factors. Bighorn use trail CON07 ill-defined, high risk factors.	Ensure stability of Dorothy Spur. Prevent expansion of impacts on Bighorn trail.	Prohibit use of Bighorn Lake use trail. Designate Convict Creek Trail below Mildred Lake as NSCS.
	Recreation Category Setting	Recreation Category 2 off primary trail.	Manage for moderate to high opportunities for solitude.	
	Use Levels 01-04	1-3 trips, 2-20 stock		Up to 4 spot and dunnage trips.
	Grazing	None reported. Fragmented sod and reduced vegetative cover near inlet. Small lakeshore meadows. Thin sod, highly erosive soils.	Overall vegetation is at desired condition. Soil erosion should not be accelerated, reduce sod fragmentation.	Unsuitable, prohibit grazing.
	Campsites	Moderate to high impacted campsites and high density of sites at outlet of lake.		No stock camps.
28. Margaret				
Destination: Margaret	Access	Margaret Lake Trail observed Trail Class 3, Resource Rating 2	Reduce instability around Rainbow without substantial	Relocate drift fence from Coyote Lake down to bottom of steep

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
Lakes		to Big Margaret Lake, Trail Class 2, Resource Rating 2.5 beyond Big Margaret Lake. Trail beyond Big Margaret (and around Rainbow Lake), lower development, moderate incision, diversion. Descends granite cliff band below Baby Lake, extremely awkward. Silver Creek trail observed Trail Class 2, Resource Rating 3.5, from Coyote Lake to Baby Lake Junction, steep, soil loss, trail damaged by grazing stock (at meadow near Coyote Lake). Silver Creek Trail below to Fish Creek, overgrown, very awkward, rarely maintained. Use trail MAR02 Saddle Mountain to Fern Lake, Resource Rating 2, lightly defined, moderate to high risk factors. Rainbow to Sedge Lake use trail MAR01, not evident, low use.	structures, development. Use trail MAR01, ensure that use trail does not become more evident. Stabilize Coyote to Baby Lake Junction trail.	section if feasible. Stabilize trail with structures after drift fence moved. Keep low use levels on Rainbow/Baby Lakes area. NSCS on system trail from Baby Lake to Silver Creek Junction. Trail between Big Margaret Lake and Rainbow Lakes is closed to commercial stock until the incised trail/meadow south of Rainbow Lakes is repaired. Prohibit use of use trails MAR01 and MAR02.
	Recreation Category Setting	Recreation Category 2.		
	Use Levels 01-04			20 spot and dunnage trips in the destination zone.
	Grazing	Coyote Lake Grazing area: Trampled throughout meadow, much of meadow does not reach range readiness, some bare areas under trees around the edge of the meadow. However, meadow appears to be in PFC. There is a headcut on the trail north of the meadow moving into the meadow. Trail between this grazing area and drift fence at	All meadows and streams should be in proper hydrologic functioning condition. Increased vegetation cover near trails and increase stability of trail tread so it is not affecting vegetation composition by diverting surface water. Trail between Coyote Lake and Coyote Lake grazing area should become more stable and soil loss should be reduced	Coyote grazing area: 62 stock nights. Frog Lake Meadow, north: 60 stock nights. Coyote Lake: Unsuitable, no grazing allowed. Fern Lake: 63 stock nights. Frog Lake Meadow: Unsuitable, no grazing allowed. Rainbow to Margaret Meadow: 127 stock nights available once trail is repaired. Until trail is repaired, no stock use of trail and

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		Coyote Lake is loose and structures are not holding in place, due to stock traveling between grazing meadow and drift fence. High reported stock use 84 stock nights. Adjacent to Coyote Lake: low productivity, high percentage of bare area, streams have low vegetation cover on banks. No use reported. Other areas (Fern, Rainbow to Margaret, Frog Lake) - All meadows have some local vegetation composition change related mainly to trails. Some headcuts associated with trail within meadows.	to near background levels.	therefore grazing is not approved.
	Campsites			Designate 2 stock camps, 1 at Coyote Lake and 1 at Big Margaret Lake.
	Other Issues	Drift fence at Coyote Meadow.		

FLORENCE/BEAR

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
1. Apollo				
Destination: Cirque Zone (including Bear Dome, Marcella)	Access	Cirque Lake observed Trail Class 1, minimal development trail. Slight incision at steep slopes, few risk factors.	Maintain current stability without changing trail character.	Low use levels. Approve use.
	Recreation Category Setting	Recreation Category 2, mostly trail-less area, high opportunities for solitude, very low impact.	Maintain trail-less, high opportunities for solitude and very low impact of area.	
	Use Levels 01-04	0-5 trips, 0-29 stock		Up to 8 spot and dunnage trips to

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
				two operators. No more than two trips a year to Orchid and Apollo.
	Grazing	Not assessed.	Not assessed.	Allow grazing 15 stock nights until assessed.
	Campsites			Designate 1 stock camp at Cirque Lake, 1 stock camp at Orchid Lake and 1 stock camp at Marcella Lake.
	Other Issues			
2. Bolsillo				
Destination: Corbett	Access	Corbett Lake Trail: observed Trail Class 2, generally stable, low-mod risk factors, meadows and creek crossings; Cunningham Lake use trail, BOL01. Kings Castle use trail BOL02.		
	Recreation Category Setting	Recreation 2 for Corbett and Recreation Category 1 other destinations.	Maintain for high and moderate opportunities for solitude.	
	Use Levels 01-04	none reported		Up to 4 spot and dunnage trips to one operator will maintain low use and high opportunities for solitude.
	Grazing	Unknown		No grazing.
	Campsites		No stock camp.	No stock camp.
3. Dutch				
Destination: Dutch/Hidden/Crater	Access	Crater Lake Trail: observed Trail Class 2.		
	Recreation Category Setting	Recreation Category 2: moderate to high opportunities for solitude, off primary trail.	Maintain for moderate opportunities for solitude.	

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Use Levels 01-04	High Sierra: 0-2 trips, 0-20 stock D&F: 0-1 trips, 0-4 stock		Up to 12 spot and dunnage trips to two operators will maintain moderate to high opportunities for solitude.
	Grazing	Not assessed.	Not assessed.	Allow grazing, 25 stock nights until assessed.
	Campsites			Designate 1 stock camp at Dutch Lake.
4. Dutch				
Destination: Thompson Lake	Access	29E57 from either north or south depending on pack station.		
	Recreation Category Setting	Recreation Category 2: High to moderate opportunities for solitude.	Maintain high to moderate opportunities for solitude.	
	Use Levels 01-04	Low recent use prior to 2001		4 spot and dunnage between two pack stations.
	Grazing	Included with Thompson Lake/Burnt Corral grazing zone		
	Campsites		No stock camp.	No stock camp.
	Other Issues	Easily accessible from Dusy-Ershim OHV road.		
5. Dutch				
Destination: Rodeo Meadow	Access			
	Recreation Category Setting	Recreation Category 2 off of primary trail; moderate opportunities for solitude.	Maintain moderate to high opportunities for solitude, low impact area.	
	Use Levels 01-04	0-2 trips, 0-14 stock		Up to 4 spot and dunnage trips to maintain moderate to high opportunities for solitude.
	Grazing	Grazing requested, no use reported 2001-2003.		Allow up to 25 stock nights.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Campsites			Designate 1 stock camp .
6. East Florence				
Destination: Shooting Star Meadow	Access	Blayney Hot Springs trail.		
	Recreation Category Setting	Recreation Category 3 along primary trail corridor. Low to moderate opportunities for solitude.	Maintain in a condition compatible with Recreation Category 3.	
	Use Levels 01-04	D&F: 0-2 trips, 0-6 stock High Sierra: 0-1 trips, 0-6 stock Lost Valley: 0-2 trips, 0-4 stock		18 spot and dunnage trips to three operators.
	Grazing	Blayney Meadow: Used as a pasture and for private recreational pack stock use. Unknown stock nights used, only 60 reported. Stream appears functional at-risk (2004) and some sections of stream have over 20% stream bank disturbance. This meadow is part private land. Double Meadow: Currently being used as a pasture, with up to 1000 stock nights estimated use (but we do not have use records). Stream is in good condition.	Blayney Meadow: Stream should move toward proper functioning condition, less than 20% stream bank disturbance on all stream reaches. Double Meadow: Maintain stream in good condition, maintain non-altered vegetation composition and continuous sod cover.	Blayney Meadow: Forest Service portion of the meadow only: 544 stock nights. Attempt to enter into an agreement with private landowners to distribute use more evenly and prevent concentrated impacts along fence lines. Double Meadow: Allow grazing. 1,250 stock nights available.
	Campsites			Designate 2 stock camps at Shooting Star Meadow.
	Other Issues	There is a population of prairie wedge grass at Blayney Hot Springs.	Maintain rare plant population.	Monitor population.
7. Hooper				
Destination: Gordon/Hooper Lakes	Access	Access is via 28E45, Trail Class 2.		

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Recreation Category Setting	Recreation Category 2, Infant Buttes is Recreation Category 1. High opportunities for solitude.	Maintain high opportunities for solitude.	
	Use Levels 01-04	0-5 trips, 0-41 stock		Up to 8 spot and dunnage trips.
	Grazing	Jackass Meadow: 135 acres (of which approximately 15 acres is in the wilderness), 7,200 feet, 75% suitable, no concerns noted by IDT, Native American basketry plant material gathering exclosure, 2025 stock nights recommended, another 120 stock nights in Forest Service administrative pasture portion. Poison: 20 acres at 6,800 feet, used as pasture; 80% suitable, some isolated vegetation composition changes, 320 stock nights. Hell Hole: 16 acres at 6,800 feet, used for brood mares and foals, 95% suitable, dominant willow community, 442 stock nights.	Maintain or improve vegetative composition.	Allow grazing: Jackass Meadow 2025 stock nights; Poison Meadow 320 stock nights; Hell Hole Meadow 442 stock nights.
	Campsites		No stock camps.	No stock camps.
8. Italy				
Destination: Hilgard Meadow	Access	Lake Italy Trail: observed Trail Class 2, Resource Rating 1, to Hilgard Meadow camps; Trail Class 1, Resource Rating 3 above, steep, meadows, riparian, moderate to high risk factors.	Prevent further degradation of trail and off-trail resources above Hilgard Meadow.	Italy Pass Trail above Hilgard NSCS.
	Recreation Category Setting	Recreation Category 2, low to moderate opportunities for solitude in peak season.	Maintain moderate opportunities for solitude.	
	Use Levels 01-04	D&F: 0-5 trips, 0-28 stock High Sierra: 1-8 trips, 3-27 stock		Up to 14 spot and dunnage trips between two operators and use of area for all expense type trips

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
				will maintain moderate opportunities for solitude.
	Grazing	Low productivity, moderate vegetation composition change. Stream is functional at-risk and there is moderate alteration of hydrologic function due to compaction, incised stream and bare soil. Reported Grazing: 0/0/66 (Was open even years only until early 2000s)	Increase late seral vegetation over time. Stream should move toward proper functioning condition, and meadow should move toward no hydrologic functional alteration.	Approve grazing: 57 stock nights. Recommend the rotation with Rosemarie continue. The rest year of rotation would help with vegetation recruitment, if not allowing increased utilization when grazed.
	Campsites	Stock holding site at Hilgard Meadow is causing minor contribution of sediment surface water. Does not meet BMPs.	All campsites should meet BMPs.	Add logs or other structures to prevent sediment from entering stream. Minor sedimentation could be reduced without moving the camp, because it is a good location with a few adjustments. Designate 2 stock camps at Hilgard Meadow.
9. Sallie Keyes				
Destination: Senger Creek	Access	Senger Creek use trail SAK08 from PCT to deer camp west of creek/meadow, Resource Rating 1, lightly defined, few risk factors. Stable with current low use.	Maintain low visibility trail.	Low use levels to maintain undefined character of trail. Do not allow trail condition to degrade.
	Recreation Category Setting	Recreation Category 1, high opportunities for solitude; low impacts.	Maintain low impacts and high opportunities for solitude.	
	Use Levels 01-04	1-9 trips, 2-64 stock		Up to 10 spot and dunnage trips. Limit use above junction into Senger creek to no more than 4 trips and or 20 stock will insure that use trails remains mostly undefined.
	Grazing	Grazing requested. Reported use 0/8/0.		In Sallie Keyes Grazing Zone, 420 stock nights allowable.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Campsites			Designate stock camp along PCT north of Senger Creek.
10. Sallie Keyes				
Destination: Sallie Keyes Lake	Access	PCT, observed Trail Class 3, but degraded with moderate resource impacts to meadows, stream crossings.	Stabilize the trail.	
	Recreation Category Setting	Recreation Category 2 along primary trail corridor. Low to moderate opportunities for solitude. Low to moderate capacity for camping.	Maintain moderate opportunities for solitude, reduce impacts of camping.	
	Use Levels 01-04	High Sierra: 0-4 trips, 0-52 stock Lost Valley: 0-1 trips, 0-2 stock		Up to 11 spot and dunnage trips by three operators and use of area for all expense and traveling trips. MTR = 4 HS = 4 LV=3
	Grazing	Minor vegetation alteration, minor decreased cover. Meadow streams in Boot Lake Meadow and "old trail" meadow near Sallie Keyes Lake are in proper functioning condition. There is some trampling of springs and stream banks, but meadow hydrologic function remains good. Grazing reported: 28/18/0.	Increase vegetation cover, increased late-seral vegetation. Protect springs from trampling and alteration of spring channel morphology.	Allow Grazing: 196 stock nights in all meadows around Sallie Keyes Lakes. Springs and very wet areas are critical areas that are not to be grazed. Manage to avoid use along old trail.
	Campsites	Two of three stock holding campsites near Sallie Keyes Meadow found to be out of compliance with BMPs.	All campsites should meet BMPs.	Close sites that do not meet BMPs. Designate 2 stock camps at Sallie Keyes Lake and insure they are setback from water to meet BMPs. Prohibit use of site at Old Trail Meadow for overnight holding of stock.
11. Sallie Keyes				
Destination: Piute Creek to SEKI Boundary	Access	Access via 27E81.		

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Recreation Category Setting	Recreation Category 2, low to moderate opportunities for solitude. Main trail for pack stock use.	Maintain use to concentrated stock locations. Increase opportunities for solitude.	
	Use Levels 01-04	D&F: 0-1 trip, 0-2 stock HSPS: 13-26 trips, 48-126 stock Muir Trail Ranch 0 trips		Up to 35 spot and dunnage trips between three operators.
	Grazing	No grazing reported or requested.	Maintain vegetation at moderate to high seral status.	Do not approve grazing.
	Campsites			Designate 1 stock camp west of boundary with SEKI.
	Other Issues			
12. Selden				
Destination: Bear Creek/PCT corridor (includes Twin Falls, Lower Bear Ck, Selden/JMT, Rosemarie)	Access	JMT/PCT observed Trail Class 3, mostly stable, but under-maintained, with moderate, isolated severe impacts at creek crossings, meadows. Seldon Pass use trail SEL04: direct line to Marie Lake from pass, does not exist. Marie Lake Cutoff SEL03, mostly undefined, potential risk factors, meadows, creek crossings. Marie Lake to Sandpiper Lake, SEL06, does not exist. Rosemarie Lake: PCT parallels east side of meadow, Trail Class 3, stable. Use trail SEL07 moderate incision, risk factors. Bear Ridge Trail, observed Trail Class 3. Bear Cr Cutoff, observed Trail Class 3. Bear Creek Trail observed Trail Class 2. Bear Creek Trail and Bear Creek Cutoff bisect populations of Mono Hot Springs evening primrose, no	Prevent development of unnecessary use trail. Keep use on system trails, which access all destinations. Maintain stability. Maintain Mono Hot Springs evening primrose populations in good condition.	Prohibit use of SEL04. Prohibit use from Twin Falls to PCT junction. Prohibit use of use trails SEL03, SEL06 and SEL07.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		reported problems.		
	Recreation Category Setting	Recreation Category 2 along primary trail corridor. Low to moderate opportunities for solitude.	Maintain moderate opportunities for solitude while camping.	
	Use Levels 01-04	D&F:2-18 trips, 11-32 stock High Sierra:7-16 trips, 40-112 stock		Up to 38 spot and dunnage trips by two operators (24 - High Sierra and 14 - D&F) and use of area for all expense/traveling trips. Rosemarie Lake: Up to 4 trips for each operator.
	Grazing	Marie: High elevation, low productivity, thin sod, erosive soils, highly visible along PCT, stream in proper functioning condition. Reported grazing: 2/0/0. Rosemarie: Moderate vegetation productivity, locally severe plant composition change. Stream in meadow was rated functional at-risk with an upward trend. Stream is widened and incised, but banks have revegetated. Slight hydrologic function alteration. Reported grazing: 18/0/38. Past management was grazing only in odd years. Bear Ridge grazing zone and Kip Camp Grazing Zone: existing condition not assessed outside of Kip Camp. Meadow with fen characteristics at Kip Camp appears to be in good condition. Reported grazing: 2001/2002/2003 is 0/34/32.	Rosemarie: Increase vegetation cover, increased late-seral vegetation. Stream and meadow continue to move toward proper functioning condition.	Marie: No grazing allowed. Rosemarie: Allow 93 stock nights of grazing with rest rotation between Rosemarie and Hilgard Meadows. The rest year of rotation would help with vegetation recruitment, if not allowing increased utilization when grazed.
	Campsites	Stock holding site at Kip Camp is slightly non-compliant with BMPs.	All stock holding and spot/dunnage sites should meet BMPs.	Designate 1 stock camp at Rosemarie Meadow.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
13. Selden				
Destination: Rose Lake	Access	Rose Lake Trail: observed Trail Class 2, Resource Rating 2.5, steep, with minimal structures, moderate incision. Moderate risk factors. Use trail SEL05 around lakeshore, unstable with many risk factor; proximity to lake, meadows.	Stabilize trail. Prevent degradation of use trail SEL05.	Low use on Rose Lake Trail. Prohibit use of use trail SEL05.
	Recreation Category Setting	Recreation Category 2 off of primary trail, moderate opportunities for solitude. Moderate impacts noticeable Recreation Impact Rating = 2.2.	Maintain as moderate to high opportunities for solitude. Reduce recreation impacts.	
	Use Levels 01-04	none reported		Up to 2 spot and dunnage trips.
	Grazing	Not fully analyzed for grazing. Meadow had some wet areas and trail to and through meadow causing sod fragmentation and erosion. Use reported: 33/0/0	Meadow and stream in meadow should remain in proper functioning condition. Reduce sod fragmentation and erosion in meadow outside the trail tread, or cause more than minimal soil erosion.	Allow grazing: 33 stock nights available.
	Campsites	Spot/dunnage site that appears to be used meets BMPs, but trail access is through wet meadow and is causing sod fragmentation. Low capacity for camping.	All campsites meet BMPs. Access routes to campsites are stable and not causing erosion.	Limiting spot and dunnage drop to area around outlet.
14. Selden				
Destination: Lou Beverly Lake / Sandpiper Lake	Access	Sandpiper Lake Trail:, observed Trail Class 2, Resource Rating 2 around Lou Beverly Lake; Resource Rating 3 above with moderate to severe impacts to springs, creeks. Moderate to high risk factors. Use trail SEL01 to Three Island Lake, not visible, many risk factors --	Stabilize trail. Prevent development of use trail to 3- Island Lake.	Trail above Lou Beverly Lake is NSCS until repaired. Prohibit use on use trail SEL01.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		meadows, stream crossings, springs.		
	Recreation Category Setting	Recreation Category 2 off of primary trail. Moderate to high opportunities for solitude, low to moderate impacts.		
	Use Levels 01-04	0-2 trips, 0-16 stock		Up to 4 spot and dunnage trips and use of areas for all expense/traveling trips. Prohibit use beyond Lou Beverly Lake until trail is fixed.
	Grazing	Stream in Lou Beverly Meadow is in proper functioning condition, and the meadow has no hydrologic function alteration. No vegetation composition alteration. Occupied Yosemite toad habitat in meadow above lake.	Stream and meadow should remain in proper functioning condition. Maintain vegetation cover. Maintain high quality Yosemite toad breeding habitat.	Allow Grazing: 39 stock nights available.
	Campsites	Stock holding site at Lou Beverly meets BMPs.	All campsites must meet BMPs.	Designate 1 stock camp at Lou Beverly Lake.
15. Ward Mountain				
Destination: Ward Mountain Lake	Access	Ward Mountain Lake use trail WAM01.		
	Recreation Category Setting	Recreation Category 1.	Maintain high opportunity for solitude.	
	Use Levels 01-04	Infrequent use prior to 2001.		Up to 2 spot and dunnage trips to one operator.
	Grazing	Not assessed.	Not assessed.	Allow grazing; 25 stock nights until assessed.
	Campsites		No stock camp.	No stock camp.

MONO ROCK CREEK/ROCK CREEK

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
1. Tamarack				
Destination: Tamarack Basin	Access	Tamarack Lake Trail: Trail Class 3, generally stable, slight impacts at streams, meadows. Trail Class 2 to Tamarack Lake, rough, few risk factors. Dorothy Lake Loop: observed Trail Class 2, Resource Rating 2, moderate incision, impacts at creek crossings. Francis Lake Trail observed Trail Class 2, Resource Rating 2, steep, stable with low use. Multiple use trails through basin.	Improve stability of Dorothy Loop Trail. Keep Francis Trail stable without addition of substantial development. Prevent expansion of use trails.	If trail conditions deteriorate, consider day ride management. Approve one use trail from Dorothy Loop to Kenneth Lake. Prohibit all other use trails.
	Recreation Category Setting	Dorothy Lake: Recreation Category 2 low to moderate opportunities for solitude.	Manage for moderate to high opportunities for solitude throughout basin.	
	Use Levels 01-04	0-12 trips, 0-57 stock		Up to 16 spot and dunnage trips. Manage for low use to the Upper Basin (Tamarack and Francis Lakes).
	Grazing	Moderate to minor localized vegetation composition change mostly at riparian crossings. No grazing reported, grazing requested. Lower area within 1 hour of pack station, grazing is not needed.	Vegetation overall is at desired condition. Minor need to stabilize trail creek and wetland crossings and approaches.	Do not approve grazing.
	Campsites		No stock camps.	No stock camps.
	Other Issues	Moderate downed firewood available around Kenneth Lake.		Modify elevational closure to allow campfires at Kenneth Lake.
2. Hilton				

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
Destination: Hilton (Davis / Second Lake)	Access	Hilton Creek Trail observed Trail Class 3, generally stable with moderate impacts at Davis Meadow. Above 2nd Lake to 4th Lake, trail steep with risk factors, Resource Rating 3. Duplicate access to Davis Lake from Hilton Ridge Trail. Davis Spur to inlet camps and peninsula is stable. Use trail HIL05 at Davis outlet accesses camps, slight impacts at creek. Population of Inyo beardtongue outside wilderness on Hilton Creek trail in good condition.	Keep use to one trail into Davis Lake. Maintain population of Inyo beardtongue in good condition.	Prohibit use of Hilton Ridge Trail. Allow trail use to designated campsites, including use trail HIL05. Do not allow stock use on the Davis Spur trail past peninsula at Davis Lake inlet. Reduce Trail Class above 2nd Lake to Class 2.
	Recreation Category Setting	Hilton (Davis and Second Lake): Recreation Category 2 low to moderate opportunities for solitude (close proximity to trailhead, high day use). High stock use with early season access by three pack stations. Recreation Impact Rating = 2.2 and 2.0.	Hilton (Davis and Second Lake): Manage area for moderate opportunities for solitude.	Change Davis and Second Lakes to a Recreation Category 3.
	Use Levels 01-04	PC: 0-4 trips, 0-18 stock McGee: 4-12 trips, 33-84 stock Rock Creek: 34-51 trips, 222-349 stock		Up to 60 spot and dunnage trips (between 3 operators), and manage area for intensive all-expense trip use.
	Grazing	Local moderate to minor vegetative alteration along trails between Second Lake and Lake 4 and at Davis lakeshore meadows. Small, wet, and fragile meadows along trail from Lakes 5 to 6. Minor trampling of riparian vegetation and associated sod fragmentation at Turk Meadow and Davis Pond Meadow. Sensitive spring heads with minor trampling damage in	Increase vegetative cover and vigor around Davis Lake, increased vegetative cover along trails between Second lake and Lake 5. Maintain high-seral status of vegetation at Turk Meadow springs. Maintain population of Blandlow's feather moss and fen area in good condition.	Approve grazing, 419 stock nights available in the grazing zone, allowable use factor (AUF) is 30%. Manage Turk Meadow springs/fen/sensitive plant habitat as a critical area.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		upper Turk Meadow. Blandlow's feather moss population in upper Turk Meadow in area with fen characteristics currently in good condition. Reported grazing: 2001/2002/2003 is 0/0/7.		
	Campsites	High campsite density and Davis Lake. Many sites, including a holding site, do not meet BMPs because they are too close to water. Abandoned goshawk territory in south shore high use camping area.	All stock holding and spot and dunnage campsites should meet BMPs. Reduce campsite density and contain individual sites. Manage for intensive use of sites. Goshawk territory habitat suitability maintained for occupancy.	6 stock camps at Davis Lake and 4 at Second Lake. Utilize only these sites for all full service trips to contain impacts, even if stock is not held overnight. 1 stock camp designated at Turk Meadow. Monitor goshawk territory and implement camping restrictions as needed through biological evaluation process.
	Other Issues			Stock holding area for day rides to tie up in the vicinity of Davis Lake peninsula/waterfall camp.
3. Hilton				
Destination: Hilton Upper Lakes	Access	Hilton Lakes Trail: Trail Class 3, stable to junction with Hilton Creek Trail, then observed Trail Class 2, steep, soil movement, moderate impacts to stream banks, terminates at 4th Lake. Use trail HIL17 from 3rd to 5th Lake, lightly defined, steep, riparian effects. There is a population of subalpine fireweed below 3rd Lake.	Maintain subalpine fireweed population in good condition.	Prohibit use of use trail HIL17. Monitor subalpine fireweed population.
	Recreation Category Setting	Hilton Upper Lakes: Recreation Category 2 low to moderate opportunities for solitude.	Maintain area as low to moderate use destination with low to moderate impacts concentrated at few sites. Maintain moderate to high opportunities for solitude.	
	Use Levels 01-04	1-19 trips, 5-104 stock		Up to 6 spot and dunnage trips to maintain moderate to high

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
				opportunities for solitude consistent with Recreation Category 2, off primary trail.
	Grazing	No grazing reported or requested.	Maintain high-seral vegetative status. Management direction is no grazing allowed when not requested.	No grazing.
	Campsites		No stock camps.	No stock camps.
4. Little Lakes Valley				
Destination: Chickenfoot / Long Lakes	Access	Chickenfoot Lake Spur observed Trail Class 2, Resource Rating 1, dry, stable to lake. Use trail LLV03 accesses from south side, duplicate access. Little Lakes Valley Trail observed Trail Class 3, generally stable. Long Lake Spur lightly developed trail accesses camps on bench south of lake.	One route to lake.	Limit stock to system spur. Prohibit use trail LLV03.
	Recreation Category Setting	Chickenfoot Lake: Recreation Category 3. High use, low opportunities for solitude, high day use. Recreation Impact Rating = 1.6. Long Lake: Recreation Category 3. High day use low opportunities for solitude. Recreation Impact Rating = 2.0.	Chickenfoot Lake: maintain moderate opportunities for solitude. Long Lake: maintain moderate opportunities for solitude.	
	Use Levels 01-04	Chickenfoot Lake 0-6 trips, 0-32 stock Long Lake 0-2 trips, 0-4 stock		Up to 12 trips to Long, Chickenfoot to prevent additional crowding.
	Grazing	No grazing reported or requested. Some local moderate loss of riparian vegetation along trails and creek access points, trail along north side of	Increased vegetative cover along trails. Maintain high-seral status of vegetation.	No grazing.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		Chickenfoot Lake.		
	Campsites	Low capacity for campsites.	No stock camps.	No stock camps.
5. Little Lakes Valley				
Destination: Ruby Lake	Access	Ruby Spur Trail Class 2, stable, close to creek, light development. Some local moderate loss of riparian vegetation along trails and creek access points, such as at the junction of the Ruby Lake and Mono Pass Trails.	Keep stable with minimal development.	Snow bypass below Ruby Lake is prohibited for commercial pack stock use. Snow bypass trails over Mono Pass are approved.
	Recreation Category Setting	Ruby Lake: Recreation category 3. High day use low opportunities for solitude. Recreation Impact Rating = 1.4.	Ruby Lake allow for moderate level of use by concentrating impacts and managing sites. Manage for lowering overall resource ratings by containing impacts.	Adjust to a Recreation Category 2.
	Use Levels 01-04	0-2 trips, 0-8 stock		Up to 6 spot and dunnage trips.
	Grazing	No grazing reported or requested.	Increased vegetative cover along trails. Maintain high-seral status of vegetation.	No grazing.
	Campsites	Low capacity for camping.		No stock camps.
6. Volcanic				
Destination: Volcanic	Access	Volcanic Knob Trail, observed Trail Class 2 to meadow, then Trail Class 1 to upper basin. Resource Rating 1. Generally stable, low impacts, low risk factors. Use trail VOL01 continues above 10,800 to lakes below Recess Peak.	Maintain current stability without adding substantial development.	Keep use levels low on trails. Approve use trail VOL01.
	Recreation Category Setting	Volcanic: Recreation Category 1. Low use high opportunities for solitude. No Recreation Impact Rating. Cabin, snow sensor site.	Volcanic: maintain high opportunities for solitude.	Change Recreation Category to 2 due to cabin and snow survey site.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Use Levels 01-04	0-5 trips, 0-21 stock		Up to 4 spot and dunnage trips.
	Grazing	Intermingled wet to moist meadow complex. Vegetation meets desired condition. Minor and local hoof punching and sod fragmentation near and along trail to snow survey cabin. Some areas of the meadow have fen characteristics. Occupied Yosemite toad habitat in good ecological condition. Reported grazing: 0/0/0.	Maintain current vegetative conditions. Maintain areas with fen characteristics in functioning condition. Maintain high quality Yosemite toad breeding habitat.	Approve grazing, 250 stock nights available, AUF is 40%, Protect critical areas (fens).
	Campsites	Campsite around snow survey cabin, low to moderate impact.	Maintain low to moderate impact at campsite at cabin.	Designate 1 stock camp.
7. Devils				
Destination: Devils Bathtub	Access	Devils Bathtub Trail observed Trail Class 2, Resource Rating 3.5, erosion, incision, proximity to water.	Long-term, improve trail.	Keep use levels low. Limit use to outlet of lake and prohibit commercial pack stock use to inlet.
	Recreation Category Setting	Devils Bathtub: Recreation Category 2. Low to moderate opportunities for solitude. Potential opportunities for high day use.	Devils Bathtub maintain moderate to high opportunities for solitude.	
	Use Levels 01-04	0-4 trips, 0-56 stock		Up to 8 spot and dunnage trips
	Grazing	Requested for grazing. No use reported 2001-2003.	Maintain mid-seral to high-seral vegetative status.	Allow 25 stock nights of grazing, 40% AUF.
	Campsites		No stock camp.	No stock camp.
8. Second Recess, Silver Pass, Graveyard, Laurel Analysis Units				

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
Destination: Lower Mono Creek (including Quail Meadow)	Access	Mono Creek Trail: Trail Class 3, generally stable with poor drainage and moderate impacts at creek crossings. Population of Mono Hot Springs evening primrose near boat landing on northeast side of Edison Lake.	Perform maintenance to increase stability. Maintain population of primrose in good condition.	Monitor evening primrose population.
	Recreation Category Setting	Lower Mono: Recreation Category 2. Moderate to high opportunities for solitude. Area adjacent to JMT and PCT. Recreation Impact Rating = 1.2.	Lower Mono: maintain for moderate to high opportunities for solitude.	
	Use Levels 01-04	0-3 trips, 0-34 stock (Quail: 0-1 trip, 0-5 stock)		Up to 18 spot and dunnage trips to one operator.
	Grazing	Overall vegetation is high-seral. Intermingled wetland complex. Some areas have fen characteristics. Quail meadow has areas of bare soil in trees and in upper, dry meadow, and sod fragmentation in wet portion of meadow. Reported use in 2001/2002/2003 is 0/48/45, only reported at Quail Meadow.	Maintain current vegetative conditions. Maintain any areas with fen characteristics or wetland characteristics in functioning condition.	Approve grazing, 323 stock nights available in Mono Creek zone. Limit planned trips to Quail Meadow to 48 stock nights. AUF is 40%. Critical area (fens) trampling <5%.
	Campsites	Stock holding campsite at Mono Creek/Second Recess confluence does not meet BMPs. There is some sediment entering the creek.	All stock holding and spot and dunnage sites should meet BMPs.	Designate 3 stock camps in this zone. Relocate stock camp at junction of Second Recess.
9. Second Recess				
Destination: Second Recess Canyon	Access	Second Recess Trail, observed Trail Class 2, Resource Rating 2, rarely maintained, with many obstacles. Difficult crossing at high water. Use trail SEC02 to Mills Lake, lightly defined, high risk factors. Many downed trees	Maintain trail to prevent multiple trailing.	Prohibit use on SEC02. Remove logs to prevent users from going off trail.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		across the system trail.		
	Recreation Category Setting	Second Recess: Recreation Category 2. Low use, moderate to high opportunities for solitude. Recreation Impact Rating = 1.3.	Second Recess maintain for moderate to high opportunities for solitude.	
	Use Levels 01-04	High Sierra: 0-7 trips, 0-45 stock Rock Creek: 0-2 trips, 0-28 stock		10 spot and dunnage trips.
	Grazing	Overall vegetation is high-seral. Intermingled wetland complex. Meadow has areas with fen characteristics. Reported use: 2001/2002/2003 is 0/23/27.	Maintain current vegetative conditions. Maintain fen in functioning condition.	Approve grazing, 278 stock nights available in zone. AUF is 40%. Protect critical areas.
	Campsites		All stock holding and spot and dunnage sites should meet BMPs.	Designate 1 stock camp
10. Fourth Recess				
Destination: Fourth Recess Lake	Access	Fourth Recess Trail, observed Trail Class 2, Resource Rating 1, slight impacts at creek crossings. Terminates at lake.	Needs improved structures at crossings.	
	Recreation Category Setting	Fourth Recess: Recreation Category 2. Low to moderate opportunities for solitude. Concentrated impacts at outlet of lake. (Recreation Impact Rating = 1.2)	Fourth Recess: manage for overall resource rating by containing impacts. Maintain moderate opportunities for solitude.	
	Use Levels 01-04	8-28 trips, 57-164 stock		Up to 28 spot and dunnage trips.
	Grazing	No grazing reported or requested. Reported grazing: 0/0/0. No reported alterations of vegetative composition or cover.	Mid-seral to high-seral vegetative status.	No grazing.
	Campsites	Limited camping, crowding potential at outlet of lake. One site is suitable for large parties.		No stock camp at lake, but down at Mono Creek. Designate 1 spot and dunnage campsite for large

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
				parties (over 8 people) at the north end of lake.
11. Fourth Recess				
Destination: Upper Mono Creek (Trail Lake, Upper Mono Corridor)	Access	Mono Creek Trail, observed Trail Class 3, degraded in steep sections, meadows, creek crossings. Use trail FOR02, access to camps near Mono Creek below 3rd, 4th Recess.	Maintain/stabilize primary trail.	Determine best route to camps, maintain stability. Golden Lake Trail is NSCS. Third Recess Trail is NSCS.
	Recreation Category Setting	Upper Mono Creek: Recreation Category 2. Low to moderate opportunities for solitude. High use along trail corridor. (Recreation Impact Rating = 1.4)	Upper Mono Creek: maintain moderate to high opportunities for solitude outside of trail corridor, moderate opportunities for solitude on trail corridor. Manage to lower overall resource rating.	
	Use Levels 01-04	1-20 trips, 2-111 stock		Up to 35 spot and dunnage trips to two operators (30 Rock Creek 5 High Sierra), and use for all expense/traveling trips.
	Grazing	Meadow north of Mono Rock, near shortcut to Mudd Lake, Reported grazing: 0/5/7. Meadow is wet throughout the summer, with local trampling and moderate sod fragmentation especially near the trail crossing at the west end and on the south side. Area with fen characteristics and occupied mountain yellow-legged frog habitat has moderate spring impacts.	Mid-seral to high-seral vegetative status. Fen in functioning condition, and mountain yellow-legged frog spring channel habitat in good ecological condition.	Meadow north of Mono Rock is unsuitable for grazing. Approve grazing in the Mono Creek zone. 323 nights in the zone. Protect critical area (fen).
	Campsites			Designate 5 stock camps.
12. Pioneer				
Destination: Pioneer Basin	Access	Pioneer Basin Trail past Mudd	Keep use to most stable trails.	No use of system trail to Lake

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		Lake to Lake 10,860, observed Trail Class 2, Resource Rating 3.5, degraded, severe incision, high risk factors. Various use trails to Camp Meadow (PIO09) Resource Rating 2, duplicates system; to Lake 10,900 (PIO16), Resource Rating 4, severe resource impacts. Use trail PIO06 from Mudd Lake to Mono Creek camps (Resource Rating 3) shortcuts system trail, used for grazing.	Enhance trails most sustainable network, and close/rehab unneeded or unstable trails. Prevent further degradation of use trails.	10,860 above Mudd Lake until the trail is repaired. Long term, repair trail to Lake 10,860 past Lake 10,840 at Trail Class 2. Prohibit use trail PIO09 and use trail PIO16. Use on system trail to the northeast of Mudd Lake is allowed only to designated campsite. Allow use of PIO06 only to access dispersed upland grazing.
	Recreation Category Setting	Pioneer Basin: Recreation Category 2. Moderate opportunities for solitude, moderate impacts. (Recreation Impact Rating = 1.4, Lake 10,900 Recreation Impact Rating 2.4)	Pioneer Basin maintain moderate to high opportunities for solitude. Manage for lower overall resource rating by containing impacts.	
	Use Levels 01-04	High Sierra: 0-1 trip, 0-7 stock Rock Creek: 13-27 trips, 96-210 stock		Up to 22 spot and dunnage trips to 2 operators (20 Rock Creek, 2 High Sierra) to lower lakes in basin.
	Grazing	No grazing reported (closed to grazing), grazing requested. Locally moderate vegetative species composition alteration, near inlet and outlet of Mudd Lake. Camp Meadow has fen characteristics and incised trail has caused changes to hydrologic condition. Occupied Yosemite toad habitat at north end of lakeshore in good ecological condition.	Maintain mid-seral to high-seral vegetative status. Fen in functioning condition. Maintain high quality Yosemite toad breeding habitat.	Approve grazing SE side of Mudd Lake only, 30 stock nights available, 30% AUF. No grazing in Camp Meadow.
	Campsites	Some spot and dunnage sites at Pioneer Basin Lakes do not meet BMPs.	All spot and dunnage and stock holding campsites should meet BMPs.	Do not allow spot and dunnage or stock holding at sites that do not meet BMPs. Designate 3

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
				stock camps, 2 in vicinity of Mudd lake and 1 above Mudd at trail/creek crossing to upper basin.
13. Hopkins				
Destination: Lower Hopkins Basin	Access	Hopkins Pass Trail, observed Trail Class 2, Resource Rating 3. Has moderate to severe incision at meadows, water diversion. Becomes indistinct, but stable last 1/8 mile from pass. Hopkins spur goes to lake, similar condition. Use trail HOP01 continues north from lake to meet Hopkins Pass Trail, duplicate access, degraded.	Reduce rate of degradation, repair trails. Prevent duplication.	Prohibit use on HOP01. Keep use levels low. Hopkins Pass Trail NSCS the last mile before the pass (above small lake south of Upper Hopkins Lake).
	Recreation Category Setting	Lower Hopkins: Recreation Category 2. Moderate to high opportunities for solitude. (Recreation Impact Rating = 2.0)	Lower Hopkins maintain moderate to high opportunities for solitude.	Identify stock camps.
	Use Levels 01-04	0-6 trips, 0-57 stock		Up to 10 spot and dunnage trips for use by two operators (8 Rock Creek; 2 HSPS) and use of area for all expense traveling trips.
	Grazing	Locally moderate sod fragmentation and altered vegetative species composition. Overall, at desired condition. Reported grazing: 2001/2002/2003 is 0/26/12.	Maintain vegetation at moderate to high seral status. Prevent local sod fragmentation and altered vegetative species composition from expanding.	Approve grazing, 159 stock nights available, 30% AUF.
	Campsites	Two sites at Lower Hopkins Lake (out of 7 evaluated) do not meet BMPs.	All stock holding and spot and dunnage sites should meet BMPs.	Do not allow stock holding or spot and dunnage at sites less than 100 feet from lake. Designate 1 stock camp at lake and 1 at junction of basin and Lower Hopkins Lake.
14. Laurel				

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
Destination: Laurel Canyon	Access	Laurel Lake, observed Trail Class 2, then Trail Class 1, Resource Rating 1. Rough trail with obstacles near bottom. Very steep, could be risk factor if use increased.	Maintain stability without addition of substantial development.	Use trail to Grinnell Lake prohibited for commercial stock use.
	Recreation Category Setting	Laurel Lake: Recreation Category 2. Moderate to high opportunities for solitude. No Recreation Impact Rating.	Laurel Lake maintain for high opportunities for solitude.	
	Use Levels 01-04	None reported (spot & dunnage)		Manage for occasional use on traveling and all expense trips.
	Grazing	No grazing reported. Grazing requested. High-seral vegetative status. Historical sod fragmentation and trail ruts patterns and local minor creek crossing impacts noted.	Maintain mid-seral to high-seral vegetative status. Maintain or improve creek crossings to prevent stream capture or excessive erosion into creeks.	Approve grazing, 92 stock nights available in lower meadow on Laurel Bench and one meadow north of bench, 40% AUF.
	Campsites	Very old campsites with low impacts at Laurel Bench.		Designate 1 stock camp at south end of Laurel Bench.
15. Graveyard				
Destination: Arrowhead/Feather Lakes	Access	Arrowhead Trail observed Trail Class 2, Resource Rating 1. Feather Trail observed Trail Class 1, Resource Rating 1, low risk factors.	Maintain stability without addition of substantial development.	Keep use levels low to Feather Lake.
	Recreation Category Setting	Arrowhead/Feather Lakes: Recreation Category 2. Moderate to high opportunities for solitude. No Recreation Impact Rating.	Arrowhead/Feather Lakes: maintain high opportunities for solitude, low development trails, low impact ratings.	Change Feather Lake to Recreation Category 1.
	Use Levels 01-04	2-6 trips, 8-50 stock		Up to 5 trips. Only occasional trips to Feather Lake, no more than 1 trip a year.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Grazing	No grazing reported or requested. High-seral vegetative status. High elevation wetland complex meadows with wet fragile inlet and outlet meadows at Feather Lake, meadows limited to small lakeshore riparian patches/meadows at Arrowhead Lake. Fen at Arrowhead Lake in good condition.	Maintain high-seral vegetative status. Maintain fen in functioning condition. D127	Unsuitable; do not allow grazing.
	Campsites	Stock holding site at Arrowhead Lake meets BMPs.	All stock holding and spot and dunnage campsites should meet BMPs.	No stock camp at Feather Lake; 1 stock camp at Arrowhead Lake north of the lake.
16. Graveyard				
Destination: Goodale Pass	Access	Goodale Pass Trail (observed Trail Class 3 to Graveyard Junction, Trail Class 2 above). Generally stable, with slight impacts at creeks, meadows. Trail on north side of pass deteriorated.	Maintain stable trail.	
	Recreation Category Setting	Goodale Pass: Recreation Category 2. Low to moderate opportunities for solitude along trail corridor. Moderate to high opportunities for solitude outside trail corridor. No Recreation Impact Rating. Graveyard Meadows: Recreation Category 2, moderate opportunities for solitude.	Goodale Pass: maintain for moderate opportunities for solitude. Concentrate impacts along trail corridor. Graveyard Meadows: maintain moderate opportunities for solitude.	
	Use Levels 01-04	0-6 trips, 0-25 stock		Up to 6 trips to Goodale Pass.
	Grazing	No grazing reported, grazing requested. Intermingled wetland	Maintain mid-seral to high-seral vegetative status. Fen in	Approve grazing, part of Graveyard zone, 400 stock nights

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		complex, some historical local and minor alteration of vegetative composition. Occupied Yosemite toad habitat in upper Graveyard Meadows. Gooddale Pass Meadow has a fen with headcuts in the spring channel. There are several fens in this drainage in good condition with little use. Stream in Middle Graveyard Meadow was rated functional at-risk, and the meadow has areas of severe compaction. It is currently grazed by cattle.	functioning condition. Allow stream in Middle Graveyard Meadow to move toward proper functioning condition. Maintain high quality Yosemite toad habitat.	available in entire Graveyard zone, 40% AUF. Limit planned grazing in Upper Cold Creek near Gooddale Pass to 200 stock nights, in Upper Graveyard meadow to 127 stock nights, Middle Graveyard Meadow to 41 stock nights. Prohibit stock entry and grazing in critical areas.
	Campsites			Designate 1 stock camp at Upper Graveyard Meadow.
17. Graveyard				
Destination: Graveyard Lakes	Access	Graveyard Trail observed Trail Class 2, heavily used compared to development, needs repair, but in mostly low-risk area up to first lake. Upper trail observed Trail Class 1.5, Resource Rating 3, incision, risk factors - proximity to creek, steepness, diversions, no development. Above Upper Graveyard Lake, trail not visible, used only to access saddle north of lake by foot.	Prevent further deterioration of trail above Lower Graveyard Lake.	NSCS past Lower Graveyard Lake inlet. Prohibit use trail GRA01 above Big Graveyard.
	Recreation Category Setting	Lower Graveyard Lakes: Recreation Category 1. Moderate to high use, low opportunities for solitude at lower lake. Camping impacts evident.	Lower Graveyard Lakes low to moderate opportunities for solitude during peak season; reduce overall impacts at destination by containing and concentrating impacts.	Change to Recreation Category 2.
	Use Levels 01-04	High Sierra: 0-34 trips, 0-228 stock D&F: 0-6 trips, 0-64		Up to 30 trips by two operators to lower lake only, to keep

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		stock		opportunities for solitude moderate and respond to low capacity of area.
	Grazing	None reported, grazing requested. Moist understory meadows between trail junction at Cold Creek and lower lake, moist to dry meadows on benches to southeast of lakes. Few impacts noted, other than minor sod fragmentation in lakeshore meadows.	Maintain mid-seral to high-seral vegetative status.	Approve grazing, part of Graveyard zone, 400 stock nights available in Graveyard zone. Limit planned grazing in Graveyard Lakes area to 32 stock nights, 40% AUF.
	Campsites			No stock camps.
18. Silver Peak				
Destination: Mott Lake	Access	Mott Lake Trail observed Trail Class 2, Resource Rating 2.5, Trail degraded, but only moderate resource effects on isolated sections. Some bypasses of wet areas between Mott Lake and the meadow. Very awkward in rocks just below Mott Lake.	Maintain trail to prevent off-trail degradation.	Allow low-moderate use to lake.
	Recreation Category Setting	Mott Lake: Recreation Category 2. Moderate to high opportunities for solitude. Used only for spot and dunnage trips. No Recreation Impact Rating.	Mott Lake: maintain for moderate to high opportunities for solitude.	
	Use Levels 01-04	High Sierra: 2-10 trips, 4-64 stock D&F: 0-2 trips, 0-10 stock		Up to 10 trips spot and dunnage to Mott Lake to two operators.
	Grazing	No grazing reported. Requested for grazing below Mott Lake along trail. Meadow stream in proper functioning condition.	Protect soda spring function. Protect hydrologic function of wetland areas.	Allow 13 stock nights of grazing in the area below Mott Lake. Spring and wetlands are critical areas.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		Contains a unique soda spring and over half of the meadow never reaches range readiness.		
	Campsites	High density of impacted sites		Designate 1 stock camp below lake.
19. Morgan Lakes				
Destination: Morgan Lakes	Access	Morgan Pass Trail observed Trail Class 3 from old mining road on Pine Creek side. Use trail MRG01 to Bear Lake, lightly defined, few risk factors.	Keep Morgan Pass Trail stable.	Use trail to Bear Lake (MRG01) prohibited for commercial stock use.
	Recreation Category Setting	Morgan Lakes: Recreation Category 2. Moderate opportunities for solitude. (Recreation Impact Rating = 1.4)	Morgan Lakes: maintain for moderate to high opportunities.	
	Use Levels 01-04	Rock Creek: 0-2 trips, 0-7 stock Pine Creek: 0-2 trips, 0-10 stock		Up to 8 trips by two operators to maintain high opportunities for solitude.
	Grazing	None requested or reported. Small lakeshore meadows and small riparian areas associated with creek above upper lake.	Maintain mid-seral to high-seral vegetative status.	Unsuitable; do not allow grazing.
	Campsites			No stock holding.
20. Silver Peak				
Destination: Pocket / Silver Pass Meadows	Access	PCT/JMT Trails Class 3.		
	Recreation Category Setting	Recreation Category 2. PCT/JMT trail corridor low to moderate opportunities for solitude.	Maintain low opportunities for solitude along JMT/PCT trail corridor.	
	Use Levels 01-04	Use for all expense trips.		Use for all expense trips.
	Grazing	Silver Pass Meadow has vegetation composition change,	Silver Pass Meadow should move toward no alteration of	Silver Pass Meadow: rest until the stream is functional at-risk

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		incised channels, streams are functional at-risk, hydrologic function alteration. Grazing reported: 0/67/127. Meadows at Silver Pass Lake are low productivity and have no current use. Pocket Meadow has an incised channel and there is some vegetation composition change, likely drying due to creek incisement.	hydrologic function, stream move toward proper functioning condition, and vegetation should be mid to high seral. Meadows at Silver Pass Lake should remain with no hydrologic function alteration and streams should remain in proper functioning condition. The stream in Pocket Meadow should move toward proper functioning condition, if possible.	with an upward trend and vegetation composition recovery toward mid-high seral. Silver Pass Lake: allow grazing 124 stock nights (moderate priority for monitoring). Pocket Meadow: 48 stock nights.
	Campsites			Designate 3 stock camps. 1 at Pocket Meadow, 1 at Silver Pass Meadow, 1 below Silver Pass Lake.

JOHN MUIR SOUTHEAST

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
1. North Fork Big Pine				
Destination: Black Lake/Summit Lake	Access	Black Lake Loop Trail observed Trail Class 3, generally stable. Use trail NFB01 to Coyote Ridge, stable with current use, low risk factors, and generally dry slopes.	Ensure continued stability of NFB01.	Approve use of use trail NFB01.
	Recreation Category Setting	Recreation Category 2, off primary trail, moderate opportunities for solitude.	Manage for moderate to high opportunities for solitude.	
	Use Levels 01-04	Black: 8-16 trips, 34-121 stock Summit: 7-14 trips, 25-68 stock		Up to 30 spot and dunnage trips to maintain moderate-high opportunities for solitude.
	Grazing	None requested, none available.		No grazing.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Campsites		No stock camps.	No stock camps.
2. North Fork Big Pine				
Destination: North Fork Big Pine	Access	North Fork Big Pine Trail: observed Trail Class 3 to 4th Lake, Trail Class 2 to 6th Lake, well-developed, stable; low to moderate commercial use, high public hiker use. 6th Lake hiker trail: observed Trail Class 2, steep with high risk factors, alternate route to stock trail. Various use trails: Heidi Cabin NFB05, 2nd Lake Snow Cabin NFB06, 4th/5th Lake spur NFB07, 5th Lake Camps NFB08, Snow Survey site NFB09 - all generally stable with current low use.	Ensure use trails do not increase or degrade. Identify best route to 6th Lake.	Approve use trail at current levels. Heidi Cabin use trail NFB05 for hunting season use only. Prohibit commercial stock on 6th Lake hiker trail. Allow access on primary 6th Lake trail.
	Recreation Category Setting	Recreation Category 3, high use corridor to 5th Lake, popular day hiking, mountaineering and backpacking destination. Low to moderate opportunities for solitude, moderate impacts concentrated at sites and trails.	Manage as high use corridor, concentrate impacts.	
	Use Levels 01-04	66-115 trips, 260-564		Up to 125 spot and dunnage trips. Use levels should not facilitate additional crowding at campsites.
	Grazing	None requested, none available.		No grazing.
	Campsites	High density campsites around lakes, all spot and dunnage or hiker camps.	All camps should meet BMPs.	No stock camps.
3. Coyote				
Destination: Baker Lakes	Access	System trail access from Baker Lake Trail, Trail Class 2. Stable,	Keep use limited to prevent degradation of use trails.	Approve COY01 to Thunder and Lightning Lake. Approve

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		lightly used, rarely maintained. Use trail access from Black Lake NFB01, faint, low use, few risk factors. Use trail COY01 from system trail to Thunder and Lightning Lake.		use of NFB01 to Coyote Flat.
	Recreation Category Setting	Recreation Category 2, off of primary trail, low use high opportunities for solitude.	Maintain high opportunities for solitude.	
	Use Levels 01-04	Baker Lake/Ridge 0-2 trips, 12-13 stock		Up to 6 spot and dunnage will maintain high opportunities for solitude.
	Grazing	None requested. Potential grazing.		No grazing.
	Campsites		No stock camps.	No stock camps.
4. South Fork Big Pine				
Destination: South Fork Big Pine	Access	South Fork Big Pine Trail: observed Trail Class 2 to Willow Lake, steep, rocky in places, with slight impacts at stream crossings near Willow Lake. Trail Class 1 above. Climbs steeply near creek. Population of Father Crowley's lupine and Inyo beardtongue near South Fork Big Pine Trail.	Keep trail stability without adding further structural development. Maintain populations of rare plants.	NSCS above Willow.
	Recreation Category Setting	Recreation Category 2, not a primary trail, has moderate opportunities for solitude, low to moderate impacts. Limited camping.	Manage for high opportunities for solitude.	
	Use Levels 01-04	None reported.		Up to 2 spot and dunnage trips with very low stock numbers will maintain high opportunities

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
				for solitude.
	Grazing			No grazing.
	Campsites	No stock camps.	No stock camps.	No stock camps.
5. Birch				
Destination: Birch Creek	Access	Birch Creek Trail: observed Trail Class 2, generally stable to just below lake, dissipates into willows. Three use trails used for hunting, two are near system trail (BIR01,BIR02), lightly defined to camps. Use trail BIR03 follows old trail to spring east of Kid Mountain. Indistinct, dry slope with few risk factors at current use levels.	Maintain system trail stability without adding substantial structures; keep commercial stock use low. Ensure that use trails do not become more evident, by limiting use to low levels.	Top 1/3 mile of Birch Creek Trail NSCS. Approve use trails BIR01 and BIR02 and BIR03 for hunting trips.
	Recreation Category Setting	Recreation Category 1, very low use high opportunities for solitude.	Manage for low use and high opportunities for solitude.	
	Use Levels 01-04	4-14 trips, 15-93 stock		Up to 5 spot and dunnage trips for hunting trips only. Consider up to 10 trips if state game tag capacity. Limit stock numbers to current numbers per party. This use level will maintain high opportunities for solitude.
	Grazing			No grazing.
	Campsites		No stock camps.	No stock camps.
6. Taboose				
Destination: Taboose to SEKI	Access	Taboose Pass Trail: observed Trail Class 2. Steep, awkward, generally stable. Snow bypass below pass. Populations of Raven's milkvetch, Inyo beardtongue, and alpine jewel-flower on the Taboose Trail	Keep all stock use on trail when trail is in adequate condition. Maintain rare plant populations in good condition.	Repair trail, so bypass not needed.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		have no reported negative impacts.		
	Recreation Category Setting	Recreation Category 2, primarily providing access to SEKI, limited camping, moderate to high opportunities for solitude.	Manage primarily as travel corridor, moderate opportunities for solitude. Manage use consistent with SEKI's desired conditions.	
	Use Levels 01-04	Sequoia Kings: 2-8 trips, 10-49 stock Mt. Whitney: 0-5 trips, 0-24 stock Rock Creek: 0-3 trips, 0-12 stock		Up to 13 spot and dunnage and resupply trips for pass through use to SEKI.
	Grazing	None requested, none available.		No grazing.
	Campsites		No stock camps.	No stock camps.
7. Sawmill				
Destination: Sawmill to SEKI	Access	Sawmill Pass Trail: observed Trail Class 2, steep, sandy, generally stable. Snow bypass SAW01 below pass. There is a population of Raven's milkvetch on the Sawmill Pass Trail with no reported negative impacts.	Keep all stock use on trail when trail is in adequate condition. Maintain Raven's milkvetch population in good condition.	Approve use trail SAW01 for bypassing snow until system trail is relocated.
	Recreation Category Setting	Recreation Category 1, Bighorn Zoological Area. Primarily used to access SEKI. Very low use and high opportunities for solitude.	Manage for very low use and high opportunities for solitude. Manage use consistent with SEKI's desired conditions.	
	Use Levels 01-04	0-2 trips, 0-15 stock		Up to 3 spot and dunnage trips to two operators to maintain low use and high solitude of area.
	Grazing	Current light use is not causing resource concerns. Reported use	Maintain or improve meadow conditions.	45 stock nights.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		9/0/0.		
	Campsites			Designate 1 stock camp at meadow below Sawmill Lake.
8. Kearsarge				
Destination: Gilbert/Matlock/Bench/Flower Lakes	Access	Kearsarge Pass Trail: observed Trail Class 3, recently repaired, stable. Matlock Lake Trail: observed Trail Class 2.5, stable. Two use trails to Bench Lake- Matlock to Bench use trail KEA06, dry slope, steep, but few risk factors; Flower to Bench use trail KEA05, less stable, longer off-system approach.	Ensure use is on most stable use trail.	Matlock Lake, Trail Class 2. Allow use of Matlock to Bench KEA06. Prohibit use trail KEA05.
	Recreation Category Setting	Recreation Category 3, high use area with low to moderate solitude and concentrated impacts at campsites and trails. Limited camping without being in sight and sound of others at each of these lakes.	Manage as a Recreation Category 3, continue to concentrate impacts.	
	Use Levels 01-04	None reported		Up to 16 spot and dunnage trips. Distribute use to various lakes within destination to prevent overcrowding or overusing any one lake.
	Grazing			
	Campsites	There are populations of Mt. Whitney draba and Sharsmith's stickseed within 0.1 mile of camp and use trails with no known adverse impacts.	Maintain populations of rare plants in good condition.	No stock camps.
	Other Issues	Mountain Yellow Legged Frog Restoration habitat	Pack stock use should be consistent with MYLF habitat restoration (State Fish and	

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
			Game project).	
9. Kearsarge				
Destination: Kearsarge to SEKI	Access	Kearsarge Pass Trail, observed Trail Class 3, stable.		
	Recreation Category Setting	Recreation Category 3, high use area with low to moderate solitude and concentrated impacts at campsites and trails. Limited camping without being in sight and sound of others at each of these lakes.	Manage as a Recreation Category 3, continue to concentrate impacts. Manage use consistent with SEKI's desired conditions.	
	Use Levels 01-04	SKPT: 20-32 trips, 110-125 stock MLPO: 0-2 trips, 0-6 stock Mt. Whitney: 0-1 trip, 0-3 stock Rock Creek: 0-1 trip, 0-3 stock Pine Creek: 0-5 trips, 0-20 stock		Up to 36 spot and dunnage trips to access the SEKI. Consistent with SEKI desired conditions and Recreation Category 3 conditions along primary trail corridor. Use of area for all expense trips.
	Grazing			No grazing.
	Campsites			No stock camps.
10. Shepherd				
Destination: Shepherd to SEKI	Access	Shepherd Pass Trail: observed Trail Class 2 to base of headwall, trail very degraded on final 1/2 mile, due to severe terrain. Junction Pass Trail: observed Trail Class 1, no resource concern, limited use after Forester Pass constructed. Rough, steep, rocky, rarely maintained. There are populations of Dedecker's clover and marble rock mat on the Shepherd Pass Trail, with no known adverse impacts.	Continue to maintain Shepherd Trail from base of headwall to Pass as primitive trail. Maintain Junction Pass as primitive trail. Reduce use to prevent excessive maintenance needs. Maintain rare plant populations.	Shepherd Pass: designate upper section as Trail Class 2, with low priority for maintenance. Require pack stations in operating plans to scout and clear trail prior to first guided trip over pass. Allow loose-herding below pass to Pothole section only. Junction Pass is NSCS.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Recreation Category Setting	Recreation Category 2 (Shepherd), Recreation Category 1 (Junction Pass). Use primarily as a pass through to SEKI. Moderate opportunities for solitude.	Manage use consistent with Park's desired conditions.	
	Use Levels 01-04	SKPT: 2-12 trips, 14-59 stock MLPO: 0-1 trips, 0-3 stock Mt. Whitney: 1-6 trip, 3-28 stock Pine Creek: 0-1 trips, 0-4 stock		Up to 18 spot and dunnage trips to two operators.
	Grazing	Anvil Camp Meadow closed to grazing in early 1990's due to stock related impacts.		No grazing.
	Campsites			Stock camp at Anvil camp for occasional use (less than 3 nights a year).
11. Whitney				
Destination: Trail Crest	Access	Stock access is via NPS trails.		Whitney Trail is NSCS (closed to all stock use).
	Recreation Category Setting	Recreation Category 3. Use is coming over from SEKI and clients hike down Mt. Whitney trail. Very high use area, impacts concentrated, low opportunities for solitude.	Manage use consistent with Park's desired conditions.	Reduce use if SEKI indicates the facilitated use is not acceptable.
	Use Levels 01-04	Cottonwood: 1-7 trips, 7-58 stock SKPT - 1 trip		Up to 14 trips a year (two operators SKPT/Cottonwood: 4:10) Unguided. Consistent with SEKI desired condition.
	Grazing			No grazing.
	Campsites			No stock camps.
12. Cottonwood				

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
Destination: Cottonwood Basin	Access	Cottonwood Lakes Trail: Trail Class 3 to Lake 3, Trail Class 2 to Lake 4/5, recently repaired, stable. Cottonwood Lake 2 Cutoff lightly defined on south, severe impacts along Lake 3 banks. Muir Lake Trail: Trail Class 2, stable, dry until lake outlet on southwest end, then riparian and stream impacts. Cirque Lake: observed Trail Class 3 & 2, generally stable, but risk factors at creek crossings and meadows. South Fork Trail: observed Trail Class 2, (mostly in Golden Trout Wilderness - only 3/4 mile in John Muir Wilderness) degraded, affecting stream, meadows, duplicates access of stable Cottonwood Lakes Trail. Hidden Lake use trail COT05, lightly defined, stable. Use trail COT01 around 4th/5th Lakes, unstable, close to lakeshores. Use trail COT08 to Frog Pond Camp, lightly defined access from CA Department of Fish and Game cabin.	Keep stock on most stable routes. Eliminate duplicate access. Ensure Muir Trail stability with minimal added development or structures. Keep Hidden Lake use trail stable without adding structures.	Cottonwood Lake 2 Cutoff - NSCS. Muir Lake Trail: designate best access to camp on west side of lake (avoid riparian at outlet, if possible). South Fork Creek Trail: NSCS above South Fork Meadow. Use Cirque Lake trail from New Army Pass Trail to access Cirque Lake. Keep use low on Hidden Lake use trail and on Muir Lake Trail. Prohibit use on use trail COT01 around 4th/5th Lake. Define best route to "Frog Pond Camp" from CA Department of Fish and Game cabin.
	Recreation Category Setting	Recreation Category 3 , high use area, concentrate impacts at campsites and trails. Low opportunities for solitude	Manage as Recreation Category 3 with concentrated impact areas at lakes.	
	Use Levels 01-04	14-32 trips, 73-215 stock		Up to 50 spot and dunnage trips consistent with Recreation Category 3. Low use and stock numbers to Hidden Lake.
	Grazing	Windy Gap Meadow is a relatively high elevation. fragile	Windy Gap - stream in proper functioning condition, meadow	Long term rest.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		meadow that is severely degraded from historic multiple headcuts, and stream and spring channel incision events. The meadow is in a long-term floodplain rebuilding process.	in late seral vegetative condition with water table restored to allow for wet meadow restoration.	
	Campsites	Sweet-smelling monardella population near Lakes 4 and 5 with no known negative impacts.	Maintain sweet-smelling monardella population.	No stock camps. Allow access to Muir Lake west shore campsites on designated system trail only.
13. Cottonwood				
Destination: New Army Pass	Access	New Army Pass Trail: Trail Class 3, generally stable.		
	Recreation Category Setting	Recreation Category 2. Access to SEKI.	Manage consistent with SEKI's desired conditions.	
	Use Levels 01-04	0-4 trips, 0-34 stock		Up to 4 spot and dunnage trips a year to maintain current use level consistent with SEKI desired conditions.
	Grazing	None requested, none reported.		No grazing.
	Campsites			No stock camps.
14. Cottonwood				
Destination: Cirque and South Fork Lakes	Access	Cirque Lake, South Fork Lake reached by primary New Army Pass Trail and Cirque Lake trails from the North Fork -- well-developed, generally stable. South Fork Trail (observed Trail Class 2 to South Fork Meadow, Trail 1 above) provides duplicate access, with isolated moderate to severe risk factors, minimum development.	Prevent degradation on undeveloped trail above South Fork Meadow.	Prohibit use of South Fork Trail above South Fork Meadow (John Muir Wilderness segment). Require the use of North Fork trails to access Cirque and South Fork Lakes.
	Recreation Category	Recreation Category 2, moderate use and moderate to	Maintain moderate to high	

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Setting	high opportunities for solitude.	opportunities for solitude.	
	Use Levels 01-04			Up to 6 spot and dunnage trips.
	Grazing	South Fork Meadow has reaches that are incised, with an active headcut. Stream segment rated functional at-risk. Requested as pasture.	Stream moves toward PFC.	No grazing. Rest for 8-12 years.
	Campsites		No stock camps.	No stock camps.

JOHN MUIR SOUTHWEST

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
1. Bench				
Destination: Bench Valley	Access	Blackcap Trail (Trail Class 3) to Bench Valley Trail (Trail Class 2, Resource Rating 3, Observed Trail Class 1), no system trail beyond Horsehead Lake. Bench Valley Trail in poor condition, severe erosion on switchbacks below McGuire Lake. Multiple trailing through at least one meadow above Guest Lake on Bench Valley Trail.	More stable Bench Valley Trail. More frequent maintenance on Bench Valley Trail.	Major rockwork needed on switchbacks below McGuire Lake (Bench Valley Trail). Regular maintenance needed on remainder of Bench Valley Trail.
	Recreation Category Setting	Recreation Category 2; a portion of upper basin is Recreation Category 1.	Maintain limited recreational impacts.	
	Use Levels 01-04	2-5 trips, 14-31 stock		Up to 6 spot and dunnage trips, consider additional (not to exceed 10) when trail is improved to standard.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Grazing	Some trailing related sod fragmentation and hoof punching are documented at McGuire Lake. Stream found to be in PFC. No grazing reported by pack station, but requested for grazing. Fall Creek grazing area: meadow less than 1 acre. Stream was rated at PFC. Stock nights reported at Fall Creek: 0/38/0	Retain stream in PFC.	McGuire Meadow: Wet areas (15%) of meadows need to be excluded from grazing. Allow grazing: 160 stock nights available. Fall Creek grazing area: allow grazing. 22 stock nights available.
	Campsites	1 stock camp at McGuire. 1 stock camp at Guest.	Stock holding and spot/dunnage sites should meet BMP's.	Designate 1 stock camp.
2. Basin				
Destination: Blackcap Basin	Access	Blackcap Trail (Trail Class 3 to junction with Bench Valley Trail, Trail Class 2 beyond), then user trails towards Ambition Lake and Maxson Lake.		Approve BAS01. Prohibit Bench to Blackcap use trail.
	Recreation Category Setting	Recreation Category 1. Remote with opportunities for solitude. Limited human impacts.	Maintain remoteness with high opportunities for solitude, low impacts.	
	Use Levels 01-04	4-5 trips, 23-24 stock		Up to 5 spot and dunnage trips.
	Grazing	Grazing at Lightning Corral Meadow reported 27/24/0 stock nights. Site not visited recently.		Allow grazing. 27 stock nights available.
	Campsites	No current packer camps in this area.		Designate 1 stock camp at Upper Lightening Corral Meadow. Stock holding and spot and dunnage sites should meet BMP's.
3. Basin				

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
Destination: Pearl/Portal Zone	Access	Blackcap Trail (Trail Class 3 to junction with Bench Valley Trail, Trail Class 2 beyond), then use trail (BAS02) towards Pearl Lake		Approve BAS02. Approve CRB01 for occasional use to Hummingbird Lake
	Recreation Category Setting	Recreation Category 1.	Maintain low use, high opportunities for solitude, low impacts.	
	Use Levels 01-04	1-4 trips, 4-20 stock		Up to 8 spot and dunnage trips per year. No more than 2 trips to Hummingbird Lake.
	Grazing	Grazing occurs in between Portal and Pearl Lakes or Crown Basin Camp. Reported grazing at Pearl Lake: 62/0/0		Pearl Lake Grazing Zone: allow grazing. 62 stock nights available.
	Campsites	Two packer camps exist at junction to Crown Basin.		Designate 2 stock camps in zone.
4. Bench				
Destination: Crabtree Lake	Access	Blackcap Trail (Trail Class 3) to Bench Valley Trail (Trail Class 2, Resource Rating 3, observed Trail Class 1, no system trail beyond Horsehead Lake, prohibited use trail to Crabtree Lake. BEN02 use trail less than 10% visible.	Maintain low visibility use trail to Crabtree Lake.	Approve BEN02 for low levels of use.
	Recreation Category Setting	Recreation Category 1.	Maintain high opportunities for solitude, low impacts, low visibility trail.	
	Use Levels 01-04	2 trips, 10-12 stock		Up to 2 spot and dunnage trips per year will maintain low visibility trail and setting of a Recreation Category 1.
	Grazing	Stock does not remain at Crabtree Lake, moved to Upper Fall Creek. Upper Fall Creek	Maintain current light grazing impacts.	Crabtree Lake: No grazing approved. Upper Falls Grazing

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		Grazing Area. 1.5 acres, low productivity. No grazing reported.		area, 12 stock nights available.
	Campsites	Little use occurring in this area. Spot and dunnage drop campsite on NE side of lake. High opportunity for solitude with very little camping available.	No stock camp.	No stock camp.
5. Basin				
Destination: Maxson Lake	Access			Approve BAS03 use trail.
	Recreation Category Setting	Recreation Category 1, very low use, high opportunities for solitude.	Maintain very low use, high opportunities for solitude.	
	Use Levels 01-04	No use reported.		Up to 2 spot and dunnage trips per year.
	Grazing	No grazing reported. Grazing requested.		Allow 25 stock night at meadow east of Maxson Lake.
	Campsites			Designate 1 stock camp.
6. Big Maxson				
Destination: Halfmoon Lake	Access	Blackcap Trail (Trail Class 3) to Halfmoon Cutoff (Trail Class 3).		
	Recreation Category Setting	Recreation Category 2. Low to moderate use, moderate to high opportunities for solitude, low impacts.	Maintain high opportunities for solitude.	
	Use Levels 01-04	1 trip, 6 stock		Up to 3 spot and dunnage trips per season.
	Grazing	No grazing requested or reported.		No grazing.
	Campsites	No packer camps in this area. Client drop off site only.	No stock camp.	No stock camp.
	Other Issues			

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
7. Big Maxson				
Destination: North Fork Kings River	Access	Blackcap Trail (Trail Class 3). Incision on Blackcap Trail at west end of Post Corral Meadow.	Reduce incision at west end of Post Corral Meadow on Blackcap Trail.	
	Recreation Category Setting	Recreation Category 2.		
	Use Levels 01-04	4-6 trips, 15-30 stock		Up to 6 trips spot and dunnage trips.
	Grazing	South side of the North Fork Kings River at the confluence of Fleming Creek. Site has high productivity and the stream within the meadow properly functioning.		Grazing allowed. Allow 400 stock nights.
	Campsites	South side of the Kings River at the confluence of Fleming Creek and the North Fork of the Kings River. BMP's were properly implemented and effective.		Designate 1 stock camp near gauging station/cabin.
	Other Issues			
8. Big Maxson				
Destination: Big Maxson Meadow	Access	Blackcap Trail (Trail Class 3). A small section of the Blackcap Trail below Big Maxson Meadow is in poor condition with instable tread and erosion issues.	Stabilize short section of Blackcap Trail that has unstable tread and shows erosion issues.	Rockwork needed on this section of the Blackcap Trail.
	Recreation Category Setting	Recreation Category 2, moderate to high use area, moderate opportunities for solitude.	Maintain as moderate opportunities for solitude.	
	Use Levels 01-04	1 trip, 14 stock		Up to 4 spot and dunnage trips.
	Grazing	Packer rarely grazes stock here, has not used since 2001. High public use in this area for		It is suitable for grazing, allocated to non-commercial pack stock users only.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		grazing. Meadow was rated functional at risk with an upward trend during field visit in 2002.		
	Campsites	There are several campsites around the meadow. This is a popular area for public stock users.		No stock camp.
	Other Issues			
9. Crown Lake				
Destination: Crown/Scepter Lakes	Access	Blackcap Trail (Trail Class 3) to Halfmoon Cutoff (Trail Class 3) to Crown Valley Trail (Trail Class 3), user trail to Scepter Lake.		Approve CRL01.
	Recreation Category Setting	Recreation Category 2, moderate use, moderate opportunities for solitude.		
	Use Levels 01-04	2 trips, 11 stock		Up to 6 spot and dunnage trips.
	Grazing	Clients are dropped at lake. Pack station moves stock 1/4 mile south of the lake to graze. Requested to graze area around and north of the lake.		Allow grazing at meadow near Scepter Lake. 25 stock nights.
	Campsites	No packer camp at lake. Clients are dropped at campsites. Very low use at this destination.		Designate 1 stock camp at Scepter Lake. Stock holding and spot and dunnage sites should meet BMP's.
10. Finger				
Destination: Chain / Duck Lakes	Access	Rancheria Trail (Trail Class 3) to Hoffman Mountain Trail (Trail Class 2). Severe erosion problems along sections of the Hoffman Mountain Trail. Trails receive low use and infrequent maintenance.	Stabilize gullied sections of the Hoffman Mountain Trail.	Significant water diversion and erosion control structures needed on Hoffman Mountain Trail.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Recreation Category Setting	Recreation Category 2. Low to moderate use, moderate to high opportunities for solitude, low impacts.		
	Use Levels 01-04	1 trip, 12 stock		Up to 4 spot and dunnage trips to one operator.
	Grazing	No grazing reported. Grazing requested at Duck Lake and Chain Lake.		Allow 25 stock nights at Duck and 25 stock nights at Chain Lake.
	Campsites			Designate 1 stock camp at Duck Lake and 1 stock camp at Chain Lake.
11. Fleming Mountain				
Destination: Dale Lake	Access	Blackcap Trail (Trail Class 3) to Hell For Sure Trail (Trail Class 2, RR 2.5, Observed. Trail Class 2) to Dale Lake Trail (Trail Class 2, RR 2.5, formerly user trail) is well defined but rocky in areas. Minor to moderate erosion and gullies on Dale Lake Trail.		Stabilize erosion and gullies on Dale Lake Trail.
	Recreation Category Setting	Recreation Category 2.	Maintain moderate to high opportunities for solitude.	
	Use Levels 01-04	1 trip, 4-5 stock		Up to 3 spot and dunnage trips.
	Grazing	Currently graze stock at Fleming Meadow or site North of Devils Punchbowl.	Retain streams in PFC.	Allow grazing. 621 stock nights available in the Fleming/Dale/Lower Indian Grazing Zone. Above Fleming Meadow (flee): Allow grazing; 77 stock nights available. Indian Lake Meadow: Allow grazing; 237 stock nights available. Upper Dale Meadow: 280 stock nights available.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Campsites	Packer drops clients at lake but does not remain with stock. One stock drop-off camp evaluated with BMP's. Primitive latrine present.		Designate packer drop off camp at Dale Lake. Remove latrine installed by CPO. Stock holding and spot and dunnage sites should meet BMP's.
12. Fleming Mountain				
Destination: Fleming Lake	Access	Blackcap Trail (Trail Class 3) to user trail that drops into Fleming Creek.		
	Recreation Category Setting	Recreation Category 2. Low use, High opportunities for solitude.		
	Use Levels 01-04	1-2 trips, 3-6 stock		Up to 6 spot trips.
	Grazing	Currently graze at Fleming Meadow. Meadow rated proper functioning condition.		Allow grazing. Fleming Meadow: 77 stock nights available.
	Campsites	Camps exist at lakes but are only used by private stock. Packer drops clients at lakes but does not remain.		Designate 1 stock camp above Fleming Lake. Stock holding and spot and dunnage sites should meet BMP's.
13. Fleming Mountain				
Destination: Rae Lake	Access	Blackcap Trail (Trail Class 3) to Hell For Sure Trail (Trail Class 2, Resource Rating 2.5, Observed. Trail Class 2) to Rae Lake Trail (Trail Class 2, Resource Rating 2, observed. Trail Class 2). Use trail from north side of Rae Lake to Reddys Hole trail is prohibited.		
	Recreation Category Setting	Recreation Category 2. Moderate use and moderate opportunities for solitude. Moderate recreational impacts.	Maintain moderate opportunities for solitude, reduce overall impacts.	
	Use Levels 01-04	3-4 Trips, 24-25 Stock		Up to 4 spot and dunnage trips.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Grazing	No grazing at Rae Lake. Graze stock at Fleming Meadow, Lower Indian or site near Devils Punchbowl trail depending on suitability.		No grazing at Rae Lake. 621 stock nights available in the Fleming/ Dale/ Lower Indian Grazing Zone. Above Fleming Meadow (flee): Allow grazing; 77 stock nights available. Indian Lake Meadow: Allow grazing; 237 stock nights available. Upper Dale Meadow: 280 stock nights available.
	Campsites	Packer drops clients at lake but does not remain. Limited camping capacity.	Stock holding and spot/dunnage sites should meet BMP's.	No stock camp.
14. Hobler				
Destination: Burnt Corral Zone	Access	Blackcap Trail (Trail Class 3) to Burnt Corral Trail (Trail Class 2)		Approve HOB01.
	Recreation Category Setting	Recreation Category 2.		
	Use Levels 01-04	2-6 Trips, 8-58 Stock		Up to 6 spot and dunnage trips.
	Grazing	Pack station grazes stock at Burnt Corral Meadow or Reddys Hole Meadow. Grazing reported at Burnt Corral: 8 stock nights.		Burnt Corral Meadow: Allow 25 stock nights.
	Campsites	No issues identified.		Designate 1 stock camp at Burnt Corral Meadow. Stock holding and spot and dunnage sites should meet BMP's.
15. Hobler				
Destination: Red Rock Basin	Access	Blackcap Trail (Trail Class 3) to Burnt Corral Trail (Trail Class 2) to Reddys Hole Trail (Trail Class 1) - possible shortcut via Hobler Lake Trail (Trail Class		

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		2) or Reddys Hole user trail. Reddys Hole system trail and user trail are very faint, often contain no discernable tread and receives very little use.		
	Recreation Category Setting	Recreation Category 1.		
	Use Levels 01-04	2-4 trips, 12-66 stock		Up to 4 spot and dunnage trips.
	Grazing	No grazing reported or requested.		No grazing approved.
	Campsites		No stock camp.	No stock camp.
16. South Woodchuck				
Destination: Chimney/Woodchuck Lakes	Access	Woodchuck Trail (Trail Class 3) to Woodchuck Lake Loop (Trail Class 2). Access to Chimney/Marsh Lake trail 28E39. Use trail to Chimney Lake is prohibited.		Prohibit Chimney Lake use trail (SOW03) Prohibit use trail (SOW02) to Marsh Lake.
	Recreation Category Setting	Recreation Category 2.		
	Use Levels 01-04	2-11 trips, 10-99 stock		Up to 15 spot and dunnage trips to one operator.
	Grazing	Stock is grazed 1/4 mile south of Chimney Lake.		Allow 25 stock nights south of Chimney Lake.
	Campsites	Pack station drops clients off at Chimney and Woodchuck Lake but moves stock to camp 1/4 mile south of Chimney Lake.	Stock holding and spot/dunnage sites should meet BMP's.	Designate 1 stock camp south of Chimney Lake.
17. South Woodchuck				
Destination: Moore Boy	Access	Woodchuck Trail (Trail Class 3) to Woodchuck Lake Loop (Trail		

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
Meadow		Class 2).		
	Recreation Category Setting	Recreation Category 1.		
	Use Levels 01-04	2-4 trips, 14-16 stock		4 trips.
	Grazing	Does not hold stock overnight. No grazing requested.		No grazing.
	Campsites	Pack station drops clients and returns.	Stock holding and spot/dunnage sites should meet BMP's.	No stock camp.
18. Post Corral				
Destination: Niche	Access	Blackcap Trail (Trail Class 3). Incision on Blackcap Trail at west end of Post Corral Meadow.	Reduce incision at west end of Post Corral Meadow on Blackcap Trail.	
	Recreation Category Setting	Recreation Category 2.		
	Use Levels 01-04	3-5 trips, 14-21 stock		Up to 6 spot and dunnage trips.
	Grazing	Does not hold stock overnight. No grazing requested or reported.		Grazing is not approved.
	Campsites	Pack station drops clients and returns.		No stock camps.
19. Red Mountain				
Destination: Disappointment Lake	Access	Blackcap Trail (Trail Class 3) to Hell For Sure Trail (Trail Class 2, RR 2.5, observed. Trail Class 2). Sections of Hell For Sure Trail in poor condition with erosion issues.	Stabilize erosion issues on Hell For Sure Trail.	NSCS trail from Disappointment Lake to SEKI boundary.
	Recreation Category Setting	Recreation Category 2.		

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Use Levels 01-04	4-6 trips, 6-40 stock		Up to 6 spot and dunnage trips.
	Grazing	Northwest of the junction of the Hell for Sure (29E52) and Meadowbrook (29E21). (Named North of Devil's Punchbowl (ramble). Meadow stream rated properly functioning.	Due to the high elevation should receive light grazing during the later part of the grazing season.	Allow 27 stock nights of grazing North of Devils Punchbowl. No grazing at Disappointment Lake.
	Campsites	Pack station drops clients off at Lake and moves stock to grazing location.		Designate 1 stock camp.
20. Red Mountain				
Destination: Devils Punchbowl / Little Shot Lake	Access	Blackcap Trail (Trail Class 3) to Hell For Sure Trail (Trail Class 2, Resource Rating 2.5, Observed. Trail Class 2), use trail to Little Shot Lake. Sections of Hell For Sure Trail in poor condition with erosion issues.	Stabilize erosion issues on Hell For Sure Trail.	Approve use trail RMB05.
	Recreation Category Setting	Recreation Category 2.		
	Use Levels 01-04	4 trips, 24 stock		Up to 4 spot and dunnage trips.
	Grazing	Northwest of the junction of the Hell for Sure (29E52) and Meadowbrook (29E21). (Named North of Devils Punchbowl). Meadow stream rated properly functioning.	Due to the high elevation should receive light grazing during the later part of the grazing season.	Allow 27 stock nights of grazing North of Devils Punchbowl. No grazing at Little Shot Lake itself.
	Campsites	Pack station drops clients off at Lake and moves stock to grazing location.	It is recommended that no packer camps be established in this location.	No stock camp.
21. Rodgers				
Destination: Crown Valley	Access	Crown Valley Trail (Trail Class		

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
		3) to Crown Valley.		
	Recreation Category Setting	Recreation Category 2.		
	Use Levels 01-04	2 trips, 11 stock		Up to 10 spot and dunnage trips.
	Grazing	No grazing, private land.		No grazing approved.
	Campsites			Designate 1stock camp.
	Other Issues			
22. Rodgers				
Destination: Geraldine Lake	Access	Crown Valley Trail (Trail Class 3) to Spanish Lake Loop (Trail Class 2) to Geraldine Lakes Trail (Trail Class 1). Steep, rocky trail leads to Geraldine Lakes.	Stabilize trail to Geraldine Lakes.	Rockwork needed on Geraldine Lakes Trail.
	Recreation Category Setting	Recreation Category 2, low use and high opportunities for solitude.	Maintain high opportunities for solitude.	
	Use Levels 01-04	3-5 trips, 22-23 stock		Up to 4 spot and dunnage trips.
	Grazing	No grazing requested or reported.		Grazing not approved.
	Campsites		No stock camps.	No stock camps.
23. Spanish				
Destination: Spanish Lakes	Access	Crown Valley Trail (Trail Class 3) to Statham Trail (Trail Class 2).		
	Recreation Category Setting	Recreation Category 2.		
	Use Levels 01-04			Up to 4 spot and dunnage trips.

Analysis Unit/ Destination	Feature	Current Condition	Desired Condition	Remedy Proposed / Operating Guidelines
	Grazing	No grazing requested.		No grazing approved.
	Campsites		No stock camps.	No stock camps.
24. Post Corral				
Destination: Fleming Creek	Access	User Trail RMB07 Fleming Creek trail departs off of the Blackcap Trail (29E03).		
	Recreation Category Setting	Recreation Category 1.	Based on limited trips authorized area will maintain opportunities for solitude.	
	Use Levels 01-04	1-2 trips, 3-6 stock		2 trips per year. Trail is only used 1-2 times a year by one individual party.
	Grazing	No grazing requested, none reported.		No grazing.
	Campsites	One campsite along Fleming Creek.		



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National Forests

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Trail and Commercial Pack Stock Management In the Ansel Adams and John Muir Wildernesses

**Final
Environmental Impact Statement**

Volume 1 – Chapters 1-3



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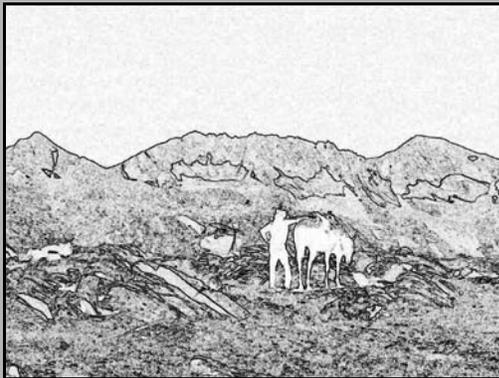
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Chapter 1 Purpose and Need for Action

Chapter 1 – Purpose and Need

1.1 Background

Analysis Area

The analysis area includes the Ansel Adams and John Muir Wildernesses and covers 810,581 acres extending in the eastern portion of the analysis area from west of Lone Pine, California in the south to State Highway 120 in the north. The western portion of the analysis area extends from the southern boundary of Yosemite National Park to west of Sequoia Kings Canyon National Park. The planning area lies within Madera, Fresno, Inyo, and Mono Counties (see Location and Vicinity Map, Figures 1.1 and 1.2).

The Ansel Adams Wilderness was originally established as the Minarets Wilderness in 1964 and was enlarged by 119,000 acres and renamed the Ansel Adams Wilderness by the California Wilderness Act of 1984. The Ansel Adams Wilderness is a total of 231,005 acres, with 78,775 acres on the Inyo National Forest and 151,483 acres on the Sierra National Forest. A small portion of the Wilderness (747 acres) is located in Devils Postpile National Monument (not included in this analysis). The Wilderness extends from Highway 120 in the north to Lake Thomas A. Edison to the south.

The John Muir Wilderness was established in 1964 by the original Wilderness Act and enlarged 81,000 acres by the 1984 California Wilderness Act. The John Muir Wilderness extends from Mammoth Lakes, California in the north, forks around the Sequoia Kings Canyon Wilderness, and extends some 100 miles to the south with its southern most boundaries just west of Lone Pine, California. The John Muir Wilderness is one of the most heavily visited wildernesses in the National Wilderness Preservation System. There are 580,323 acres within the Wilderness, with 228,366 acres on the Inyo National Forest and 351,957 acres on the Sierra National Forest. Approximately 26,000 acres in the northern portion of the Fish Creek watershed are Sierra National Forest lands administered by the Inyo National Forest.

History

With the completion of the Ansel Adams, John Muir and Dinkey Lakes Wilderness Plan in 2001, new direction for the management of these wildernesses was incorporated into the Land and Resource Management Plans for the Inyo and Sierra National Forests. The plan established a need for types of commercial services, levels of commercial use (measured in service days), controls on commercial use with quotas at trailheads for all commercial operations, limitations on pack stock travel, grazing standards for all recreational stock, and desired conditions for the wildernesses through the creation of three recreation categories. Recreation categories are a strategy for managing recreation use in the Ansel Adams, John Muir and Dinkey Lakes Wildernesses. The three recreation categories are explained in more detail in the Glossary in Appendix A.

The Wilderness Plan's Record of Decision set objectives and desired conditions for managing these wildernesses and established limitations and controls on authorized commercial operations. This proposal adds and modifies direction pertaining to commercial stock supported outfitter and guiding.

In April 2000, a lawsuit filed against the Sierra and Inyo National Forests alleged violations of the National Forest Management Act, National Environmental Policy Act (NEPA), and the Wilderness Act. The judge found in favor of the plaintiffs on the NEPA claim. The Court determined that in authorizing the special use permits for the pack stations, the Forest Service failed to adequately document environmental impacts as required by the NEPA. A Court Order was issued that required the Forest Service to re-evaluate the existing management direction and impacts of commercial pack stock operations in the Ansel Adams and John Muir Wildernesses. This proposal will establish management direction. Proposals for individual pack stock special use permits will be considered through a subsequent NEPA analysis to be completed by December 2006.

Nineteen pack station operations continue to be authorized, with specified conditions and restrictions imposed by the court. The restrictions will remain in place until the NEPA analysis is completed and new special use permits are issued. Most of the special use permits issued to existing commercial pack stock operations have expired or are due to expire in the next few years. For all of these pack stations, their use in the Ansel Adams and John Muir Wildernesses reflects only a portion of their overall operation. Many pack stations provide service on lands outside these wildernesses and in some cases in other adjacent wildernesses—the Kaiser, Dinkey Lakes, Golden Trout, and South Sierra Wildernesses.

The Forest Service assessed resource conditions where pack stock operations occur, and compared that condition with current Forest Land and Resource Management Plan standards, applicable laws, and policies. Where differences between existing conditions and standards, guidelines, laws, and policies were found, a need for change and corrective actions were identified.

This proposal will also establish a Trail Management Plan for the Ansel Adams and John Muir Wildernesses. Both forests have maintained various trail inventories during the past 40-50 years; including the most recent list of trails in Appendix C of the 2001 Wilderness Plan, a 1987 Recreation Information Management (RIM) Inventory maintained by the Inyo National Forest, and a remnant inventory from the 1960s and 1970s, once used by the Sierra National Forest.

The 2001 Wilderness Plan's Record of Decision directs the forests to adjust trail maintenance levels to be consistent with the desired conditions of the three recreation categories. Designations in the proposed trail management plan are intended to meet this direction for the two wilderness areas.

1.2 Proposed Action

The Forest Service proposes to amend the Land and Resource Management Plans for the Sierra and Inyo National Forests which includes the 2001 Ansel Adams, John Muir, and Dinkey Lakes Wildernesses Management Plan. This amendment will provide further standards and guidelines for commercial pack stock activities. The proposed action would modify existing Wilderness Plan direction related to use levels (numbers of stock and numbers by use type), locations of

commercial use, party size, trail suitability for commercial pack stock operations, grazing suitability and utilization levels, and designation of campsites and use of campfires. The Proposed Action also establishes a Trail Management Plan for both wildernesses. The Trail Management Plan establishes the trails that will be maintained on the Forests' inventories, and how they will be managed. The specifics of the proposal are detailed in Chapter 2, Alternative 2 – Proposed Action.

1.3 Purpose of and Need for Action

The need for the Trail and Commercial Pack Stock Management Direction for the Ansel Adams and John Muir Wildernesses is as follows:

There is a need for additional guidance for managing commercial pack stock operations in the Ansel Adams and John Muir Wildernesses in order to achieve and maintain desired resource and experiential conditions identified in the 2001 Wilderness Plan and Record of Decision. Stock impacts can cause substantial damage to vegetation and soils particularly in sensitive environments (McClaren and Cole, 1993; Newsome et al., 2004; DeLuca et al., 1998). Overall stock use can also affect other wilderness visitor experiences, both on trails and at campsites. The 2001 Wilderness Plan relies upon external controls to manage use and impact. Field assessments indicate more direct actions (internal controls) are needed to manage commercial pack stock impacts and maintain the desired resource and experiential conditions of the 2001 Plan.

There is a need for a trail plan that accurately identifies a system of trails for all users, and appropriate trail management objectives for each system trail, consistent with the desired condition of areas within the two wildernesses as identified in the 2001 Wilderness Plan and Record of Decision. Past trail system inventories (2001 Sierra N.F.; 1988 Inyo N.F.) are incomplete, have a variety of inaccuracies, and in many cases are inconsistent with the management of the areas that they access. The 2001 Wilderness Plan directs the Forests to adjust trail maintenance levels to implement the three category recreation strategy.

In meeting these needs, the proposal must also achieve the following purposes:

1. Comply with the Wilderness Act by preserving wilderness character. The Wilderness Act (16 U.S.C. 1131-1136) provides overall direction to Federal land management agencies that administer wilderness areas. Federal agencies are required to manage wilderness areas so as to preserve wilderness character. Elements of wilderness character include: untrammled, natural, undeveloped and outstanding opportunities for solitude or a primitive and unconfined type of recreation.

2. Provide for needed commercial pack stock services. There is a substantial need for commercial pack stock services by segments of the population who wish to engage in legitimate wilderness activities, but can only do so with commercial pack stock support. A purpose of this decision is to preserve wilderness character while meeting that need. The public's need for commercial pack stock services is documented in the Needs Assessment (Appendix D).

3. Comply with the January 10, 2002, court order from the United States District Court for the Northern District of California granting injunctive relief in *High Sierra Hikers Association v. Powell* (No. C-00-01239) by:

- **Identifying appropriate group size limits for commercial stock operations.** There are both social and resource considerations with the current party size of 15 persons and 25 stock. Party size limitations are in place wilderness wide and many locations do not have the capacity for a full party size. Social impacts of large groups can affect other visitor's wilderness experience and their expectations of few encounters with others. Large parties can also create larger campsites and a proliferation of larger campsites.
- **Establishing camping limitations on commercial pack stock operations.** Pack stock impacts can be more severe on vegetation and soils than hiking parties. The size and impacts of stock camps can be noticeable and intrusive in some locations.
- **Identifying which trails are suitable for use by commercial pack stock.** There are a variety of factors including resource impacts, management objectives, allowable levels of use and trail maintenance objectives that require considering the appropriateness of commercial stock on certain trails.
- **Identifying an appropriate level of stock to be used in conjunction with the commercial operations.** Stock impacts can cause substantially more damage to vegetation and soils particularly in some sensitive environments. Overall stock numbers on trails can also affect other wilderness visitor experiences, both on the trail and at campsites. Managerial actions in the past have focused on regulating the numbers of people with very coarse limits on stock.
- **Completing a cumulative impact analysis by December 2005.** The 2001 Wilderness Plan identified separate NEPA processes for the issuing of multiple pack station special use permits in the two wildernesses. The District Court of San Francisco issued injunctive relief that included direction that the Forest Service prepare a cumulative impact analysis by December 2005 followed by a second NEPA process to issue individual special use permits.

4. Identify monitoring requirements to facilitate responsive adaptive management for commercial pack stock operations. In recognition that conditions change and need to be managed over time, it is important to have clear, responsive guidelines for those operations through the term of the permits.

5. Identify the appropriate level of grazing associated with commercial pack stock operations. It is a common practice to allow commercial pack stock to graze meadows and other forage producing areas within these wildernesses. Some meadows used by pack stock exhibit varying historical and current impacts such as soil compaction, bare soil, and stream alternations which affect hydrologic function, and vegetation composition.

Scope of the Proposal

The topics to be addressed in the EIS are relatively narrow in scope, specifically designed to respond to the above mentioned court order and establish a Trail Management Plan for the Ansel Adams and John Muir Wildernesses. The recent 2001 Wilderness Plan set forth programmatic management direction for these two wildernesses and this analysis will not revisit the following decisions that have already been made: party size limits for non commercial pack stock visitors, hiker only trails, the strategy of desired conditions as identified by the recreation category definitions, and that the Forest Service (or authorized contractor) will issue all wilderness permits. These issues have already been adequately addressed through full NEPA processes, and

it would divert scarce agency resources to revisit these issues, and it would produce little benefit. Therefore, the range of alternatives in this EIS is limited to the focused purpose and needs described above.

While the above discussion goes beyond the strict parameters of the purpose and need, this is done to provide greater context for the decision to be made and to address specific concerns raised by the public. NEPA itself, the regulations implementing it, and the case law interpreting NEPA all make clear that the range of alternatives is defined by the purpose and need. NEPA and its implementing regulations also make clear that the agency should focus its discussion on significant issues only. That is what we have tried to do with this EIS. While we believe we have succeeded in achieving this goal, it should also be noted that the agency has been under a strict court-imposed deadline, so has only had limited time to address all the issues at hand.

1.4 Decision Framework

Decision to be Made

The decision to be made is whether or not to continue commercial pack stock operations in the Ansel Adams and John Muir Wildernesses and, if so, to determine the extent of the operations, which includes the amount, type, and locations where these activities would occur. A decision will also be made that establishes a Trail Management Plan for both wildernesses. This will determine the trails that will be maintained on the Forest's inventories, and how they will be managed.

Related Laws, Regulations, and Agency Policies that Influence the Scope of the EIS

1964 Wilderness Act: This law provides for the establishment of designated wilderness lands that are to be protected for their ecological, geological, recreational, historical, scientific, educational and scenic values. Managing agencies are to preserve the wilderness of the designated lands, yet the Act does not establish standards for this to occur. This Act designated a National Wilderness Preservation System and the Ansel Adams and John Muir Wildernesses were two of the original areas designated as wilderness.

The National Forest Management Act (1976) requires that a plan be prepared for the management of each National Forest. Among other direction, it also directs National Forests to prevent irreversible watershed damage and to prevent detrimental impacts to streams and wetlands.

Endangered Species Act: The Endangered Species Act (1973) and amendments to the Act (1978, 1979, and 1982) was passed by Congress to prevent the extinction of any species that is in danger of extinction throughout all or a significant portion of its range. Section 7 of the Act outlines procedures for interagency cooperation to conserve Federally listed species and designated critical habitats. Section 7(a)(1) requires Federal agencies to use their authorities to further the conservation of listed species. Section 7(a)(2) requires Federal agencies to consult with the National Marine Fisheries and/or the U. S. Fish and Wildlife Service to ensure they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat.

Clean Water Act: The Clean Water Act (33 U.S.C. 1251 et seq.), a series of Acts passed from 1948 to 1987, was passed to restore and maintain the chemical, physical, and biological integrity of the nation's waters, and to protect beneficial water uses. It requires compliance with state and federal pollution control measures. The Clean Water Act is enforced by the California State Water Resources Control Board (SWRCB). The Forest Service developed Best Management Practice (BMP) guidelines (Water Quality Management for Forest System Lands in California – Best Management Practices, USDA Forest Service, Sept. 2002) as part of the Management Agency Agreement between the Forest Service and the SWRCB. These BMPs are guidelines for prevention of water quality degradation on National Forest Lands in California.

Clean Air Act: The Clean Air Act (1967) and amendments to the Act (1972, 1977) were established to enhance the quality of the Nation's air resources and protect public health and welfare. Section 118 of the Clean Air Act requires the federal government to comply with all federal, state, tribal, interstate, and local air quality standards and requirements. The Act established National Ambient Air Quality Standards and gave the States primary responsibility for air quality management. States carry out this responsibility through development of a State Implementation Plan. Federal and State land managers must ensure that their actions comply with all procedural and substantive requirements contained in Federal, State and local air pollution control regulations.

The 1977 Clean Air Act Amendment: Areas of the country were designated as Class I, II, and III air sheds for the prevention of significant deterioration purposes. Class I areas include national parks and wilderness areas designated before 1977 and over 5,000 acres in size. The Ansel Adams and John Muir Wildernesses are Class I airsheds. Class I provides protection to pristine lands by severely limiting the amount of additional human-caused air pollution that can be added to these areas.

Executive Orders 11988 and 11990 direct federal agencies to avoid to the extent possible the impacts associated with the destruction or modification of floodplains and wetlands. Agencies are directed to avoid construction and development in flood plains and wetlands whenever there are any feasible alternatives.

Water Quality Management for Forest Lands in California: Best Management Practices (Sept. 2000) provides guidance for protecting water quality, as directed by the Lahontan Regional Water Quality Control Board (LRWQCB) Central Valley Regional Water Quality Control Board (CVRWQB).

Inyo National Forest Land and Resource Management Plan (1988) and Sierra National Forest Management Plan (1991) as Modified by the Sierra Nevada Forest Plan Amendment (2004): The Ansel Adams and John Muir Wildernesses fall under the jurisdiction of individual plans—Sierra (1991) and Inyo (1988). Each Forest Plan contains general management direction applicable to all wildernesses within each Forest. This direction includes multiple use goals and objectives, forest-wide standards and guidelines, management area direction (prescriptions), and monitoring and evaluation requirements.

The Sierra Nevada Forest Plan Amendment Record of Decision 2004 (2004 ROD) amended both of these forest plans. The 2004 ROD established Riparian Conservation Objectives (RCOs); a set of six objectives and their associated standards and guidelines that establish management direction for Riparian Conservation Areas (RCAs). RCAs are defined as areas near water bodies and wetlands. The RCOs were developed to protect water quality, aquatic and riparian habitats,

and stream, floodplain and watershed condition. The applicable RCOs and RCA standards and guidelines are described in the document and are available in the project record. There is also direction to maintain and restore habitat of riparian dependent plant and animal species.

A number of wildlife related standards and guidelines are also in the 2004 ROD. These include standards and guidelines for willow flycatcher, wolverine, great grey owl, northern goshawk, California spotted owl, fisher, marten, and Sierra Nevada red fox.

The Record of Decision for Management Direction for the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses 2001 (Wilderness Plan) amended both forest plans and establishes management direction for the Ansel Adams, John Muir and Dinkey Lakes Wildernesses. Desired conditions for visitor use are described through the recreation categories assigned to the landscape. The recreation categories establish standards and guidelines for the experiential components and resource conditions that are to be maintained. They allow for some areas to be heavily managed with high visitor use while other areas are managed for very low use and pristine conditions. These categories and desired conditions are in place to prevent the slow degradation of areas over time. Campsite, use trails, and trail management direction were also established in relation to the recreation category. Standards and guidelines were established for recreational stock grazing, including utilization, range readiness and hydrologic conditions. Allocations of use and a rationing mechanism to maintain the desired use levels for both commercial and non commercial visitors were established.

The Wilderness Plan states that the Forests will “provide a transportation system that ensures suitable access for the types and numbers of trail users, protection of resources, and is consistent with management objectives for the areas accessed.” It further states that the Forests will maintain an inventory of system trails with designated “service levels” (nationally known as “Trail Classes”), which consider the three recreation categories for the areas that the trail accesses.

Specific direction from the Wilderness Plan relevant to the current planning effort is detailed in the project record.

1.5 Public Involvement

A Notice of Intent to prepare an EIS was published in the Federal Register on June 15, 2004. Two Proposed Actions (*Trail Management Plan* and *Commercial Pack Stock Use Authorizations for the Ansel Adams and John Muir Wildernesses*) were distributed to interested parties in June 2004. Public meetings were held to clarify the Proposed Actions in Clovis, California (July 8, 2004) and Bishop, California (July 12, 2004). The public was asked to submit comments to the action from which issues could be determined and alternatives developed. Approximately 300 comments were received for the Commercial Pack Stock Use Authorizations Proposed Action and approximately 200 comments were received for the Trail Plan Proposed Action (table below provides a summary of these comments). The comments for both of these projects were used to develop the significant issues.

Table 1.1 Number of comments received on the Proposed Actions

Project	Agency	Interest Group	Commercial Pack Station	Individual	Form Letter	Total
Commercial Pack Stock Use and Authorization	3	7	6	119	131	266
Trail Management Plan	2	7	3	88	67	167
Total	5	14	9	207	198	433

On January 25, 2005, a revised Notice of Intent was published in the Federal Register. This notice incorporated the Trails Management Plan EA into the Commercial Pack Stock Use Authorizations EIS. The project was renamed *Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses EIS* and the purpose and need for the project was clarified. This combined EIS responds to concerns over these two projects being connected actions and will better display the cumulative effects of two projects occurring in the same geographic area.

The Draft EIS was released for public comment on March 29, 2005. The document was placed on the Inyo and Sierra National Forests' websites and was mailed to interested parties. On April 15, 2005, the Draft EIS Notice of Availability was published in the Federal Register. Two public meetings were held. Approximately twenty people attended the May 17, 2005, meeting in Bishop, California and three people attended the May 19, 2005, meeting in Clovis, CA. The comment period closed June 15, 2005. Over 400 comments were received on the DEIS, the majority of which were form letters. The table below summarizes the comments received on the Draft EIS; the response to comment is in Appendix E.

Table 1.2 Summary of comments received on the Draft EIS

Agency	Interest Group	Commercial Pack Station	Individual	Form Letter	Total
12	10	5	178	224	429

1.6 Scope of the Analysis

Issues Studied in Detail

Using the comments on the Proposed Action from the public, organizations, other agencies and (affected) tribes, the interdisciplinary team and Forest Supervisors developed a list of issues. Issues are points of discussion, debate or dispute about environmental effects.

The Forest Service separates the issues into two categories: significant and non-significant. The Council on Environmental Quality regulations state:

NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail. (40 CFR 1500.1(b))

Using the scoping process, not only to identify significant environmental issues deserving of study but also to deemphasize insignificant issues narrowing the scope of the EIS process accordingly. (40 CFR 1500.4(g))

Significant issues directly influence the initiation, development, and technical design of the project; are disclosed in the analysis; and were used to develop alternatives to the proposed action. Issues are significant because of the extent of their geographic distribution, the duration of their effects, or the intensity of interest or resource conflict.

Non-significant issues are identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) unrelated to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council for Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)..." A list of the non-significant issues and reasons regarding their categorization as non-significant may be found in the project file.

These significant issues directly influence the initiation, development, and technical design of the project; are used in the analysis; and were used in the development of alternatives to the proposed action.

Issue #1: Use Levels

There is disagreement on the amount of commercial pack stock use that is acceptable in these wildernesses. Some believe that the proposed level of commercial pack stock use will cause degradation of resources including wilderness values. Others believe the proposed action is overly restrictive and that more commercial stock use should be allowed.

How the issue was addressed:

- Evaluation of each alternative's use levels on the four components of wilderness character.
- Evaluations of effectiveness of various control mechanisms on resource impacts.
- Evaluation of impact of various use level control mechanisms on wilderness experience of pack stock visitors.
- Development of different alternatives with varied numbers of stock and locations where commercial stock use occurs.
- Development of different alternatives with varied control mechanisms, numbers of stock, and locations where commercial stock use occurs.

Issue #2: Party Size

There is disagreement on the appropriate party size for commercial pack stock. Some publics feel the proposed party size is too high and proposed site specific party size limitations do not go far enough in responding to the effects that large stock parties have on both the resource (trails, camps and meadows) and the experience of the non-pack stock visitor.

How the issue was addressed:

- Locations where party size is less than wilderness-wide standard of 15 persons and 25 stock.
- Objective evaluation of research on effects of party size on ecological and experiential resources.
- Development of an alternative with lower overall people and stock limits.

Issue #3: Trail Suitability

There are concerns that some destinations and trails may incur further impacts as a result of continued commercial pack stock use. The current conditions of the proposed system and use trails are not capable of sustaining repeated use by commercial pack stock due to terrain, grade and maintenance limitations. Conversely, commercial stock operators believe there should be no trail restrictions for commercial pack stock users.

How the issue was addressed:

- Miles of System Trail available to commercial stock and resource condition ratings of trails.
- Percent of System available to commercial.
- Miles of Use Trail available to Commercial Stock.
- Development of alternatives with variations on numbers of miles and types of trails that are not suitable for commercial stock.

Issue #4: Grazing Management

There is disagreement over the level of grazing that is sustainable and the level of grazing that is appropriate. Some believe the proposed grazing practices will lead to unacceptable resource impacts. Drift fences may support poor grazing practices by allowing loose grazing and a determination on the role of drift fences in managing stock is needed. Others believe that all forage should be available for pack stock grazing.

How the issue was addressed:

- Number of meadows grazed and their condition (Proper Functioning Condition rating).
- Number of meadows grazed and their Hydrologic Function Alteration Severity rating.
- Estimated number of key areas, and percent of total assessed, predicted to exhibit a downward trend in the vegetation needed to protect the watershed over the long term.
- MIS riparian meadow and meadow edge habitats with improved habitat conditions and reduced potential for human disturbances.

Issue #5: Campfires

It is believed by some publics that the current elevation fire closures do not accurately reflect firewood availability at some locations and that campfire closures should be based on site specific conditions, not generic elevation closures. By bringing firewood from outside the wilderness into areas closed to collecting firewood and allowing campfires as proposed, the proposal commercial pack stock users could bring pathogens, spread weeds, and possibly encourage unauthorized campfires from non-packer supported wilderness users.

How the issue was addressed:

- Number of campsites where firewood may be brought into the wilderness.
- Assessment of risk associated with packing in firewood.
- Development of alternatives with variations on campfire limits.

Issue #6: Economic and Operational Effects

There is disagreement as to the extent that economic factors should be considered when deciding levels and appropriateness of commercial activities in the wilderness. The proposed action includes additional restrictions on commercial pack stock in the Ansel Adams and John Muir Wildernesses and will limit the flexibility of pack station operators. One perspective on this issue is that the additional restrictions may irreparably harm the financial viability of these operations. These potentially negative economic impacts to commercial pack stations would also lead to adverse economic effects on local communities.

How the issue was addressed:

- Regional economic contribution (in terms of labor income and employment) related to wilderness commercial pack stock activities.

Issue #7: Trail Development

Some comments on the Proposed Action stated that the proposed trail management plan does not protect wilderness values. The higher development trails have characteristics and management intrusion which adversely affects visitors' experience of wilderness. On the other hand, other comments contend that the low development trails will not support the allowable use types and levels and may cause greater resource effects leading to exclusion of stock from trails that are not adequately maintained. Trails need to be designated to accommodate the allowable types and levels of use.

How the issue was addressed:

- Miles of trail by trail class.
- Miles of Trail Class 1 open to commercial stock.
- Miles of system trail and use trails available to commercial stock.
- Miles of trails by trail class indicators.
- Cost analysis of maintaining trails to standards.
- Development of alternatives with variations on trail class assignments.

1.7 Applicable Regulatory Requirements, Required Coordination, Licenses, and Permits

Consultation with United States Fish and Wildlife Service

Forest Service Manual direction found in 2671.45 describes the direction and procedures for Consultation with the U. S. Fish and Wildlife Service (USFWS) as required under the Section 7 of the Federal Endangered Species Act of 1973, as amended.

The Forest Service is required to consult with the USFWS when a proposed action will result in a “may affect” determination that the Forest Service has concluded through a biological evaluation process for a federally listed species, or designated critical habitat. Consultation through a Biological Assessment can be informal when a determination of “may affect not likely to adversely affect” is concluded, or the consultation process moves to formal consultation when the determination is a “may affect, likely to adversely affect.”

Conference is a legally required “informal consultation” with the USFWS. It is mandatory whenever an agency program or activity that is likely to jeopardize the continued existence of any species proposed for listing or result in the destruction or adverse modification of proposed critical habitat.

The USFWS reviews the Forest Service findings of affect in the biological assessment/consultation process to determine if it concurs with the findings, or to determine if further conservation actions are necessary to prevent the action from jeopardizing the continued existence of a listed species, or to avoid adverse effects to a proposed species.

No consultation is required with the U. S. Fish and Wildlife Service under Section 7 of the Act if a determination of “no affect” is concluded.

Consultation with the Advisory Council on Historic Preservation (Council) and the State Historic Preservation Office (SHPO)

Compliance with Section 106 of the NHPA requires that the agency afford the Council the opportunity to comment on actions that have the potential to impact heritage resources. The majority of this work is done through the SHPO. The forests have consulted with the Council and the SHPO on this undertaking.

Government-to-Government Consultation

The Forests will work with tribal governments and tribal communities to develop mutually acceptable protocols for government-to-government and tribal community consultations. Vegetation community conditions will be assessed where a specific area has an identified importance to an affected tribe or tribal community. The Forests will consult with affected tribes and or tribal communities to consider traditional and contemporary uses and needs and to identify areas of new or worsening weed infestations and develop plans for appropriate weed control. The Forests will maintain appropriate access to sacred and ceremonial sites, and to tribal traditional use areas. All sensitive and proprietary information to the greatest extent permitted by law will be protected (Sierra Nevada Framework ROD 2001).

Under the U.S. Constitution and Federal law, and in some cases under treaty, federally recognized Indian Tribes have certain rights that do not extend to tribal groups that are not so recognized, and federal agencies have certain obligations toward federally acknowledged Tribes that they do not have toward other groups. As a result, there may be occasions on which the Forests will necessarily have to consult with and otherwise interact with the federally recognized Tribes in a manner different from that in which they interact with the other groups regarded as Tribes for purposes of the Wilderness PA.

The Wilderness Programmatic Agreement

The Inyo and Sierra National Forests developed the *Programmatic Agreement: Controlling Impacts on Historic Properties; Management of Ansel Adams, John Muir, and Dinkey Lakes Wilderness, Sierra and Inyo National Forests* (Wilderness PA) in accordance with Section 106 of National Historic Preservation Act (NHPA) and 36 CFR Sec. 800.14(b) of its implementing regulations. The Wilderness PA has a five year time span, ending on January 1, 2006. Work done in the wildernesses during this period was carried out under its stipulations.

A Strategy for Compliance with Section 106 of the National Historic Preservation Act for Issuance of Special Use Permits for Pack Station Operations on the Inyo & Sierra National Forests (Strategy) was submitted by the Inyo and Sierra National Forests to the Council and the SHPO for comment with the release of the DEIS. The Strategy covers the CEA and the Trails Plan, as well as the upcoming Special Use Permit issuance.

Figure 1.1 Location map

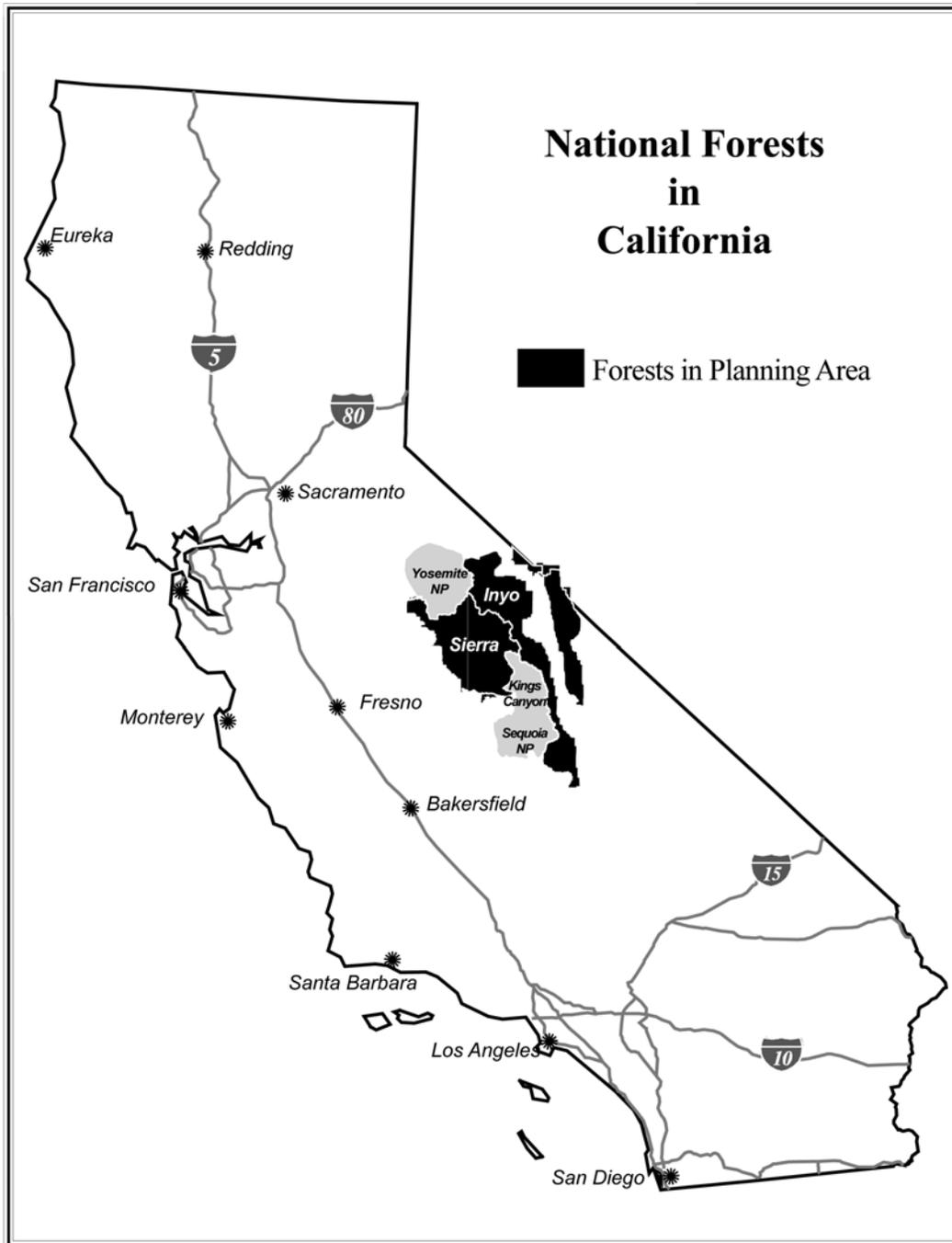
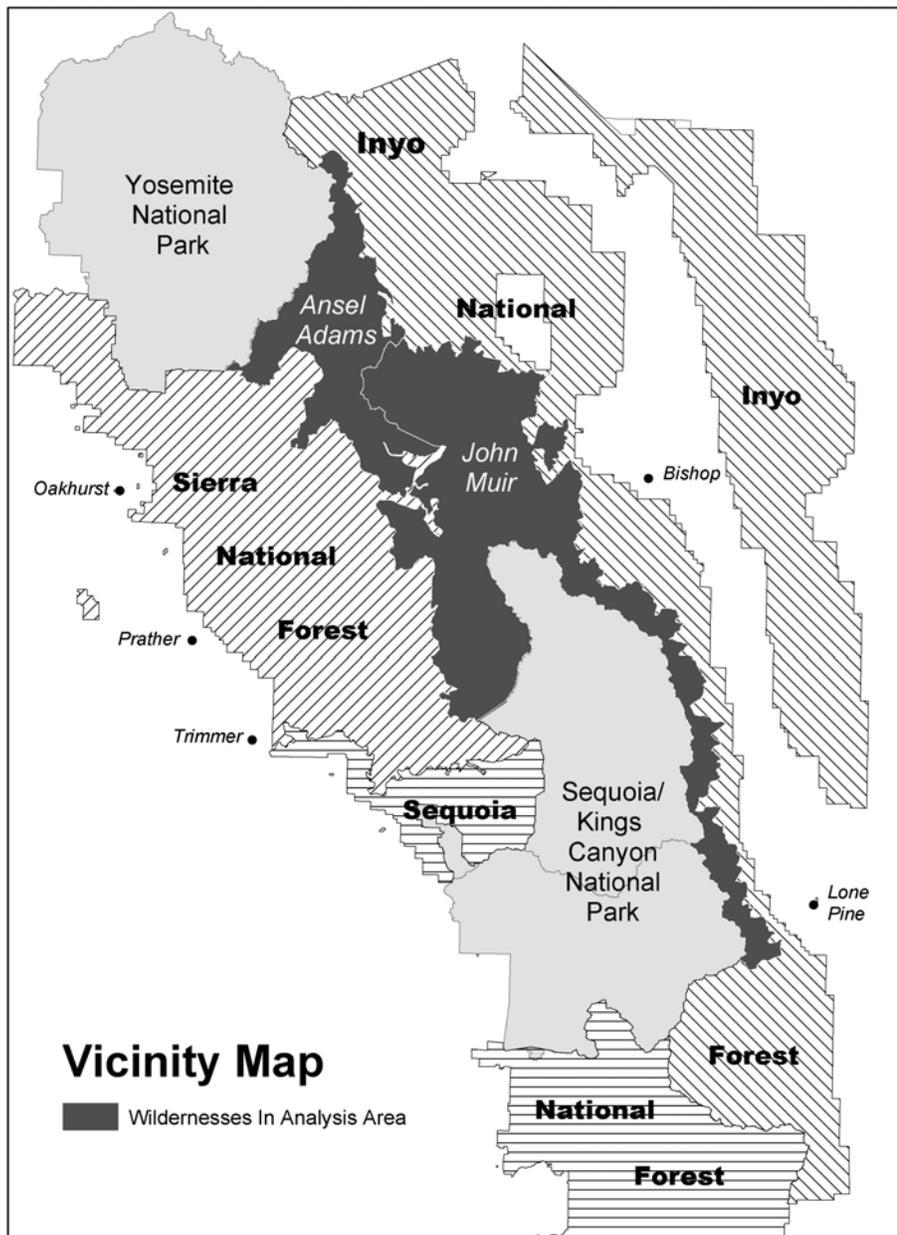
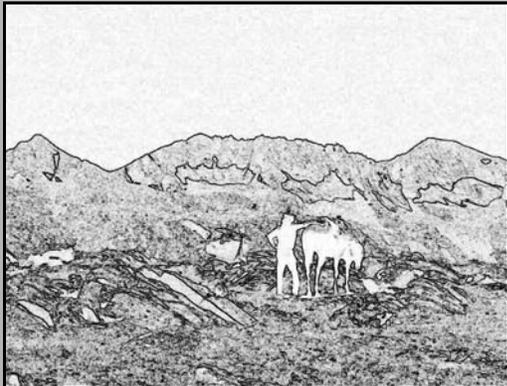


Figure 1.2 Vicinity map





Chapter 2 Alternatives, Including the
Proposed Action

CHAPTER 2 – ALTERNATIVES, INCLUDING THE PROPOSED ACTION

INTRODUCTION

This chapter describes and compares the alternatives considered for the Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses plan. Section 2.1, *Process Used to Develop the Alternatives* describes the development of the proposed action and the process used to define and develop the range of alternatives.

The description and comparison of the six alternatives begins with Section 2.2, *Elements Common to All Alternatives*. This section is followed by a description of each alternative. At the end of the chapter are more detailed tables that show the trails inventory, use trail approvals, destination quotas, day rides, drift fences, grazing actions, and designated campsites in a comparative format. The chapter concludes with a comparison of effects, as required by the National Environmental Policy Act, as well as discussion of the environmentally preferred alternative.

2.1 PROCESS USED TO DEVELOP THE ALTERNATIVES

Alternatives were developed for this environmental analysis to meet the purpose and need while addressing issues and concerns raised during public involvement. Initially, a proposed action was developed by assessing the current situation in these wildernesses. Specifically, commercial pack stock use, the activities and the conditions on the trails, campsites and grazing areas the commercial pack stations use were identified. The interdisciplinary team identified changes needed to meet current standards and guidelines and applicable laws and policies. The interdisciplinary team worked with the District Rangers from the Inyo and Sierra National Forests to identify actions to include in the proposed action. The team also proposed additional standards they considered necessary to manage commercial pack stock.

As described in Chapter 1, this proposal is the result of a court ordered analysis of the cumulative impacts of commercial pack stock operations in the Ansel Adams and John Muir Wildernesses. The Court expressed concerns “*that the cumulative impacts of the pack station permits may be substantial, with some packers operating in the same sensitive areas.*” The order required the agency to consider limits on numbers of stock animals used in conjunction with commercial operators, limits on group size (both numbers of people and numbers of stock on and off trail), trail suitability for various use types, and designation of campsites for use by commercial pack stations. Magistrate LaPorte further stated that “*the purpose of requiring these specific considerations in the environmental analysis is to pinpoint issues that directly affect the degradation of the wilderness.*”

In addition to this court direction, a subsequent ruling from the 9th Circuit Court of Appeals asserted that the 2001 Needs Assessment did not go far enough in assessing the need for

commercial services. This Court expressed concerns over the preservation of wilderness character as a result of the existing commercial authorizations. An amendment to the 2001 Needs Assessment accompanies this document (Appendix D) and forms a basis of need for commercial services from which these alternatives assess different levels and extent of commercial services.

Alternatives to the proposed action were developed, responding to the issues raised during the public scoping process (see Chapter 1 – Public Involvement). These alternatives represent a reasonable range of alternatives. Given the scope of the analysis as described in the Purpose and Need, there could be literally hundreds of permutations of alternatives for each of the elements that are subject to actions: grazing, overnight use levels, day rides, use trails, system trails, campfires etc. It is simply not possible to address every person's individual concerns on every element. The six alternatives, ranging from the No Action to five variations on use levels and control mechanisms with compatible grazing and trail management techniques adequately addresses the significant and relevant issues. In addition, and most important to note, each alternative described in this section was developed to comply with the requirements of the Wilderness Act to preserve wilderness character and provide use and enjoyment in a manner that protects these lands as wilderness.

After receiving public comment on the Draft EIS in June 2005, a fifth alternative was developed, Alternative 2 – Modified. The central component of the Proposed Action (Alternative 2), destination quotas, is used in this alternative, thus leading to its identification as a modified Alternative 2. The quota numbers themselves change in this alternative, with more thorough analysis of use levels and resource effects. The trail system was also re-considered with attention to comments on trail suitability and similarly the grazing actions, use trail authorizations, drift fences, day rides, campfires were all considered in relation to the central component, destination quotas.

2.2 ELEMENTS COMMON TO ALL ALTERNATIVES

This section defines management guidelines that will be common to all action alternatives.

TRAIL MANAGEMENT PLAN

General Guidelines

Maintain an inventory of system trails to assigned service levels. Maintain system trails to meet management objectives for visitor use and resource protection. Also, consider the recreation categories for the areas that a trail accesses and adjust trail maintenance levels to match the three recreation categories.

Review trail development levels (trail classes) when monitoring indicates inconsistency with destination management.

Actively restore and/or stabilize trails that have been abandoned (due to realignment or closure) that will not heal naturally. Some examples include abandoned trails that alter local hydrology, deeply compacted soils, and sites with continued inappropriate traffic, increased entrenchment or widening.

Do not construct new trails.

Do not add use trails to the system, or conduct major reconstruction to trails on the forest trail system solely for the purpose of providing improved or easier access to an area. Add use trails to the system only when there is an overriding benefit to the protection of the wilderness resource.

When adding or removing trails from the forest trail inventory, NEPA analysis, including public involvement, will be conducted.

Consider removing trails from the system (with appropriate public involvement) when concerns are identified, such as limited or no use, catastrophic natural event, unmitigable resource impacts, change from original need (ie: unneeded mining road/trail), or others. Evaluate the need for physical closure or allow natural recovery, depending on the expected resource impacts.

The Mt. Whitney and Meysan Lakes Trails will be closed to all stock use.

Trail design targets for the Ansel Adams and John Muir Wildernesses (Table 2.29) provide guidelines by trail class. These will be considered when maintaining, repairing or reconstructing trails. Variations from these guidelines may occur due to circumstances unique to each trail.

Routine Maintenance

Routine maintenance will be conducted on all system trails in the inventory, dependent upon on funding or other available maintenance resources. Routine maintenance includes cleaning and repairing drainage structures (i.e., water bars and rolling dips) and berm removal; clearing the trail tread of obstacles such as rock, slough, trees, and brush; clearing obstacles from the trail tread to target width and grade; blocking and naturalizing multiple trails or shortcuts, and incidental replacement or repair of trail structures such as steps, walls, and causeways.

Commercial pack stock is required to stay on system trails, unless otherwise approved by the Forest Service. Examples of approved bypasses include circumstances when an impassable obstacle or severe safety issue exists which cannot be reasonably removed by the packer.

Reconstruction Guidelines

Reconstruction projects beyond routine maintenance will require an appropriate planning and NEPA process, including field clearances, completion of the Section 106 process and consultation with affected tribes.

Generally, repair and reconstruction projects will be prioritized using the following considerations:

- Trails where the location or deteriorated condition is causing substantial effects to riparian, watershed, threatened, endangered or sensitive species, or significant cultural resources.
- Trails with health and safety problems out of character with the designated trail class.
- Trails with deteriorated conditions that substantially hinder the intended use or purpose, or will likely lead to this condition within the short-term (<5 years).
- Primary trails where use is relatively high. (Generally repairs of short spurs associated with the primary trail will also be integrated into projects when conducting major reconstruction.)

USE TRAIL MANAGEMENT

Reduce or eliminate resource impacts associated with use trails.¹

Where suitable, allow a low density of use trails that meet management objectives.

Discourage the creation of additional use trails and limit the impacts associated with existing use trails.

Emphasize managing or eliminating use trails in riparian, meadow, and streamside areas.

Evaluate the need to allow, eliminate, stabilize, or add use trails to the forest trails system.

If a use trail is not specifically identified or is not otherwise approved through campsite or grazing approvals, it is considered prohibited to commercial pack stock.

Use trails will be monitored to ensure that the resource condition does not deteriorate from the current condition from which the approval was based. If the use trail is found to exceed standards and guidelines or incidental physical treatments cannot mitigate identified resource concerns, use will be limited, suspended or disapproved.

Commercial pack stock may travel off-trails when requested by the Forest Service or County Sheriff officials during search and rescue, fire, or other emergencies and to access and support approved research, studies, or projects.

Packers supporting clients with valid game tags may leave trails with stock to retrieve game.

¹ A “use trail” is a path or route that is not on the forest inventory so is not a “system” trail. It is therefore not subject to maintenance or improvement. It is generally created by repeated hiker or equestrian use.

COMMERCIAL PACK STOCK GRAZING

The grazing actions are intended to allow maintenance of, or a trend toward, desired conditions as described in the Record of Decision for the 2001 Wilderness Plan and the Inyo and Sierra National Forest's Land and Resource Management Plans. An adaptive management strategy will be used to adjust the grazing actions based on the results of monitoring. Monitoring will be directed at compliance with standards in key and critical areas.

Grazing will be managed by using *Grazing Response Index* methods and forage utilization standards in conjunction with rangeland suitability criteria, range readiness and recreation strategy objectives, to maintain or reach desired conditions (2001 Wilderness Plan and Appendix G, Pack Stock Management Guide).

Prevent disturbance to meadow-associated stream banks and lake and pond shorelines caused by human activities (for example, pack stock grazing and dispersed recreation) from exceeding 20 percent of stream reach or 20 percent of lake and pond shorelines. Disturbance includes bank sloughing, chiseling, trampling, and other means of exposing bare soil or cutting plant roots.

The Authorized Officer may approve changes to the grazing direction based on monitoring results. Changes may include adjustments in stock numbers (increase or decrease); changes in stock management; identification of range readiness dates, stock nights, critical areas, and areas to be rested until resource recovery; and determinations of suitability by an interdisciplinary team.

WEED AND PATHOGEN PREVENTION

To prevent spread of weeds and plant pathogens, it is recommended that stock have their hooves cleaned before entering the wilderness. If stock is held in the 14 counties with quarantine for sudden oak death (SOD)², their hooves must be cleaned before entering the wilderness.

It is recommended that certified weed free hay and straw be used in the AA/JM Wildernesses when feed is brought in. When the California certification program for weed free hay and straw is operational and certified feed becomes available, certified hay and straw will be required for all wilderness users.

COMMERCIAL PACK STOCK MONITORING

Pack stock operations will be monitored through reports provided by commercial pack stock operators as follows:

- Each day of service will be recorded on a commercial report or "tally sheet." This includes each day of a multi-day trip.

² For a list of the 14 counties see USDA APHIS, Dec. 21, 2004. Emergency Federal order restricting movement of nursery stock from California, Oregon, and Washington nurseries. [www.aphis.usda.gov/ppq/ispm/sod/faqprorder\(\)11305.html](http://www.aphis.usda.gov/ppq/ispm/sod/faqprorder()11305.html).

- Reports will include as a minimum: wilderness permit number, number of clients, number of employees, number of stock, trailhead entry, trailhead exit, destination of the service provided, stock or designated camp used, and grazing activity by grazing zone and/or meadow.

Wilderness permits will be written by the Forest Service. In the event that wilderness permits or reservation services are contracted out, the contractor will be performing the function of the US Forest Service.

2.3 ALTERNATIVES, INCLUDING THE PROPOSED ACTION

Table 2.1 Alternative summary. This table summarizes the various components contained in the six alternatives.

Alternative						
	1- No Action	2 - Modified	2	3	4	5
Use Levels and Stock Numbers						
Day Rides	Allocated by Wilderness Plan in service days.	Day ride locations identified per Pack Station and limited by number of stock at one time in the wilderness. Limits placed on areas where day ride activities have potential for use or resource conflicts.	Allocated per Pack Station location.	Allocated per packer.	Allocate service days per packer with consideration of resource or social issues.	None authorized.
Service Days	Allocated service days with additional temporary service day pool.	No Service Days to Resort Permittees.	No Service Days to Resort Permittees.	No Service Days to Resort Permittees.	Service Days at 20% reduction from Alt 1.	None authorized.
Quotas	Trailhead quota for people. Borrowing of next days quota allowed. FS writes all wilderness permits.	Destination quotas managed through destination management plans. Stock at one time limit. FS writes all wilderness permits.	Destination quotas. Stock quotas daily/seasonal. FS writes all wilderness permits.	Trailhead quota for people, seasonal. Threshold for clients and stock. Few destination quotas. FS writes all wilderness permits.	Trailhead quota for people, reduction in party size at some trailheads. No borrowing. FS writes all wilderness permits.	None authorized.

Alternative						
	1- No Action	2 - Modified	2	3	4	5
Primary Operating Area	N/A	Identified by destination quotas.	Identified operating area.	Identified operating area.	In effect, no overlap of areas for spot and dunnage trips.	None authorized.
Party Size	15/25	15/25 And site specific party size limits.	15/25 And site specific party size limits.	15/25 And site specific party size limits.	12/20 And where trailhead prohibits full party size.	N/A
Trail Management Plan						
General Trail Plan	2001 Wilderness Plan direction and existing inventories.	Designates system of trails and assigns development levels.	Designates system of trails and assigns development levels.	Designates system of trails and assigns development levels.	Designates system of trails and assigns development levels.	Designates system of trails and assigns development levels.
System Trails	Inyo 1988 inventory Sierra 2001 inventory.	Aligns with recreation categories and destination management objectives.	Aligns with recreation categories and commercial destination quotas.	Aligns with recreation categories allowing higher development system than Alt 2.	Aligns with recreation categories allowing lower development system than Alt 2.	Aligns with recreation categories allowing lower development system than Alt 2.
Grazing Management						
Grazing Strategy	Utilization standards. Range readiness standards. Suitability direction not yet implemented.	Utilization standards estimated with stock nights. Range readiness standards same as Alt 1. Grazing suitability determinations. Establishment of grazing zones and critical areas.	Grazing zones, (stock nights, utilization and meadow closure) 5% impact in critical areas.	Grazing zones, (stock nights, utilization and meadow closure) 5% impact in critical areas.	Grazing zones, (stock nights, utilization and meadow closure) 5% impact in critical areas.	None by commercial pack stock authorized.
Drift Fences	Allow drift fences only where needed for protection of resources or safety of visitors.	Retain 13 drift fences and approve one additional for resource protection.	Retain 11 drift fences and approve one additional for resource protection.	Retain 10 drift fences and approve one additional temporary drift fence for resource protection.	Retain 4 drift fences and approve 1 additional temporary drift fence for resource protection.	None authorized for commercial pack stock.

Alternative						
	1- No Action	2 - Modified	2	3	4	5
Trail Suitability						
System Trails Suitable for Comm. Pack stock	Only use on existing system trails as directed by wilderness plan.	Use of system and authorized user trails except system trails identified as “Not Suitable for Commercial Stock.”	Use of system and authorized user trails except system trails identified as “Not Recommended for Stock.”	Use of system and authorized user trails except system trails identified as “Not Suitable for Commercial Stock.” Fewer NSCS trails.	Use of system and authorized user trails except system trails identified as “Not Suitable for Commercial Stock.” Many trail NSCS.	None authorized for commercial pack stock.
User Trails	Require approval Use trails approved in 2004.	Use trail approvals based on destination management.	Use trail approvals based on destination quotas.	Same use trail approvals as in Alt 2.	Very few use trails approved.	None authorized for commercial pack stock.
Campsites						
Campsites	50 feet from water.	Required to use designated stock camps when holding stock overnight with option of reserving site. All designated stock camps will meet BMPs.	Required to use designated stock camps when holding stock overnight with option of reserving site.	Required to use designated stock camps when holding stock overnight with option of reserving site.	All campsites for commercial pack stock designated (not just for overnight holding of stock) and limited to these sites.	None authorized for commercial pack stock.
Campfires						
Campfires	Elevational closures Site specific closures.	Few modifications to elevational fire closure boundary where firewood is available. Allow charcoal fires in areas closed to wood campfires. Case by case wood campfire use by commercial pack stations.	Elevational closures and packers allowed to pack in wood and charcoal.	Same as Alt 2 for full service trips in designated sites only.	Elevational closures Site specific closure.	Elevational closures.

ALTERNATIVE 1 – NO ACTION (WILDERNESS PLAN DIRECTION)

SUMMARY

The No Action Alternative follows the existing management direction in the *Final Environmental Impact Statement and Record of Decision for the Ansel Adams, John Muir, Dinkey Lakes Wildernesses* (April 2001). For more detailed direction refer to the 2001 Wilderness Plan and Record of Decision.

Generally, the No Action Alternative reflects the status quo of current management under the direction of the 2001 Plan. The Wilderness Plan programmatic direction has never been fully implemented, in part, because over the last three years resources have been diverted to the court-ordered analysis and some management actions were delayed until this analysis is completed. For the purpose of this analysis the No Action Alternative includes the elements of the 2001 Wilderness Plan that have been implemented.

This direction establishes a level of commercial pack stock use measured in service days that is consistent with the average of the high two years of use from 1996-2000. It established a trailhead quota system for commercial operators that limit the location and timing of their use.

Direction in the 2001 Wilderness Plan established utilization levels, range readiness standards and a suitability evaluation process for recreation pack stock grazing. Although meadow suitability determinations are a reasonable foreseeable action under the 2001 Wilderness Plan, they have not yet been made and are not considered in the No Action.

The Trail Management Plan for the Inyo National Forest is based upon the 1987 trails inventory and is consistent with the direction in the Inyo National Forest Land and Resource Management Plan. In the absence of a similar trail inventory associated with the Sierra National Forest Land and Resource Management Plan, Appendix C from the 2001 Wilderness Plan serves as the basis for the Sierra N.F. in this alternative. Direction for managing the trail system, including system and use trail suitability is based on the 2001 Wilderness Plan, but assumes that the designation of a trail system, consistent with the newly designated recreation categories (including identifying trails not recommended for stock) has not yet been fully implemented.

1. TRAIL MANAGEMENT PLAN

The trail system inventory for this alternative is shown in Table 2.26.

The inventories reflect the 2001 Wilderness Plan for the Sierra N.F. and the “service levels” concept. The Inyo N.F. uses the 1987 inventory with the “maintenance levels” concept which refers to the frequency and priority of maintenance rather than the level of development. Descriptions of service levels and maintenance levels are available in the project record.

2. USE LEVELS AND STOCK NUMBERS

A. Day Rides

Day rides are services that do not include any overnight use or equipment.

Day rides are approved as a distinct allocation measured in service days³, with locations approved in annual operating plans. Where areas of congestion or concerns occur, the Forest Service will work with the operators to identify alternate locations for day rides. The service day allocation for day rides can be found in Table 2.33.

B. Overnight Use

Upper limits allowed for overnight services (spot, dunnage and all expense type trips) provided by commercial pack stock operations are allocated by service days as shown in Tables 2.2 and 2.3.

Table 2.2 Service day allocations for pack stock support, non traditional pack stock and day rides by forest.

Activity	West side entry Allocation (Service Days)	East side entry Allocation (Service Days)
Pack stock supported	2,855*	13,300
Non-traditional pack stock	200	500
Day Rides	600	4,100**

*Allocation reflects the reduction of service days for the Dinkey Lakes Wilderness because it is not addressed in this planning effort.

**Allocation was corrected from 5000 to 4100 by an errata. Mistake attributed to error in Reds Meadow's allocation.

Table 2.3: Overnight service day allocation by pack station location

Location	Wilderness Plan Allocated Overnight (Service Days)
North Lake	1082
Silver Lake	1881
Cottonwood Lakes	261
North Fork Big Pine	640
Various. John Muir south of North Fork Big Pine	156
Edison Lake	893
Reds Meadow	3005
Lakes Basin	1731
McGee Creek	636
Clover Meadow	997*
Pine Creek	666
Onion Valley	263
South Lake	466

³ A service day is a day or part of a day for each individual accompanied or provided services including transportation services, by an outfitter or guide.

Location	Wilderness Plan Allocated Overnight (Service Days)
Rock Creek	2308
Double Meadow	38
Blayne Meadow	135***
Fish Camp	102**
Various, John Muir Inyo NF	119
Tule Meadow	507
Huntington Lake	342

*Tabulation of service days in the 2001 Wilderness Plan for Minarets Pack Station inadvertently omitted certain classes of use (e.g., re-supply of non-stock commercial operators). The value shown corrects this error for the high two years used in the Wilderness Plan (1996-97), and is based on an actual hand count of all existing records.

**The 2001 Wilderness Plan showed no service days for Yosemite Trails Pack Station due to lack of reliable data to estimate high two at that time. The value shown is based on 2003 and 2004 data.

***Tabulation of service days for Muir Trail Ranch was incorrect in the 2001 Wilderness Plan. Overnight use traveling through the National Forest to the National Park was recorded as day use. The value shown corrects this error.

C. Quota

The rationing system includes three types of trailhead quotas:

Single Quotas - A single quota is to be used in areas with low commercial use and/or the desired condition for the area prescribes low levels of use.

Case-by-Case Itinerary Approvals - Entry points where the Forest Service has not identified a compelling reason for commercial services to be provided is approved only on a case-by-case basis using the following criteria:

- Use must meet a need identified in the needs assessment.
- Trips in these areas will not be advertised in brochures or other media.
- Service is occasional in nature and not part of a yearly, repeated operation.
- Use must fit within the quota system.
- In areas where limiting factors have been identified, the appropriate resource specialists must review the proposed use to assure it is consistent with resource objectives.

Multiple Quotas - Where there is high demand for visitor use, including commercial service providers, there are multiple quotas, a quota for commercial providers and a separate quota for the general, non-commercial public.

All guides and employees of operators must have an authorized wilderness permit for overnight use.

Table 2.4: Alternative 1 single quotas

Inyo NF Entry	Quota
Beck	15
Big Pine SF	12
Deer Lake	10
Fern Lake	10
Fern/Yost	8
George Lake	10
Gibbs	8
Glacier Canyon	8
Horton Lakes	10
JMT/PCT South	10
Mammoth Pass	20
Meysan	10
Parker Creek	10
Red Cones	15
Sawmill	10
Shepherd	15
Taboose	10
Upper Buttermilk	8
Sierra NF Entry	Quota
Badger	10
Bear Creek	10
Bear Ridge	10
Cassidy	10
Chiquito	35
Cliff Lake	20
Crown/Rancheria	10
Hells Half Acre	10
Logan Meadow	10
Mammoth	25
Miller	10
Mono Creek	30
Onion Springs	10
South Fork	10
Squaw Dome	10
Woodchuck	20

In addition to the single quotas listed, there were eleven entry points that were inadvertently omitted from the 2001 Wilderness Plan. Table 2.5 lists these trailheads. with Each is managed for a single daily quota. Overall they represent a small proportion of the total use entering on the Sierra National Forest (4.7% in 2004) and almost no pack station use (17 visitors in 2004). Due to the low use, quotas were set at minimum levels.

Table 2.5: Sierra N.F. additional single quota trailheads

Sierra NF Entry	Quota (Single)
Statum/Spanish	10
Corbet	10
Dutch	10
Hooper	10
Margaret Lakes	10
Mono Meadow	10
Doris/Tule	10
Mono Hot Springs	10
Portal Forebay	10
Rattlesnake	10
Crater	10

Table 2.6: Entry points for case-by-case approval for commercial operations

Inyo NF Entry	Quota
Baker/Green	8
Baxter Pass	8
Birch	8
Bloody Canyon	8
Convict	10
Gable Lakes	8
George/Williamson	8
Golden Trout	10
Laurel	8
Mt. Whitney Day Hike	100
Mt. Whitney Overnight	60
Red Lake	8
Tuttle Creek	8

Inyo NF Entry	Quota
Valentine	8
Italy Pass	8
Trail Crest	25
Tyee	10
Sierra National Forest Entry	Quota
Willow Meadow	30

Table 2.7: Multiple quotas

INF Entry	Non Commercial	Commercial	Packer	Outfitter/ Guide
Big Pine, North Fork	25		15	8
Bishop Pass	36	15		
Cottonwood Lakes	60	15		
Duck Lake	30	15		
Fish Creek	15	15		
High Trail	20	15		
Hilton Lakes/Creek	15	15		
John Muir Trail, North	10	10		
Kearsarge	60	15		
Lamarck	10	8		
Little Lakes	25	10		
McGee	15	15		
Minarets	10	10		
Mono Pass	20	15		
NF Lone Pine	10	8		
Pine Creek	15	15		
Piute Cr	30	15		
River Trail	30	8		
Rush Creek	30	15		
Sabrina Lake	25	15		
Shadow	30	15		
Tamarack	10	8		
Treasure Lakes	10	8		
Sierra NF Entry	Non Commercial	Commercial	Packer	Outfitter/ Guide
Devils/Graveyard	20	10		
Fernandez	21		8	12

Sierra NF Entry	Non Commercial	Commercial	Packer	Outfitter/ Guide
Florence	35	15		
Isberg	22		8	8
Jackass/Norris	10	8		
Maxson	25		8	8
Walton	9	8		

D. Primary Operating Areas

No direction on where commercial pack stock operators can operate.

E. Party Size

The party size for commercial pack stock supported parties is 15 persons and 25 stock wilderness-wide.

3. GRAZING MANAGEMENT

A. Grazing Strategy

Grazing management as described in the Wilderness Plan and the Sierra Nevada Forest Plan Amendment includes utilization standards by vegetation types using key species and key area concepts, annual range readiness determinations, and protection of riparian resources including stream bank and shoreline trampling standards. Most meadows/meadow complexes are open for grazing, except for the few meadows that were previously closed or under rest-rotation grazing due to resource conditions (see Table 2.30).

For the purposes of analyzing this “No Action” Alternative the assumption is that suitability and utilization standards have not been implemented even though it is a reasonably foreseeable future action that management direction would eventually be implemented.

B. Drift Fences

Allow drift fences only where the protection of resources or safety of visitors is of concern; not solely for the convenience of the visitor, outfitter or guide.

See Table 2.34 for locations of approved drift fences.

4. TRAIL SUITABILITY FOR COMMERCIAL PACK STOCK

A. System Trails

The plan provides for the future designation of system trails as “Not Recommended for Stock” (NRFS) when conditions warrant. As directed in the plan, trails so designated would be closed to commercial stock use. No specific trails have yet been identified as NRFS in this alternative.

Seven miles of system trails are closed to commercial operators in annual operating plans, based on known resource or management conflicts. These are:

- **Marie Louise Lake** (*INF – Bishop/Humphreys Geographic Unit*)
- **Bull Lake to Ruwau** (*INF – Bishop/Humphreys Geographic Unit*)

- **Gable Lakes** (*INF – Bishop/Humphreys Geographic Unit*)
- **Grass Lake outlet** (Lamarck area); and (*INF – Bishop/Humphreys Geographic Unit*)
- **South Fork Cottonwood Creek** above South Fork Meadow (*INF – John Muir Southeast Geographic Unit*)

B. Use Trails and Routes

All commercial use off existing system trails must be approved by the Forest Service. Following the guidance in the Wilderness Plan, use trails are requested for use by operators and approved or disapproved. A list of the use trails approved under the various alternatives is in Table 2.27.

5. CAMPSITES

Campsites will be located 100 feet from water. In areas where terrain does not permit a campsite to be 100 feet from water, sites will be no closer than 50 feet from water.

Designated campsites can be implemented under this direction. Commercial pack stock camps are currently designated in the Rush Creek drainage.

6. CAMPFIRES

Prohibit wood campfires in areas above 10,000-foot elevation in the northern portion of the planning area and 10,400 feet in the southern portion.

Permit gas, propane, and multi-fuel stoves and heaters in areas closed to wood campfires.

Prohibit wood burning stoves (including “Zip” stoves), charcoal fires, packed in firewood, or fire pans within areas closed to wood campfires.

7. RECREATION CATEGORIES

Recreation categories will be used to manage recreation use as described and mapped in the 2001 Wilderness Plan direction.

ALTERNATIVE 2 - MODIFIED

SUMMARY

This alternative allows commercial pack stock activities with the following standards and guidelines:

- Emphasis is on destination management and managing for conditions at destinations. Desired condition of destinations is driven primarily by the three recreation categories outlined in the 2001 Wilderness Plan. Seasonal destination quotas will be the starting point for achieving the desired conditions.
- The destination management concept will be applied through an implementation plan that describes desired condition by destination. Desired condition includes recreation category setting, access, grazing, use levels, campsites and impacts that require remediation actions.
- Maximum stock in the wilderness at one time will limit the potential for overcrowding, provide temporal controls on commercial stock use and provide overall management for total amount of commercial pack stock use.
- The alternative includes a monitoring plan to manage destinations over time and a “toolbox” describing how and when to take further action.
- Party size limit would be 15 persons and 25 stock wilderness-wide with 14 site specific destinations with smaller maximum party size.
- Ten locations have limitations on stock numbers per season to maintain or improve conditions.
- Campsites will be designated for all locations where operators hold stock overnight and operators will be required to use these sites.
- Grazing will be managed through a determination of suitability and stock night capacity for grazing zones and specific meadows. Critical areas will be protected from grazing impacts.
- Some site specific modifications to the elevational fire closure respond to firewood availability and inconsistencies at destinations.
- The proposed system of trails and maintenance levels are based on recreation categories, current and anticipated use, resource impacts, and trail maintenance considerations. These are considered to ensure that trail management objectives are consistent with area management objectives.
- Trail suitability determinations for commercial pack stock are based on the suitability of destinations, trail infrastructure stability, resource conditions, and potential impacts of continued commercial pack stock use due to risk factors.

- In evaluating the extent of commercial pack stock use that was necessary, “Not Suitable for Commercial Stock” determinations were made to exclude commercial stock use into areas.

1. TRAIL MANAGEMENT PLAN

The trail system inventory responding to the direction for this alternative is shown in Table 2.26. See Section 2.2, *Actions Common to All Alternatives* for overall direction for trail management.

Not Recommended for Stock

This alternative does not identify “Not Recommended for Stock” (NRFS) trails. Trails will be identified as NRFS as needed and will be merely an educational consideration for private equestrians. NRFS has no regulatory effect; it serves as an educational and informational tool.

2. USE LEVELS AND STOCK NUMBERS

A. Day Rides

Day rides will be authorized in locations listed in Table 2.33. Day rides will be limited in locations where there are resource concerns or potential or known user conflicts. Initially, Reds Meadow (specifically rides to Rainbow Falls) and rides in the Mammoth Lakes Basin will be allocated a specific level of use.

In all other locations day rides are identified and limited by the location and type of ride and the number of guest horses available for these rides. For a full description of the allocations, see Table 2.33, *Day Rides Alternative Comparison*.

The Forest Service will emphasize opportunities outside wilderness to allow expansion of day ride business.

B. Overnight Use

Use will be controlled by seasonal destination quotas, maximum stock at one time in the wilderness, designated stock camps, party size limitations, and trail suitability determinations.

The outfitter and guides (non-resort permits) will be allocated service days and operate through trailhead quotas, not destination quotas. Annual operating plans will approve use of trailheads to insure consistency with desired conditions of area and to reduce conflicts with other types of use. The service day allocation for llamas will be 250. The service day allocation for a burro operator will be 119.

C. Quota

Destination quotas are the method of limiting and distributing commercial pack stock use in this alternative. These quotas are estimates of use for commercial stock operators to meet the desired resource and experiential condition of the area, considering the recreation category and the resource capacity of the destination. Quotas are placed on the number and type of trips per season:

- Spot and dunnage type trips have quotas on each destination, for each operator. No additional quota is allocated for unassigned or additional trips, (or ½ trips for small parties) as is proposed in Alternative 2.
- In addition, each operator has a set number of all expense and traveling type trips.

Quotas were based on an assessment of the capacity of the locations for commercial stock use. All locations where commercial pack operators identified current, proposed and past use were assessed. Tally sheets (the self-reported record of commercial use) were analyzed to calculate the number of trips, people and stock use at destinations.

The assessment of capacity was determined by reviewing the level of use at each recorded destination over the last three years (2001-2003). Three criteria were applied to determine if this level of use was the appropriate capacity for the future:

1. **Resource Condition:** The resource condition rating of the destinations as evaluated by the interdisciplinary team by assessing recreational impacts, access issues, riparian concerns, camping potential, and risk factors at destinations;
2. **Capability:** Assessment of current levels of use and sustainability of the resource at that level of use (factoring in prescribed actions such as designated sites, meadow management, use trail prohibitions, and stock number limits) and a determination of whether the destination could accept more use, or if the area was already at an appropriate level of use or needed to be reduced; and
3. **Consistency with Recreation Category:** Whether that level of use is consistent with the recreation category, given considerations of other uses (overnight use by general public, other outfitters and guides, day hiking, and day riding).

The following describes how various pack station trips will be accounted for in the destination quota system:

- For spot and dunnage, a trip is defined as a one-way service.
- A one-way spot trip will count for one trip.
- Trips that hold stock in the backcountry overnight in conjunction with an all expense, traveling or base camp type service are considered “all expense” for the purposes of the quotas. A trip that involves services (such as a cook or camp tender and wrangler) throughout the duration of a client’s trip is considered an all expense trip. All expense trips have a specific quota that cannot be exchanged or otherwise counted as a spot and dunnage trip. Each operator is authorized a specific number of all expense trips. All expense trips will be further regulated by the designated site requirement and allowable grazing constraints.

Destination quotas will not be adjusted (lowered) based on lack of use. They can be lowered based on future assessments of capacity or resource conditions. Quotas are designed to accommodate fluctuations at various destinations over the years. There will be no borrowing, trading or otherwise sharing the destination quota assigned to an operator.

It is assumed that the combination of destination quotas and limits on number of stock at one time in the wilderness will serve an estimated 3,000 - 5,500 clients and utilize 6,000 - 10,000 stock per season for overnight use and 3,000 - 4,000 clients and 3,000 - 4,000 stock for day rides.

This level of use is considered to be within the extent necessary for preserving wilderness character.

At the conclusion of each season, actual use will be compared to the use levels identified above for clients and stock. If these levels are reached or exceeded, the responsible officer will make an assessment of the potential resource implications. If any evaluation indicates that conditions do not meet standards and guidelines or desired conditions, corrective actions—including reduced use levels, reduced destination quotas and/or campsite or other site specific closures—will be considered.

For a full listing of all destination quotas see Table 2.31.

Any use identified for travel into or through the adjacent National Parks (Yosemite National Park, Devils Postpile National Monument and Sequoia/Kings Canyon National Park) will comply with authorizations or use level limitations by the National Parks. If the National Parks wish to increase use into the Park and no other resource concerns exist, the Forest Service will support Park allocations.

Wilderness permits are required for all parties and commercial pack stock operators will obtain the proper wilderness permits from the Forest Service (or its contractor). Tally sheets for reporting the service will continue to be required. Each day of use will be recorded for all expense and traveling trips to improve monitoring of use and conditions.

In cases of administrative use, including approved research permits, support of functions such as search and rescue, tribal walks, the authorizing officer can allow use of areas previously unidentified as a destination. This is on a case-by-case basis, and is not considered a reoccurring use.

Use of areas not identified by destinations for hunting activities will be subject to case-by-case approval similar to that described above for administrative use. Hunting areas will change based on availability of State Game tags and are typically low use and minimal impact activities.

The *Destination Management Strategy* in the Record of Decision provides a framework for the direction found in this alternative. The strategy is intended to guide management over time.

D. PRIMARY OPERATING AREAS

Specific primary operating areas are not assigned. The assignment of destination quotas provides delineation of pack station operations. Overlap of operators will primarily occur as a result of traveling trips. Very few areas of overlapping spot and dunnage services are proposed. All areas of overlap will be monitored through the destination management approach to determine if additional separation of use is needed.

E. PARTY SIZE

Party size for commercial pack stock parties is 15 persons and 25 stock wilderness-wide. In 14 site specific locations the party size varies, based on the physical capacity, setting and management objectives for the area. These are in Table 2.8 and included in the *Destination Management Strategy* (available in the Record of Decision).

Table 2.8. Site-specific party size limitations

Geo Unit	Analysis Unit	Location/Person/Stock limit
Ansel Adams East	King Creek	Fern Lake: 10 persons/20 stock
	King Creek	Anona Lake: 10 persons/20 stock
	Rush Creek	Weber Lake: 10 persons/20 stock
Bishop/Humphreys	Bishop Creek	Ruwau Lake: 8 persons/15 stock
	Bishop Creek	Marie Louise Lake: 6 persons/10 stock
	French	Merriam Meadow: 10 people/20 stock
	French	Steelhead Lake: 6 persons/6 stock
	Glacier Divide	Honeymoon Lake : 6 persons/12 stock
	Glacier Divide	Packsaddle Lake: 6 persons/6 stock
Fish Creek/ Convict /McGee	Sabrina	Baboon Lake: 8 persons/15 stock
	Convict	Cloverleaf Lake: 15 persons/8 stock
	Purple Bench	Above Ram Camp: 8 stock
	Silver Divide	Peter Pande: 10 persons/15 stock
	Upper Fish	Tully Lake: 8 persons/15 stock

F. STOCK NUMBERS

Commercial pack stock operators are subject to a maximum number of stock in the wilderness at one time to limit temporal spikes and address overcrowding. These stock numbers were derived from an analysis of recent stock use on trails, current resource concerns, visitor capacity considerations, cumulative impacts and management objectives. These limits are listed in Table 2.9.

Table 2.9. Alternative 2 – Modified stock at one time limits

Pack Station Located at	Stock at One Time
North Lake	60
Cottonwood Creek	35
Silver Lake	75
North Fork Big Pine	35
Lakes Basin	75
McGee Creek	60
Pine Creek	50
South Lake	35
Reds Meadow	90
Rock Creek	90
Onion Valley	35

Pack Station Located at	Stock at One Time
Blayne Meadow	35
Huntington Lake	35
Tule Meadow	35
Double Meadow	25
Edison Lake	60
Clover Meadow	60
Fish Camp	25

The following locations have seasonal limits on stock numbers. Specific direction for the destination is in the *Destination Management Strategy*, (available in the Record of Decision).

- **Clarice Lake** (*Ansel Adams East*)
- **Holcomb Lake** (*Ansel Adams East*)
- **Fern Lake** (*Ansel Adams East*)
- **Honeymoon Lake** (*Bishop/Humphreys*)
- **Muriel Lake** (*Bishop/Humphreys*)
- **Desolation Lake** (*Bishop/Humphreys*)
- **Mesa/Tomahawk Lakes** (*Bishop/Humphreys*)
- **Baboon Lake** (*Bishop/Humphreys*)
- **French Lake** (*Bishop/Humphreys*)
- **Cloverleaf Lake** (*Fish/Convict/McGee*)

In addition, the following locations have limits on stock numbers until a condition is repaired or otherwise corrected. Specific direction for the destination is in the *Destination Management Strategy*.

- **Ediza Lake** (*Ansel Adams East*)
- **Anne Lake** (*Ansel Adams West*)
- **Golden Trout Lake** (*Bishop/Humphreys*)

3. GRAZING MANAGEMENT

A. Grazing Strategy

Grazing is to be managed in “grazing zones” that include one or more meadows and their surroundings. Grazing is only allowed within these identified grazing zones. Meadows within the grazing zones were assessed for determinations of suitability and estimated grazing capacity. Within suitable meadows, key areas and critical areas were identified. Critical areas include fens, Yosemite toad breeding habitat, and other important hydrologic features such as springs, seeps, and unstable areas.

No stock entry or use will be allowed in areas identified as critical or unsuitable. The stock user is expected to manage stock to avoid stock entry. Operators planning on using meadows with identified critical areas, must describe the techniques they plan to use to avoid entry. This must be approved in the annual operating plans.

Monitoring of vegetative utilization and streambank disturbance will occur at selected key areas as described in the 2001 Wilderness Plan Final EIS, Appendix G (pp. 7-10) and the *R5 Rangeland Analysis and Planning Guide* (pp. 5-10 to 5-15).

An overall estimate of stock nights was assigned to each grazing zone and key areas within the grazing zones. These estimates are based on calculated suitable meadow area, vegetative productivity for the key areas and reported stock use (2001-2003) (see Table 2.30). The estimated stock nights are intended as a pre-season trip planning guide to be used during annual operating plan development. Operators will not be allowed to schedule itineraries that intentionally exceed stocking rates.

Specific allocations and grazing terms and conditions will be approved in the annual operating plan.

If, later in the season, the permittee requests additional use, and monitoring data shows that utilization and other standards have not yet been reached, then additional grazing may be approved for a specific amount for that season only.

Before any permanent change is made in estimated stock nights (increase or decrease) or in grazing zone boundaries, there will be a review of existing monitoring data and/or collect additional data and re-calculate stock nights or change management as described in the *Monitoring Plan* (found in the Record of Decision).

Meadows with streams categorized as Functioning at Risk with a downward trend or with access issues such as unstable trails will be rested from grazing. This period of rest from grazing and grazing associated impacts will continue until recovery of identified resource indicators. These resource indicators include recruitment and establishment of stabilizer plant species on point bars, on stream banks, and on headcuts adequate to meet the Recreation Stock Forage Goals and Objectives, as defined in the *2001 Wilderness Management Plan for the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses* (p. 23).

This rest for resource recovery will continue until an interdisciplinary team establishes baseline monitoring and then accomplishes subsequent monitoring that quantifies an upward trend in resource conditions and confirms that resource conditions are sufficient to sustain grazing and stock entry.

In general, monitoring will typically be done at identified key areas. The entire area within a grazing zone, however, may be managed as needed by applying standards described in the Wilderness Plan for range readiness, vegetation utilization, and streambank and soil disturbance.

B. Drift Fences

Existing drift fences that provide for resource protection and visitor safety are approved. Resource protection includes the prevention of stock drifting or moving to areas where grazing is rested or not suitable. Drift fences are also considered to be appropriate in situations where visitor safety is of concern, such as on steep trail passages where drifting stock may be a danger to visitors on the trail. Drift fences that do not facilitate resource protection or visitor safety but only provide convenience for commercial pack stock operators will be removed.

For a list of approved drift fences see Table 2.34.

Whenever possible, temporary or electric rather than permanent fencing will be used and encouraged to keep stock out of critical areas, sites that are not range ready, or to keep stock in approved areas. The commercial pack stock operator may request, and the Authorized Officer may approve, an alternative method of controlling stock to minimize the risk of impacts to critical areas.

4. TRAIL SUITABILITY FOR COMMERCIAL PACK STOCK

A. System Trails

In this alternative, trails designated as “Not Suitable for Commercial Stock” (NSCS) are closed to commercial stock use. There are 89 miles of system trails designated as NSCS in this alternative. Determinations for trails designated as NSCS in this alternative considered trail conditions, development level, capability of the trail, resource conditions including risk factors, and the suitability of the destination. Trails which are generally resource-stable with no risk factors and access a destination suitable for commercial pack stock use are generally open to commercial stock use.

B. Use Trails and Routes

All commercial pack stock use off existing system trails must be approved by the Forest Service. Use trails are not intended to be used or managed as system trails, because they typically do not require recurring maintenance. A list of the use trails and routes that will be approved under the various alternatives is in Table 2.27.

On approved use trails that are used primarily by commercial pack stock operators, mitigation of resource impacts and removal of seasonal obstacles may be performed, such as the removal of downed trees where bypasses would otherwise impact resources. Mitigation is limited to the minimum necessary, so that the character of the use trail does not change.

Campsite access trails that are directly associated with designated commercial pack stock camps (see Table 2.32) are approved as an inherent part of the designation of stock camps and are generally not addressed as “use trails.” Mitigation of resource impacts and maintenance is the responsibility of the operator and will be managed through annual operating plans.

Trails accessing spot and dunnage campsite or drop off locations, will be managed through the *Destination Management Strategy*. Any such trails will be short in length and will access an established campsite or drop off location.

Cross country travel that is authorized in this alternative occurs only in areas where the level of use will not lead to any defined or visible trail. In physically durable areas such as expanses of granite or decomposed granite with little to no vegetation, low levels of riding and pack stock can travel and not leave evidence of use.

C. Early Season Access and Trail Readiness

Where trail or destination readiness concerns exist, key areas will be identified and a monitoring program initiated. Concerns with early season access include saturated soils, surface flows on trails, snow drifts or other factors which may cause accelerated erosion or disturbance.

Monitoring of key area conditions will be used to determine when trail or destination conditions are ready and commercial pack stock use will not contribute to unacceptable deterioration.

Shoveling, sanding or otherwise treating a trail to obtain access over snow or obstacles must be approved in advance. These occurrences will be infrequent and access will be approved when trail and destination readiness is determined. No such treatments will occur into the National Parks unless Park approval is provided. Sanding material and sources must be approved and weed-free.

5. CAMPSITES

All overnight holding of stock by commercial operators will take place at a designated stock camp. All party members on an all expense, base camp or traveling trip must stay in a designated stock camp. These sites will be signed as stock camps.

As identified in Forest Service policy, assigned sites are designated stock camps that, upon request by the operator, can be reserved for the exclusive use of that operator. These sites are subject to a reserved site fee (as specified in Forest Service Handbook Chapter 2709.11, Section 37.21 (h)).

All designated campsites must be 100 feet from water, already established, durable and adequate for loading and unloading stock, and have acceptable access from the system trail. Designated campsites will not be located where sensitive resources (e.g., heritage, sensitive plants, etc.) may be affected.

These designated sites will have identified stock holding areas, identified access into and out of the camp, and will be contained in a manner that is consistent with Best Management Practices. Features and allowances will be made in these sites to ensure and facilitate resource protection. All designated sites will be brought up to this standard within two years of permit issuance.

If a stock camp has not been identified, and an operator requests use of an area where overnight holding of stock is needed, the Authorized Officer may approve that use consistent with the destination management strategy for that area. If an operator plans to use sites repeatedly through the term of the permit, the site should be approved and designed in accordance with the guidelines above.

Any legal campsite may be used for spot and dunnage trips except where specifically prohibited or prescribed in the list of designated sites found in Table 2.32.

6. CAMPFIRES

On a case-by-case basis, approval will be considered for wood fires in areas above the elevational closure. The fire must be in a fire-pan and the ashes must be packed out. Wood must be brought in from outside or an approved source. These allowances will be managed through annual operating plans. Areas that may be considered appropriate for such uses are areas that are not often used by the non commercial public or are at sites that have some separation from areas where non commercial parties typically camp. These allowances will be site and/or seasonal specific.

For all visitors, charcoal fires with a fire-pan will be approved above the elevational fire closure. The charcoal fire must be in a fire-pan and the ashes must be packed out.

If non-compliance with the campfire policy is documented or there is an increase in trash, ash, charcoal, fire-rings, mutilations of standing trees or any indication that resources are not protected as a result of charcoal or wood fires, then site specifically the approval may be revoked. Monitoring will be conducted with existing campsite condition inventory monitoring protocol. Adequate documentation and rationale must accompany any revocation.

Areas that are at or just above the elevational fire closure, and have firewood available, will be subject to adjustments in the elevational fire closure boundary. Areas to be considered are locations where more than one site indicates dead and downed fuel wood availability rated at “3” or below. Sierra/Inyo N.F. campsite inventory monitoring protocol will be used for these ratings.

The following adjustments to elevation closure will be made to reflect adequate downed wood sources at areas near the elevation closure.

- **Purple Lake** (*Fish/Convict/McGee Geographic Unit*)
- **Genevieve** (*Fish/Convict/McGee Geographic Unit*)
- **Deer Lakes** (*Fish/Convict/McGee Geographic Unit*)
- **Steelhead Lakes** (*Fish/Convict/McGee Geographic Unit*)
- **Kenneth Lake** (*Mono/Rock Creek Geographic Unit*)
- **Lower Sallie Keyes Lake** (*Florence/Bear Geographic Unit*)
- **French Canyon** (*Bishop/Humphreys Geographic Unit*)
- **Piute Canyon** (*Bishop/Humphreys Geographic Unit*)

In addition, **Rutherford Lake** (Ansel Adams West) is identified as not having fuel wood available and the elevation will be adjusted to exclude campfires from this location.

7. RECREATION CATEGORIES

The following changes will be made in the assignment of recreation categories. These areas were determined to be consistent with the proposed recreation category. These are not areas that have changed in condition since 2001, but were improperly categorized and are more consistent with the new category.

Table 2.10. Alternative 2 – Modified recreation category changes

Location	Geographic Unit	Analysis Unit	Recreation Category	
			Current	Change to:
Deadhorse Lake	Ansel Adams East	Minaret	RC2	RC 1
Cabin Lake	Ansel Adams East	Shadow-Ediza	RC3/2	RC 1
Cecile Lake	Ansel Adams East	Shadow-Ediza	RC2	RC 1
Altha Lake	Ansel Adams East	Thousand Island	RC2	RC 1
Marie Lake	Ansel Adams East	Upper Rush	RC2	RC 1
Slab Lakes	Ansel Adams West	Triple Divide	RC2	RC 1
Chalfant Lakes	Bishop/Humphreys	Granite Park	RC2	RC 1

Location	Geographic Unit	Analysis Unit	Recreation Category	
			Current	Change to:
Goethe Lake	Bishop/Humphreys	Glacier	RC2	RC 1
Lower Honeymoon Lake	Bishop/Humphreys	Glacier	RC2	RC 1
Moonlight Lake	Bishop/Humphreys	Sabrina	RC2	RC 1
Golden Lake (McGee Creek)	Fish Creek/Convict/McGee	McGee	RC2	RC 1
Beetlebug Lake	Fish Creek/Convict/McGee	Silver Divide	RC2	RC 1
Medley/Three Island Lakes	Florence/Bear	Seldon	RC2	RC 1
Blackrock Lake	John Muir Southwest	Red Mountain	RC2	RC 1
Third Recess Lake	Mono Creek/Rock Creek	Fourth Recess	RC2	RC 1
Golden Lake (Mono Creek)	Mono Creek /Rock Creek	Fourth Recess	RC2	RC 1
Feather Lake	Mono Creek /Rock Creek	Graveyard	RC2	RC 1
Grinnell Lake	Mono Creek /Rock Creek	Laurel	RC2	RC 1
Laurel Lake	Mono Creek /Rock Creek	Laurel	RC2	RC 1
Second Recess	Mono Creek /Rock Creek	Second Recess	RC2	RC 1
Parker Lake	Ansel Adams East	Parker	RC1	RC2
Anona Lake	Ansel Adams East	King	RC1	RC 2
Badger Lakes	Ansel Adams East	River-High	RC3	RC 2
Iceberg Lake	Ansel Adams East	Shadow-Ediza	RC1	RC 2
Rosalie Lake	Ansel Adams East	Shadow-Ediza	RC3	RC 2
Marie Meadow	Ansel Adams East	Upper Rush	RC3	RC 2
Lady Lake	Ansel Adams West	Staniford	RC3	RC 2
Vandenburg Lake	Ansel Adams West	Staniford	RC3	RC 2
Edith Lake	Fish Creek/Convict/McGee	Convict	RC1	RC 2
Dorothy Lake	Fish Creek /Convict/McGee	Convict	RC1	RC 2
Genevieve Lake	Fish Creek /Convict/McGee	Convict	RC1	RC 2
Volcanic Knob	Florence/Bear	Volcanic	RC1	RC 2
Guest Lake	John Muir Southwest	Bench	RC1	RC 2
Graveyard Lake	Mono Creek/Rock Creek	Graveyard	RC1	RC 2
Ruby Lake	Mono Creek/Rock Creek	Little Lakes Valley	RC3	RC 2
Davis and Second Lake	Mono Creek /Rock Creek	Hilton	RC2	RC3

ALTERNATIVE 2 – PROPOSED ACTION

SUMMARY

As discussed in the introduction, the proposed action was developed by the interdisciplinary team and Forests' District Rangers. It was designed in response to the interdisciplinary team's assessment of conditions in locations where pack station operations had been identified. The assessment focused on the issues identified by the court in the injunctive relief. The team identified a need for change where conditions warranted further direction, change in direction or specific actions to implement existing direction. A comprehensive and detailed proposed action was scoped in June 2004.

This alternative allows commercial pack stock activities with the following standards and guidelines:

- Use is rationed through seasonal destination quotas combined with daily and seasonal stock quotas (totals) set at levels similar to the past three years.
- Destination quotas respond to a determination of capacity for the destination, utilizing the desired condition of the area (recreation category), resource capability, and a consideration of risk factors.
- Party size limit is 15 persons and 25 stock wilderness-wide with some site specific decreases in party size.
- Campsites are designated for all locations where operators hold stock overnight and operators will be required to use these sites.
- Grazing is managed through a determination of suitability and stock night capacity for grazing zones and specific meadows.
- The proposed system of trails and development levels are based on an analysis of current and anticipated use, resource impacts, and trail maintenance considerations. Destination recreation categories and commercial stock quotas are considered to ensure that trail management objectives are aligned with area management objectives.
- Trail suitability for commercial pack stock is based on an analysis of anticipated trail infrastructure stability, current resource impacts and potential impacts due to a variety of risk factors (if commercial pack stock use were to occur or continue). These same trails would also be posted as not recommended for private stock due to perceived severity of trail conditions and safety concerns.

1. TRAIL MANAGEMENT PLAN

The trail system inventory responding to the direction for this alternative is shown in Table 2.26.

2. USE LEVELS AND STOCK NUMBERS

A. Day Rides

A total of 5,500 day rides will be authorized in locations listed in Table 2.33, *Day Rides Alternative Comparison Table*.

B. Service Days

No service days are assigned to pack station operations. Use is controlled by destination quotas, primary operating areas, designated campsites, grazing restrictions and party size limitations.

Pack stock operators with O/G Special Use Permits (no facilities on forest lands) will be assigned service days as follows:

Table 2.11 Alternative 2 outfitter/guide service days allocations

Operator	Allocation
Burro Operator	119
Horse and Mule Operator	156
Llama Operator	100

C. Overnight Use

Quotas on number of trips per season by destinations will replace trailhead quotas and service day allocations.

Quotas were based on an assessment of the capacity of the locations for continued commercial use. All locations where commercial pack stock identified their current, proposed and past operations were assessed. Tally sheets (the self-reported record of commercial use) were analyzed and the number of trips, people and stock use at destinations was calculated.

Calculations were done to the best of the agencies ability, given a small margin of error for imprecise recording of destinations by permittees. Records are not available consistently across the planning area prior to 2001.

The assessment of capacity was done by looking at the highest level of use to each recorded destination from 3 years (2001-2003). Three criteria were applied to determine if this level of use was the appropriate capacity:

- 1) The resource condition rating of the destinations as evaluated by the interdisciplinary team by assessing recreational impacts, access issues, riparian concerns, camping potential, and risk factors at destinations;
- 2) Determination if the destination could accept more use, or if the areas was already at or exceeded capacity and needed to be reduced; and
- 3) Whether that level of use is consistent with the recreation category, given considerations of other uses (overnight use by general public, other outfitters and guides, day hiking, and day riding).

These quotas are estimates of use for commercial operators that would meet the desired resource and experiential condition of the area, considering the recreation category and the physical capacity of the destination.

In addition to the quota assigned to destinations and quota assigned for all expense trips, each operator would be assigned five trips that can be used (pending approval from the line officer) for either unidentified or unassigned destinations or, if needed and approved, for exceeding destination quotas for the season. This accommodates fluctuations and allows a small amount of flexibility to the operators.

Quotas would be managed over time to adapt to changing conditions. If conditions at destinations deteriorate or do not meet the desired condition, the number of trips would be reduced. If conditions improve or stay the same and a determination is made that an increase in use is sustainable, the number of trips may increase. Increases and reductions will be incremental and monitored for effectiveness. Both the Forest Service and the commercial pack stock operator must respond to resource concerns in a prompt and appropriate manner. Destination quotas are only one mechanism in this alternative that allows for the management of the resource quality of the wilderness.

Primary operators (the primary operating concept is explained below) would have priority for available destination quotas. Traveling trips or trips by operators who are not the primary operator would be the first to be reduced if resource conditions warrant reduction.

The following describes how various pack station trips would be accounted for in the destination quota system:

- For spot and dunnage, a trip is defined as a one-way service ⁴
- A one-way spot trip will count for one trip.
- A one-way dunnage that utilizes less than five stock will count for a ½ trip. This provides incentive for a type of trip (dunnage) that utilizes less stock per person. Due to data collection concerns of National Park managers, trips accessing the National Parks will not be counted as ½ trip, regardless of the number of stock.
- Trips that hold stock in the backcountry overnight in conjunction with an all expense, traveling or base camp type service are considered “all expense” for the purposes of the quotas. These all expense trips will be considered one trip for the duration of the service provided on that trip. All expense trips will be further regulated by the designated site requirement and allowable grazing constraints.

Destination quotas will not be adjusted (lowered) based on lack of use. Quotas are designed to accommodate fluctuations at various destinations over the years.

Any use identified for travel into or through the adjacent National Parks (Yosemite National Park, Devils Postpile National Monument and Sequoia/Kings Canyon National Park) will comply with authorizations or use level limitations set by the National Parks.

⁴ A spot trip is where the party rides and pack stock is used to carry the dunnage. A dunnage trip is where the party walks in and pack stock is used to carry the dunnage.

Wilderness permits are required for all parties, commercial pack stock operators will obtain the proper wilderness permits from the Forest Service (or its contractor). Tally sheets for reporting the service will continue to be required as described in Alternative 1.

For a full listing of all destination quotas see Table 2.31.

D. Primary Operating Areas

Pack station operators are assigned a primary operating area. This is defined by the area an operator can reasonably service with a one to two day spot or dunnage trip from their base pack station facility where past use records show service has regularly been provided. These areas are defined in the site-specific section by the destination/zone quotas assigned to each operator in Table 2.31.

In areas where two or more pack stations can access the same destination through spot and dunnage trips, primary operating areas may be shared. With the exception of the shared primary areas, no overlap of services in these primary operating areas will be assigned for spot or dunnage trips. Allocations for occasional trips can be authorized in another operator's primary area, but the Authorized Officer must approve such trips. (Note: "approval" for any occupancy or use, for primary operating areas and other actions common to all analysis units constitutes a written statement regarding the status and terms of the approval, signed by the Authorized Officer.)

E. Party Size

Party size for commercial pack stock parties is 15 persons and 25 stock wilderness-wide. In 15 site specific locations the party size varies, based on the physical capacity, setting and management objectives for the area. These are listed in Table 2.12.

Table 2.12. Site-specific party size limitations

Geo Unit	Analysis Unit	Location: Person/Stock limit
Ansel Adams East	King Creek	Fern Lake: 10 persons/20 stock
	King Creek	Anona Lake: 10 persons/20 stock
	Rush Creek	Weber Lake: 10 persons/20 stock
Bishop/Humphreys	Bishop Creek	Ruwau Lake: 8 persons/15 stock
	Bishop Creek	Marie Louise Lake: 6 persons/10 stock
	French	Merriam Meadow: 10 persons/20 stock
	French	Steelhead Lake: 6 persons/6 stock
	Glacier Divide	Honeymoon Lake: 6 persons/12 stock
	Glacier Divide	Packsaddle Lake: 6 persons/6 stock
Fish Creek/Convict/McGee	Sabrina	Baboon Lake: 8 persons/15 stock
	Convict	Cloverleaf Lake: 15 persons/8 stock
	Purple Bench	Above Ram Camp: 8 stock
	Silver Divide	Peter Pande Lake: 10 persons/15 stock

Geo Unit	Analysis Unit	Location: Person/Stock limit
	Upper Fish	Tully Lake: 8 persons/15 stock
Mono Creek/Rock Creek	Little Lakes Valley	Gem Lake: 8 persons/10 stock

F. Stock Numbers

Commercial pack stock operators are subject to seasonal and daily stock number limits. These limits were derived by an analysis of recent stock use on trails and current resource concerns, visitor capacity considerations, and management objectives and are listed below.

Table 2.13: Alternative 2 - seasonal and daily stock limits

Pack Station Location	Stock Limit
North Lake	
Seasonal	1100
Daily	50
Tule Meadow	
Seasonal	500
Daily	35
Cottonwood Creek	
Seasonal	300
Daily	35
Huntington Lake	
Seasonal	200
Daily	35
Silver Lake	
Seasonal	1700
Daily	50
North Fork Big Pine	
Seasonal	850
Daily	50
Edison Lake	
Seasonal	1200
Daily	50
Double Meadow	
Seasonal	75
Daily	25
Lakes Basin	
Seasonal	1000
Daily	50
McGee Creek	
Seasonal	700
Daily	50

Pack Station Location	Stock Limit
Clover Meadow	
Seasonal	1000
Daily	50
Mt Whitney	
Seasonal	150
Daily	35
Pine Creek	
Seasonal	500
Daily	35
South Lake	
Seasonal	400
Daily	35
Reds Meadow	
Seasonal	2000
Daily	90
Rock Creek	
Seasonal	2000
Daily	80
Onion Valley	
Seasonal	250
Daily	35
Fish Camp	
Seasonal	280
Daily	25
Blayney Meadow	
Seasonal	350
Daily	25

3. GRAZING MANAGEMENT

A. Grazing Strategy

Grazing is managed in “grazing zones” that include one or more meadows and their surroundings. Grazing is only allowed in the 82 grazing zones that are based on areas requested for grazing by the commercial pack operators. Key meadows were visited within the grazing zones for determinations of suitability and estimated grazing capacity. Within those key meadows, some critical areas were identified based on resource concerns, such as fens, Yosemite toad breeding habitat, and important hydrologic zones such as springs, seeps, and unstable areas.

An overall estimate of stock nights was assigned to each grazing zone based on calculated suitable meadow area, vegetative productivity, and reported stock use in the last three years (see Table 2.30). This estimate will be used as an initial stocking rate to be adjusted either up or down based on monitoring of progress toward or maintenance of desired conditions. Of 178 meadows

analyzed within grazing zones, 127 meadows were determined to be suitable and 51 unsuitable. If no meadows in a requested area were determined to be suitable, no grazing zone was established. Twenty meadows determined to be unsuitable are in this category. An additional eight meadows outside of areas requested for grazing by commercial pack outfitters were analyzed and determined to be unsuitable.

Most monitoring will focus on the key meadows; however, the entire area inside the grazing zone will be managed by applying standards described in the Wilderness Plan. These include standards for range readiness, vegetation utilization, and streambank and soil disturbance. Critical areas and areas identified as unsuitable will be managed for no use, and the stock user will be expected to avoid stock entry, although there is an inadvertent ground disturbance limit of 5% allowed in these areas.

Monitoring of utilization, and trampling at selected critical areas, will occur as described in the Wilderness Plan.

B. Drift Fences

Existing drift fences are allowed for resource protection and where identified by, and agreed to by the Forest Service, for stock management. Stock management includes the prevention of stock drifting or moving to areas where grazing is not suitable, particularly in situations where the drifting could lead to loose, unattended stock on the trail thereby causing unsafe situations for visitors. Drift fences that do not facilitate resource management or stock management but only provide convenience for commercial pack stock operators will be removed. Whenever possible, temporary rather than permanent or electric fencing will be used and encouraged to keep stock out of critical areas, sites that are not range ready, or to keep stock in approved areas. The commercial pack stock operator may request, and the Authorized Officer may approve, an alternative method of controlling stock to minimize the risk of impacts to critical areas. For a list of drift fences see Table 2.34.

4. TRAIL SUITABILITY FOR COMMERCIAL PACK STOCK

A. System Trails

The 2001 Wilderness Plan provides direction to identify trails that are not suitable for commercial stock as “Not Recommended for Stock” (NRFS). Commercial stock use is not authorized on trails that are NRFS. The NRFS has no regulatory effect on private stock use, and is used for public educational and advisory purposes only.

Management of trails designated as “Not Recommended for Stock” will include gradually signing trails, identifying them on agency recreational maps, and working with private map producers to identify these trails appropriately. Other educational efforts will be implemented as appropriate. The trails will continue to receive basic maintenance and stabilization to keep them from degrading and causing excessive resource impacts. In most cases work will not be undertaken which changes the current character of the trail.

This alternative identifies 73.8 miles of system trails that are designated as “Not Recommended for Stock” (listed in Table 2.26). The identification of these trails is based on the direction in the 2001 Wilderness Plan that closure is appropriate where repetitive commercial pack stock use on trails not maintained at a higher level results in further degradation of the trail. In addition, the

closure provides benefits to soils, vegetation, and biophysical resources and reduces maintenance and reconstruction costs.

B. Use Trails and Routes

The 2001 Wilderness Plan requires that all commercial use off existing system trails be approved by the Forest Service. Alternative 2 implements this guidance and designates the use trails and cross county routes appropriate for use by commercial pack stock, taking into consideration commercial uses at destinations, grazing areas, and designated camps. Certain undefined (cross-country) routes that had limited risk factors and no notable existing resource degradation under current use levels were considered for approval if not in conflict with other commercial stock direction in this alternative. If some risk factors exist, limitations are placed on the number of approved trips to these areas. A list of the use trails and routes that will be approved under the various alternatives is in Table 2.27.

Mitigation of resource impacts and removal of seasonal obstacles can be performed on use trails (such as removal of downed trees where bypasses would otherwise impact resources), but are limited to the minimum necessary, so that the character of the use trail does not substantially change.

Campsite access trails that are directly associated with designated commercial pack stock camps (see Table 2.32) and are used for access to the site are approved as an inherent part of the designation of stock camps and are generally not addressed as “use trails.” Mitigation of resource impacts and basic trail opening to ensure that multiple routes do not form is allowed and is generally the responsibility of the primary operator.

5. CAMPSITES

All overnight holding of stock by commercial operators can only take place at a designated stock camp. These sites will be signed as stock camps. The general public is not excluded from using these sites, but the intent is for a stock party to have priority over a non-stock party for use of the site.

These sites will have designated stock holding areas, designated access into and out of the camp, and will be contained in a manner that is consistent with Best Management Practices.⁵ Features and allowances will be made in these sites to ensure and facilitate resource protection. The Forest Service and commercial pack stock operators will bring all designated sites up to this standard within five years of permit issuance.

As identified in Forest Service policy, assigned sites are designated stock camps that, upon request by the operator, can be reserved for the primary operator for the area. These sites are subject to a reserved site fee (as specified in Forest Service Handbook Chapter 2709.11, Section 37.21 (h)). Assigned sites are not mandatory.

If a stock camp has not been identified, and an operator requests use of an area where overnight holding of stock is needed, the Authorized Officer may approve that use. If an operator plans to

⁵ Best Management Practices (BMP) is a practice or combination of practices that are the most effective and practical means of preventing or reducing water pollution from non-point sources.

use sites repeatedly through the term of the permit, the site should be approved and designed in accordance with the guidelines above.

Any legal campsite may be used for spot and dunnage trips except where specifically prohibited or prescribed in the list of designated sites found in Table 2.32.

Table 2.14 describes camping limitations in twelve locations. These limitations are intended to facilitate resource protection objectives.

Table 2.14. Alternative 2 camping limitations

Geo Unit	Analysis Unit	Management Action
Fish Creek/Convict/McGee	Silver Divide	One night grazing per trip in Cascade Valley and Silver Divide analysis units.
Fish Creek/Convict/McGee	Purple Bench	Purple Lake: limit camping when not with clients to no more than five nights a year.
Florence/Bear	Sallie Keyes	Prohibit use of site at Old Trail Meadow for overnight holding of stock.
John Muir Southeast	Cottonwood	Allow access to Muir Lake west shore campsites on designated system trail only.
John Muir Southeast	Shepherd	Anvil Camp: allow overnight camping with pack stock (remove current restriction).
Mono Creek/Rock Creek	Fourth Recess	Prohibit camping (through trail use only) below Third Recess to Fish Camp (Second Recess).
Mono Creek/Rock Creek	Hilton Creek	Close campsites in vicinity of goshawk nests at Davis Lake.
Bishop/Humphreys	Sabrina	Prohibit use of campsite at inlet of Blue Lake.
Bishop/Humphreys	Sabrina	Set back campsite at Dingleberry Lake from water and contain.
Bishop/Humphreys	Treasure	Close campsite near Treasure Lakes bench.
Ansel Adams East	Rush Creek	Designate stock holding area for day rides at Crest Creek.
Ansel Adams West	Staniford	Vandeberg: Limit pack stock access to sites at north shore of lake. Contain campsites, and set back from water.

6. CAMPFIRES

In areas that are closed to campfires by the elevational closure in the 2001 Wilderness Plan commercial stock operators are allowed to pack in wood and charcoal from outside the wilderness for campfires. This applies to all types of trips including dunnage, spot, and full service. All campfires in areas otherwise closed by the elevational restriction will only occur in a fire-pan and the ash and coals from these fires will be packed out of the wilderness.

The following are requirements associated with firewood use in the Ansel Adams and John Muir Wildernesses.

- Get firewood locally, particularly no wood from the 14 counties with quarantine.

- No use of wood that has been left in woodpiles over winter.
- Clean any equipment used in gathering firewood.

7. RECREATION CATEGORIES

Recreation categories are used to manage recreation use as described and mapped in the 2001 Wilderness Plan direction.

ALTERNATIVE 3

SUMMARY

- Use is rationed through trailhead quotas and a threshold concept for limiting seasonal stock and clients on each trailhead.
- Party size limit is 15 persons and 25 stock wilderness-wide with some site specific decreases in party size.
- Campsites will be designated for all locations where operators hold stock overnight and operators are required to use these sites.
- Grazing will be managed through a determination of suitability and stock night capacity for grazing zones and specific meadows. Meadows with hydrologic function conditions on a downward trend will be closed to grazing.
- The proposed system of trails and development levels are based on an analysis of current and anticipated use, resource impacts, and trail maintenance considerations. Destination recreation categories and commercial stock quotas at certain locations are also considered to ensure that trail management objectives are aligned with area management objectives.
- Trail suitability for commercial pack stock is based on an analysis of anticipated trail infrastructure stability, current resource impacts and potential impacts due to a variety of risk factors, if commercial pack stock use were to occur or continue. Trails which are awkward for most equestrian use, but are otherwise generally resource-stable and not likely to degrade may be allowed for commercial stock use.
- “Not Recommended for Stock” determinations in this alternative are a public advisory, and do not directly restrict commercial operations.

This alternative responds to Issues #1- Use Levels and #6 – Economic and Operational Effects with a different rationing system than destination quotas. Trailhead quotas on people combined with annual thresholds on stock and clients allow for more flexibility to operators while at the same time providing definitive capacities to protect desired conditions. Additional protections are provided with some destinations that will also have a limit on the number of trips per season.

Issue #4- Grazing Management is addressed by considering all meadows with a rating of functional at risk with a downward trend to be unsuitable for grazing.

Issue # 5 – Campfires is addressed by limiting where the commercial operators can have a campfire above the elevation closure to designated sites only.

Issue #7 – Trail development is addressed by providing a stable trail system in light of the anticipated allowable uses. This alternative proposes a Trail Management Plan implementing the direction in the 2001 Wilderness Plan and is compatible with this alternative’s proposed direction for the management of commercial pack stock. The proposed system of trails, along with the assigned Trail Management Classes are based on analysis of recreation categories, current and anticipated use, resource impacts, and trail maintenance considerations to ensure that trail management objectives are consistent with area management objectives.

1. TRAIL MANAGEMENT PLAN

Implements direction as described in Alternative 2. In addition the following changes or clarifications would apply:

This alternative proposes the “Not Recommended for Stock” (NRFS) concept. NRFS refers to those trails or trail segments where the Forest Service wishes to communicate and educate to both public and commercial stock users that a condition exists that warrants their consideration when using stock on that trail. Trails identified as NRFS in this alternative are open to all stock users with appropriate caution. There are approximately 135 miles of trail designated as NRFS in this alternative.

The criteria for identifying a trail as NRFS include:

- Conditions present which could be especially awkward or impractical to most riders or pack and saddle animals.
- Conditions or hazards which are not likely to be repaired in a stock-suitable manner.
- Obstacles or hazards that are severe, prolonged, or out of character with the trail class and/or the rest of the trail.
- Consistently awkward condition which may require frequent or continuous dismounting and leading of animals.
- Issues surrounding destination and desired conditions of area and management of the trail that make it highly unlikely that the trail condition and hazards will be repaired to a stock-suitable condition.

The trail system inventory responding to the direction for this alternative is shown in Table 2.26.

2. USE LEVELS AND STOCK NUMBERS

A. Day Rides

Allow 5,500 day rides in 45 analysis units as described in Table 2.34.

B. Overnight Use

No service days will be assigned to pack station operations that are under resort term permits. Use will be controlled by daily commercial quotas, primary operating areas, designated campsites and party size limitations, and overall thresholds on commercial stock numbers and clients.

Pack stock operators under Outfitter/Guide (O/G) Special Use Permits will be counted in existing daily trailhead quotas on visitors.

Pack stock operators with O/G Special Use Permits (no facilities on Forest Lands) will be assigned service days as follows:

Table 2.15 Alternative 3 outfitter/guide service days allocations

Operator	Allocation
Burro Operator	119
Horse and Mule Operator	156
Llama Operator	100

C. Quota

Trailhead Quotas

Wilderness permits will be required for all parties serviced by commercial pack stock operations for overnight use. Operators must obtain the proper wilderness permits to enter the wilderness from the Forest Service, or a contractor authorized to issue the permits. Tally sheets for reporting the service will continue to be required as described in Alternative 1.

Trailhead quotas in conjunction with identified primary use areas will provide temporal and spatial controls on pack station use. Specific commercial packstock quotas will be put in place on trailheads where commercial pack stations are located. Existing commercial quotas will remain for use by non pack stock outfitter guides. Quotas for the general public will not be modified.

Daily trailhead quotas on people spending the night in the wildernesses will be in effect. This includes any overnight employees of the commercial operator.

The total number of stock will be counted for each trip. Re-entering the wilderness to pick up a party is a trip and the number of stock used for that service will be counted. Re-supplying a camp or a party will also count against the annual stock and client threshold. When the re-supply service is for a commercial outfitter/guide then the stock will be counted but not clients.

For all multiple quota trailheads, thresholds are established for both stock and clients. These thresholds provide general guidance for total use in a season. Single quota trailheads will only have a seasonal stock threshold and will regulate number of clients through the daily trailhead quota.

At the conclusion of each season, actual use will be compared to the established thresholds. If thresholds are reached or exceeded, the responsible officer will make an assessment of the causative factors and potential resource implications. If conditions are within standards and guidelines, the responsible officer can allow the threshold to be raised with definitive monitoring goals and objectives identified. If any evaluation indicates that conditions do not meet standards and guidelines or desired conditions, corrective actions—including reduced thresholds, additional destination quotas and/or campsite or other site specific closures—will be considered. Any adjustments to thresholds would require NEPA compliance.

Commercial quotas will be modified as follows:

Table 2.16. Alternative 3 Inyo N.F. trailhead quotas and thresholds

Multiple quota trailheads

Trailhead	DAILY Packer Quota (People)	DAILY Outfitter/Guide Quota (People)	SEASONAL Stock Threshold	Seasonal Client Threshold
NF Big Pine	15	8	765	450
Bishop Pass	15	8	385	350
Cottonwood Lakes	15	8	300	200
Duck Lake	15	8	600	450
Fish Creek	8	8	350	200
High Trail	15	8	700	400
Hilton	15	8	700	400
Hilton Creek	Shared quota with Hilton		100	100
JMT north	8		150	100
Kearsarge	8	8	180	200
Lamarck	8	8	25	25
Little Lakes Valley	8	8	40	50
McGee	15	8	500	450
Minaret	15	8	90	150
Mono Pass	15	8	800	400
Pine Creek	15	8	500	450
Piute Creek	15	8	600	450
River trail	8	8	130	200
Rush Creek	15	8	1200	700
Sabrina Lake	15	8	280	300
Shadow	15	8	280	300
Tamarack	8	8	125	150
Treasure	8	8	25	25

Single quotas as identified in the Wilderness Plan will remain the same. Pack station operators will compete with the general public for the quota on these trails. Primary operators will be identified based on pre-Wilderness Plan operating areas.

Single quota trailheads

Trailhead	Single Quotas DAILY (People)	SEASONAL Stock Threshold
Bloody	8	0
Glacier Canyon	8	0
Gibbs	8	0
Parker Ck	10	25
Fern/Yost	8	0
Beck	15	150
Fern Lake	10	160
JMT/PCT South	10	0
Red Cones	15	50
Deer Lake	10	35
Laurel	8	80
Horton Lakes	10	15
Upper Buttermilk	8	5
George Lake (via Sabrina)	10	0
SF Big Pine	12	0
Taboose	10	50
Sawmill	10	15
Shepherd	15	100
Meysan	10	0

Trailheads that have “0” as a seasonal stock threshold and case-by-case trails are trailheads that have no or very little recorded stock use. Unless a trail is identified as “Not Suitable for Commercial Stock,” these trails will be managed on a case by case approval basis for allowing incidental use. Incidental use is considered to be irregular, unadvertised, infrequent, and small parties that may meet a need not currently being met.

Trail Crest will be managed to allow for visitors that have been provided spot and dunnage pack stock support for entry, but are currently unguided and unsupported to exit Trail Crest. 40% of the quota (10) will be available for commercial packstock clients in advance.

Table 2.17. Alternative 3 Sierra N.F. trailhead quotas and thresholds

Multiple quota trailheads

Trailhead	DAILY Packer Quota (People)	DAILY Outfitter/Guide Quota (People)	SEASONAL Stock Threshold	Seasonal Packer Client Threshold
Maxson	8	8	260	285
Florence	15	8	630	430

Trailhead	DAILY Packer Quota (People)	DAILY Outfitter/Guide Quota (People)	SEASONAL Stock Threshold	Seasonal Packer Client Threshold
Devils/Graveyard	10	8	440	295
Isberg	8	8	510	310
Walton	8	8	25	60
Fernandez	8	12	480	285
Jackass/Norris	8	8	25	20

In addition, on the Sierra National Forest six trailheads would be changed from their current management as Single Quota to Multiple Quota, creating a separate commercial quota that includes both commercial pack stock operators as well as commercial non-stock operators.

Trailheads changing from a single quota to a multiple quota

Trailhead	DAILY Packer Quota (People)	DAILY Outfitter/Guide Quota (People)	SEASONAL Stock Threshold	Seasonal Packer Client Threshold
Onion Springs	10	Included in Packer Quota	25	20
Crown/Rancheria	10	Included in Packer Quota	55	80
Woodchuck	10	Included in Packer Quota	125	85
Bear Creek (Diversion)	10	Included in Packer Quota	30	130
Bear Ridge	10	Included in Packer Quota	200	85
Margaret Lakes	8	Included in Packer Quota	150	80

Single quotas as identified in the Wilderness Plan will remain the same. Pack station operators will compete with the general public for the quota on these trails. Primary operators will be identified based on pre-Wilderness Plan operating areas.

Single quota trailheads

Trailhead	Single Quotas DAILY (People)	SEASONAL Stock Threshold
*Mono Meadow	10	25
*Doris/Tule	10	25
*Mono Hot Springs	10	25
*Portal Forebay	10	25

Trailhead	Single Quotas DAILY (People)	SEASONAL Stock Threshold
*Rattlesnake	10	25
*Crater	10	25
Logan Meadow	10	25
Hells Half Acre	10	25
South Fork	10	25
Squaw Dome	10	25
Cassidy	10	80
Miller	10	55
Mammoth	25	105
Chiquito Lake	35	245
*Statum/Spanish	10	30
*Corbet	10	25
*Dutch	10	50
*Hooper	10	45
Mono Creek	30	140

* See Alternative 1; Trailheads inadvertently omitted from Wilderness Plan

Destination quotas

In addition to trailhead quotas, the following destinations will be limited to a maximum number of trips per season. This includes stops on a traveling all expense trip.

Table 2.18 Alternative 3 destination quotas

Geographic Unit	Area	Number of Trips
Ansel Adams East	Superior	8
	Emily (temporary until trail is fixed))	0-4
	Laura	2
	Ediza (temp)	24
Ansel Adams West	Sadler	10
	Staniford	20
Bishop/Humphreys	Muriel	4
	Packsaddle	2
	Mesa, Tomahawk	4
	Treasure	8
	Chocolate	4
	Elba, Moon, L (temp)	2
	Royce	4
	Merriam	4

Geographic Unit	Area	Number of Trips
	French	2
	Wahoo	4
Fish Creek/Convict/McGee	Woods Lake	4
	Cloverleaf	4
	Pika	4
	Peter Pande	4
	Convict destinations (other than Cloverleaf)	18
	Tully Lake	4
John Muir Southeast	Birch	5
Mono Creek/Rock Creek	Hilton #3	6
	Pioneer Basin	20
	Ruby	6

D. Primary Operating Areas

Pack station operators will be assigned a primary operating area. This is defined by the area an operator can reasonably service with a one to two day spot or dunnage trip from their base pack station facility (pack station) where past use records show service has regularly been provided.

In areas where two or more pack stations can access the same destination through spot and dunnage trips, primary operating areas may be shared. With the exception of the shared primary areas, no overlap of services in these primary operating areas will be assigned for spot or dunnage trips. Allocations for occasional trips can be authorized in another operator's primary area, but the Authorized Officer must approve such trips. (Note: "approval" for any occupancy or use, for primary operating areas and other actions common to all analysis units constitutes a written statement regarding the status and terms of the approval, signed by the Authorized Officer.)

E. Party Size

Party size is 15 persons and 25 head of stock throughout the two wildernesses. In addition party size is limited at the same destinations as in Alternative 2.

3. GRAZING MANAGEMENT

A. Grazing Strategy

Allow grazing at the utilization, range readiness, inadvertent use/impact critical area 5% standard, and other standards as for Alternative 2. Initial identified stock nights available are the same as for Alternative 2 for areas that are assessed as Fully Functional or Functional at Risk with an upward trend.

No use will be authorized on key areas determined to be Functional at Risk with a downward trend.

Some locations where assessments were not accomplished prior to the Proposed Action have changes in identified initial stock nights available as a result of site visits in 2004. This affects

locations visited in 2004 such as Davis Lake Benches, Coyote Lake, Margaret Lake, Graveyard Meadows/Cold Creek, Silver Divide (Olive Lake, Box Canyon above Grassy, Chief Lake), Silver Pass Analysis Unit, Stevenson Meadow, Crater Meadow, Deer Creek, Blayne Meadow, Jackass Meadow, Hells Hole Meadow, and Poison Meadow.

B. Drift Fences

Drift fence management for Alternative 3 can be found in Table 2.34.

4. TRAIL SUITABILITY FOR COMMERCIAL PACK STOCK

A. System Trails

This alternative redefines the term “Not Recommended for Stock” (NRFS) from the Wilderness Plan and replaces the NRFS designation in Alternatives 1 and 2 with the term “Not Suitable for Commercial Stock” (NSCS). In this alternative, trails designated as NSCS are closed to commercial stock use.

There are 62.8 miles of system trails designated as “Not Suitable for Commercial Stock” based on an analysis of compliance with the Wilderness Plan management direction, trail and resource condition, and compatibility with the commercial pack stock direction in this alternative.

Overall guidance for the identification of trails designated as NSCS remains the same as trails designated as NRFS in Alternative 2. It is based on the direction in the 2001 Wilderness Plan that closure is appropriate where repetitive commercial use on trails not maintained at a higher level will result in further degradation. Also, the results of the closure will be beneficial to soils, vegetation, and biophysical resources as well as reducing maintenance and reconstruction costs. The distinction between criteria used in Alternative 2 and this alternative is that trails which are notably awkward for most equestrian use, but are generally resource-stable and not highly likely to degrade may be allowed for commercial stock use. This assumes that the commercial operators are familiar with the travel conditions of the trail, and will use appropriate judgment regarding the capability of each packer, pack and saddle animals, and their clientele.

B. Use Trails and Routes

The rationale for approving use trails in this alternative is modified from Alternative 2 to account for differences in the anticipated use resulting from the specific management direction contained in this alternative for commercial pack stock. Certain undefined (cross-country) routes that had limited risk factors and no notable existing resource degradation under current use levels were considered for approval if not in conflict with other commercial stock direction in this alternative.

A list of use trails and routes approved in this alternative is in Table 2.27.

C. Pass Sanding

Passes may be sanded with approval from the appropriate line officer.

5. CAMPSITES

All overnight holding of stock by commercial operators must take place at a designated stock camp. These sites will be signed as stock camps. The general public will not be excluded from using these sites, but the intent is for a stock party to have priority over a non-stock party for use of the site.

All designated campsites must be 100 feet from water, already established, durable and adequate for loading and unloading stock, and have acceptable access from the system trail. Designated campsites will not be located where sensitive resources (e.g., heritage, sensitive plants, etc.) may be affected.

These sites will have designated stock holding areas, designated access into and out of the camp, and will be contained in a manner that is consistent with Best Management Practices to ensure and facilitate resource protection. The Forest Service and pack station operators will have all designated sites up to this standard within five years of permit issuance.

Assigned sites will be designated stock camps that, upon request, will be reserved for the primary operator for the area. These sites will be subject to a reserved site fee (as specified in Forest Service Handbook Chapter 2709.11, Section 37.21 (h)). Assigned sites will not be mandatory.

If a stock camp has not been identified, and an operator requests use of an area where overnight holding of stock is needed, the Authorized Officer may approve that use. If an operator plans to use sites repeatedly through the term of the permit, the site should be designated and designed in accordance with the guidelines above.

Any legal campsite may be used for clients engaged in spot and dunnage trips except where specifically prohibited or as prescribed in the table below.

Table 2.19. Alternative 3 site-specific camping limitations

Geographic Unit	Analysis Unit	Camping Limitations
Fish Creek/Convict/McGee	Cascade	Prohibit all spot and dunnage to Iva Belle Hot Springs.
Fish Creek/Convict/McGee	Purple Bench	Purple Lake: limit camping when not with clients to no more than five nights a year.
Florence/Bear	Sallie Keyes	Prohibit use of site at Old Trail Meadow for overnight holding of stock.
John Muir Southeast	Cottonwood	Allow access to Muir Lake west shore campsites on designated system trail only.
John Muir Southeast	Shepherd	Anvil Camp: allow overnight camping with pack stock (remove current restriction).
Mono Creek/Rock Creek	Fourth Recess	No camping from Third Recess to below Second Recess in Mono creek. Close Fish Creek camp.
Mono Creek/Rock Creek	Hilton Creek	Close campsites in vicinity of goshawk nests at Davis Lake.
Bishop/Humphreys	Sabrina	Prohibit use of campsite at inlet of Blue Lake.
Bishop/Humphreys	Sabrina	Set back campsite at Dingleberry Lake from water and contain.
Bishop/Humphreys	Treasure	Close campsite near Treasure Lakes bench.

6. CAMPFIRES

In areas that are closed to campfires by the elevational closure in the 2001 Wilderness Plan, commercial packers will be allowed to pack in wood and charcoal from outside the wilderness for campfires. All campfires in areas otherwise closed by the elevational restriction must occur in a fire-pan and the ash and coals from these fires must be packed out of the wilderness after each trip. This allowance will be made for full service (all-expense and/or traveling trips) in designated sites only.

The following are requirements associated with firewood use in the Ansel Adams and John Muir Wildernesses:

- Get firewood locally, particularly no wood from the 14 counties with quarantine
- No use of wood that has been left in woodpiles over winter
- Clean any equipment used in gathering firewood

If monitoring indicates that a changed condition occurs as a result of this allowance, including increased depletion of wood or if there is demonstrated continual non compliance at a location, then this privilege will be revoked site specifically.

7. RECREATION CATEGORIES

The following changes will be made in the assignment of recreation categories. These areas were determined to be consistent with the proposed recreation category. These are not areas that have changed in condition since 2001, but were improperly categorized and are more consistent with the new category.

Table 2.20. Alternative 3 – Modified recreation category changes

Location	Geographic Unit	Analysis Unit	Recreation Category (RC) Change to:
Deadhorse Lake	Ansel Adams East	Minaret	RC 1
Cabin Lake	Ansel Adams East	Shadow-Ediza	RC 1
Cecile Lake	Ansel Adams East	Shadow-Ediza	RC 1
Altha Lake	Ansel Adams East	Thousand Island	RC 1
Marie Lake	Ansel Adams East	Upper Rush	RC 1
Slab Lakes	Ansel Adams West	Triple Divide	RC 1
Chalfant Lakes	Bishop/Humphreys	Granite Park	RC 1
Goethe Lake	Bishop/Humphreys	Glacier	RC 1
Lower Honeymoon Lake	Bishop/Humphreys	Glacier	RC 1
Moonlight Lake	Bishop/Humphreys	Sabrina	RC 1
Golden Lake (McGee Creek)	Fish/Convict/McGee	McGee	RC 1
Beetlebug Lake	Fish/Convict/McGee	Silver Divide	RC 1
Medley/Three Island Lakes	Florence/Bear	Seldon	RC 1

Location	Geographic Unit	Analysis Unit	Recreation Category (RC) Change to:
Blackrock Lake	John Muir Southwest	Red Mountain	RC 1
Third Recess	Mono/Rock Creek	Fourth Recess	RC 1
Golden Lake (Mono Creek)	Mono/Rock Creek	Fourth Recess	RC 1
Feather Lake	Mono/Rock Creek	Graveyard	RC 1
Grinnell Lake	Mono/Rock Creek	Laurel	RC 1
Laurel Lake	Mono/Rock Creek	Laurel	RC 1
Second Recess	Mono/Rock Creek	Second Recess	RC 1
Vandeberg Lake	Ansel Adams West	Staniford	RC 2
Anona Lake	Ansel Adams East	King	RC 2
Badger Lake	Ansel Adams East	River-High	RC 2
Iceberg Lake	Ansel Adams East	Shadow-Ediza	RC 2
Rosalie Lake	Ansel Adams East	Shadow-Ediza	RC 2
Marie Meadow	Ansel Adams East	Upper Rush	RC 2
Lady Lake	Ansel Adams West	Staniford	RC 2
Edith Lake	Fish/Convict/McGee	Convict	RC 2
Dorothy Lake	Fish/Convict/McGee	Convict	RC 2
Genevieve Lake	Fish/Convict/McGee	Convict	RC 2
Volcanic Knob	Florence/Bear	Volcanic	RC 2
Guest Lake	John Muir Southwest	Bench	RC 2
Graveyard Lake	Mono/Rock Creek	Graveyard	RC 2
Ruby Lake	Mono/Rock Creek	Little Lakes Valley	RC 2

ALTERNATIVE 4

SUMMARY

- Use is rationed through trailhead quotas. Quotas are lowered in this alternative for trailheads accessing interior destinations with resource concerns.
- Party size limit is lowered to 12 persons and 20 stock wilderness-wide.
- Campsites will be designated and required for all locations where operators hold stock overnight and drop parties on spot and dunnage type trips.
- Grazing will be managed through a determination of suitability and stock night capacity for grazing zones and specific meadows. Meadows with hydrologic function conditions on a downward trend as well as meadows with severe hydrologic function alteration will be closed to grazing.
- The proposed system of trails, along with the assigned trail management classes are based on analysis of recreation categories, anticipated reduced commercial use levels, the increased number of trails that are prohibited to commercial stock because of destination concerns, and attempts to maximize the undeveloped character on trails.
- Trail suitability for commercial pack stock is based on an analysis of anticipated trail infrastructure stability, current resource impacts and potential impacts due to a variety of risk factors, if commercial pack stock use were to occur or continue. Additionally, perceived social and experiential conflicts with other wilderness users in more remote wilderness locations were considered, with an emphasis on separating conflicting user groups.
- “Not Recommended for Stock” determinations in this alternative are purely a public advisory, and do not directly restrict commercial operations.

This alternative responds to **Issue # 1 – Use Levels** and **#6 Economic and Operational Effects** with a different rationing system than destination quotas. This system provides lowered trailhead quotas in areas where resource concerns have been identified. In conjunction with this use level reduction, the service day allocations are reduced 20% from Wilderness Plan levels. The designation of campsites is expanded to include all sites that are used by commercial operators when servicing clients.

This alternative responds to **Issue #2 – Party Size** by reducing the wilderness-wide party size to 12 persons and 20 stock and by allowing the trailhead quotas to be the limiting factor for party size.

This alternative responds to **Issue # 3 – Trail Suitability** and **Issue #7 Trail Development** with a more restrictive trail system for commercial pack stock. Trail suitability determinations in this alternative also address perceived social and experiential conflicts with other wilderness users in more remote wilderness locations. This alternative proposes a Trail Management Plan that implements the direction in the 2001 Wilderness Plan. The trail inventory and maintenance classes presented emphasize a primitive character by limiting development to the lowest possible

level which could be maintained stably with the anticipated amount and patterns of use as directed in this alternative.

This alternative responds to **Issue # 4 – Grazing Management** by including meadows with severe hydrologic function as not suitable for grazing. It also reduces the maximum utilization levels in areas with functional at risk with no apparent trend.

This alternative responds to **Issue # 5 – Campfires** by not allowing any exceptions to the elevation fire restriction.

1. TRAIL MANAGEMENT PLAN

The concept of trails that are identified as “Not Recommended for Stock” for the purpose of public advisory is the same as Alternative 3. Trails identified as NRFS will be the same as Alternatives 3 and 5, except in cases where any of these trails are no longer designated system trails (see Table 2.26).

The trail system inventory responding to the direction for this alternative is shown in Table 2.26.

2. USE LEVELS AND STOCK NUMBERS

A. Day Rides

Allow 3,350 day rides in 39 analysis units as described in Table 2.33.

B. Overnight Use

Service day allocations would be as follows:

Table 2.21. Alternative 4 service day allocations

Activity	West side entry Allocation (Service Days)	East side entry Allocation (Service Days)
Pack stock supported	2,284	10,640
Non-traditional pack stock	200	500
Day Rides	350	3000

C. Quota

Trailhead Quotas

Overnight commercial pack stock use will be rationed by service day allocations and daily trailhead quotas on people.

Wilderness permits are issued by the Forest Service (or approved contractor) with no split quotas (borrowing).

Single quotas will stay the same. Non commercial quotas would not be modified in this action.

Commercial quotas will be modified as follows:

Table 2.22. Alternative 4 Inyo N.F. trailhead quotas and thresholds

Multiple quota

Trailhead	Quota (People per day)
North Fork Big Pine	15
Bishop Pass	12
Cottonwood lakes	10
Duck Lake	15
Fish Creek	10
High Trail	10
Hilton	10
JMT North	8
Kearsarge	15
Lamarck	0
Little Lakes Valley	8
McGee	15
Minaret	10
Mono Pass	10
Pine Creek	15
Piute Creek	15
River trail	6
Rush Creek	15
Sabrina Lake	15
Shadow	10
Tamarack	6
Treasure	6

Table 2.23. Alternative 4 Sierra N.F. trailhead quotas and thresholds

Multiple trail quotas

Trailhead	Alternative 4 Quota
Devils/Graveyard	10
Fernandez	8
Florence	15
Isberg	8
Jackass	8
Maxson	8
Walton	8

D. Primary Operating Areas

Primary operators will be identified to eliminate all overlap of spot and dunnage operations. The only overlap that will be approved is that between spot and dunnage and all expense traveling trips.

E. Party Size

Party size for commercial pack stock supported parties is 12 persons and 20 head of stock throughout the two wildernesses. If a trailhead quota is lower than the maximum party size, then the quota will limit the allowable party size.

3. GRAZING MANAGEMENT

A. Grazing Strategy

Allow grazing at the utilization, range readiness, inadvertent use/impact critical area 5% standard, and other standards as for Alternative 2. Initial identified stock nights available are the same as for Alternative 2 for areas that are assessed as Fully Functional or Functional at Risk with an upward trend, with the following exceptions:

- A 30% maximum utilization factor will be set on key species in key areas determined to be Functional at Risk with no apparent trend.
- No use will be authorized on key areas determined to be Functional at Risk with a downward trend.
- No use will be authorized on key areas categorized as having severe alteration of hydrological function.

Five meadows that are currently used as pastures will only be used to support client trips, not as pastures. These are Poison, Hell Hole, Jackass, Blayney, and Double Meadows in the Florence/Bear Geographic Unit.

B. Drift Fences

Allow drift fences only where the protection of resources or safety of visitors is of concern; not solely for the convenience of the visitor, outfitter or guide. A list of drift fences in Alternative 4 can be found in Table 2.34.

4. TRAIL SUITABILITY FOR COMMERCIAL PACK STOCK

A. System Trails

In this alternative, trails designated as Not Suitable for Commercial Stock (NSCS) are closed to commercial stock use. In addition to the resource and destination limitations addressed in Alternatives 2 and 3, trail suitability determinations in this alternative also address perceived social and experiential conflicts with other wilderness users in more remote wilderness locations.

There are approximately 165 miles of system trails that will be designated as “Not Suitable for Commercial Stock” based on an analysis of compliance with the Wilderness Plan management direction, resource condition, and consistency with the commercial pack stock direction presented in this alternative (listed in Table 2.26).

B. Use Trails and Routes

The criterion for authorizing use trails is based on the following:

- Must be existing visible trail.
- Trails can accommodate type and level of use.
- Areas to be accessed can accommodate the proposed level of stock and stock have historically used these areas.
- The annual operating plan will document and approve user-created, non-system trails. Pack station operators must provide the Forest Service with their proposed trails by March 1 each year.
- Guided, cross-country travel will not be allowed beyond ¼ mile travel distance from designated trails.
- User-created, non-system trails will not be authorized if an existing system trail provides similar access to a destination.
- Stock travel to designated camps and approved grazing areas is permitted.

The list of user trails approved or prohibited based on these criteria is in Table 2.27.

C. Pass Sanding

No passes will be sanded to facilitate early access over the Sierra crest.

5. CAMPSITES

All campsites that are used by commercial pack stock will be designated sites. Commercial pack stock will be required to use these sites and only these sites in conjunction with their operation. This includes sites used to load and unload for spot and dunnage trips. Stock camps will be designated as well for all expense type trips that hold stock overnight. Trips that hold stock overnight must camp in a designated stock camp. All designated campsites must be 100 feet from water, already established, durable and adequate for loading and unloading stock, and have acceptable access from the system trail.

Locations for all designated sites are found in Table 2.32. Any additional site specific limitations at a site are noted in Table 2.24.

Table 2.24. Alternative 4 site-specific camping limitations

Geographic Unit	Analysis Unit	Camping Limitations
Fish Creek/Convict/McGee	Cascade	Prohibit all spot and dunnage to Iva Belle Hot Springs
Fish Creek/Convict/McGee	Purple Bench	Purple Lake: limit camping when not with clients to no more than 5 nights a year
Fish Creek/Convict/McGee	Silver Divide	One night only on Silver Divide.
Florence/Bear	Sallie Keyes	Prohibit use of site at Old Trail Meadow for overnight holding of stock

Geographic Unit	Analysis Unit	Camping Limitations
John Muir Southeast	Cottonwood	Allow access to Muir Lake west shore campsites on designated system trail only
John Muir Southeast	Shepherd	Anvil Camp: allow overnight camping with pack stock (remove current restriction)
Mono Creek/Rock Creek	Fourth Recess	No camping from Third Recess to below Second Recess in Mono Creek. Close Fish creek camp.
Mono Creek/Rock Creek	Hilton Creek	Close campsites in vicinity of goshawk nests at Davis Lake
Bishop/Humphreys	Sabrina	Prohibit use of campsite at inlet of Blue Lake
Bishop/Humphreys	Sabrina	Set back campsite at Dingleberry Lake from water and contain.
Bishop/Humphreys	Treasure	Close campsite near Treasure Lakes bench

6. CAMPFIRES

Campfires are allowed below 10,000 feet north of the Kings/San Joaquin River divide and below 10,400 feet south of this divide. No change from the Wilderness Management Direction.

No packing in of firewood or charcoal will be allowed into areas closed to campfires.

7. RECREATION CATEGORIES

Recreation categories will be used to manage recreation use as described and mapped in the 2001 Wilderness Plan direction.

ALTERNATIVE 5

SUMMARY

In this alternative there will be no commercial pack stock activities. Standard and guidelines will be the same as in Alternative 1, the No Action alternative, but direction specific for commercial pack stock use will no longer be needed or applicable.

This alternative proposes a Trail Management Plan that implements the direction in the 2001 Wilderness Plan. The trail inventory is based on the same general criteria as Alternative 2. The proposed system of trails and the trail management classes are based on analysis of recreation categories, current and anticipated use, resource impacts, and trail maintenance considerations to ensure that trail management objectives are consistent with area management objectives, with the additional consideration of the removal of all commercial pack stock from the trail system.

1. TRAIL MANAGEMENT PLAN

Implement direction as described in Alternative 3.

The concept of trails that are identified as “Not Recommended for Stock” is the same as Alternatives 3 and 4. Trails identified as NRFS will be the same as Alternative 3, except in cases where any of these trails are no longer designated system trails (see Table 2.26).

Trail classes are designated at levels which would minimally sustain anticipated non-commercial use types and levels.

The trail system inventory appropriate for this alternative is shown in Table 2.26.

2. USE LEVELS AND STOCK NUMBERS

A. Day Rides

Not applicable; no commercial pack stock in wilderness.

B. Overnight Use

No service days would be allocated for commercial pack stock overnight, day rides or non traditional pack stock.

C. Quota

All trailhead quotas would remain the same and commercial quotas would be used to ration remaining outfitter and guide activities. Quotas specific to commercial pack stock operations would be removed.

D. Primary Operating Areas

Not applicable; no commercial pack stock in wilderness.

E. Party Size

No commercial stock permitted in the wilderness.

3. GRAZING MANAGEMENT

A. Grazing Strategy

Not applicable; no commercial pack stock in wilderness.

B. Drift Fences

All drift fences associated with commercial pack stock are removed.

4. TRAIL SUITABILITY FOR COMMERCIAL PACK STOCK

A. System Trails

Does not apply.

B. Use Trails and Routes

With no commercial stock there would be no need to identify any use trails or routes as approved for commercial stock uses.

5. CAMPSITES

Not applicable; no commercial pack stock in wilderness.

6. CAMPFIRES

No change from the Wilderness Management Direction (campfires are allowed below 10,000' north of the Kings/San Joaquin divide and below 10,400' south of this divide).

No packing in of firewood or charcoal will be allowed in closed to campfire areas.

7. RECREATION CATEGORIES

Recreation categories will be used to manage recreation use as described and mapped in the 2001 Wilderness Plan direction.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

Federal agencies are required by the National Environmental Policy Act “to rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated” (40 CFR 1502.14). Public comments received in response to the original scoping phase and the DEIS were used to develop the alternatives contained in the FEIS.

Many ideas have been suggested and evaluated during the development of the alternatives considered in detail. Various components were considered, such as additional mitigation measures, changes to quotas and allocations, no grazing, and adjustments to commercial use quotas. Addressing all of the possible permutations would create an unmanageably large number of alternatives that would not be helpful to the decision makers or the public. In addition, some components were determined to be outside the scope of the current wilderness plan revision process, were already represented by one or more of the alternatives considered in detail, or were determined to risk unnecessary environmental harm. Therefore, a number of alternatives were considered but dismissed from detailed consideration.

There was a concerted effort by some who commented on the DEIS to forward what might best be described as “Modified Alternative 4.” This proposal suggested reducing quotas, party size and service days further, and identifying more trails as not suitable for stock. This alternative was not analyzed in detail for three reasons. First, it was determined that Modified Alternative 4 did not meet Purpose # 1 (*Provide for needed commercial pack stock services*) for this project. The levels of service that would have been provided in Modified Alternative 4 would have fallen far short of the public need as identified in the Needs Assessment. Modified Alternative 4 would reduce commercial packing services considerably below what is provided today. Secondly, the proposed reductions were rather capricious and lacked rationale beyond a desire to have less packstock in the wilderness. It appeared as though the primary basis for the proposed alternative was social issues rather than environmental considerations. We believe that merely reducing commercial services to arbitrary levels below Alternative 4 does not demonstrate a corresponding improvement to the condition of the wilderness and justify the draconian reduction in public access to these wilderness areas. In addition, Modified Alternative 4 was not analyzed because it is believed that the environmental effects associated with this alternative will ultimately closely resemble the effects described for Alternative 5. The alternative did not provide the decision maker or public with an approach to managing commercial pack stock much different than in Alternative 5.

Table 2.25 Effects Summary

This table summarizes the effects of the six alternatives on the relevant resources in the project area.

Wilderness	
Alternative 1	<p>Overall, impacts to wilderness character with this alternative will be moderate intensity at a number of site specific locations. Less than 50 locations (approximately) of thousands of possible destinations in these wildernesses would have moderate long term impact to some qualities of wilderness character (naturalness). Impacts to some visitor's experience (solitude, unconfined recreation) would be short in duration, while some impacts to wilderness character may be longer term, but not have permanent adverse effects. With the fewest limits on where and how frequently pack stock can go on trails and to locations, this alternative has the greatest risk of increasing the aggregate extent of impact caused by commercial pack stock use and the general public. Campfire closures may be dispersing use to lower elevation campsites and wood depletion may increase at these locations. These locations however will tend to be more abundant with the ability for renewal of downed wood resources. Campsites can expand and new stock camps can be created, though that is not likely since stock camps are well established and the current number and locations of stock camps seem to adequately meet the commercial packers needs. Opportunities for solitude will not be high in first six miles from trailheads and at popular destinations. Beyond this opportunities for solitude and unconfined recreation will be very high. Areas where commercial pack stock are prohibited will have moderate-high opportunities for solitude. There are the most opportunities of unconfined recreation with the primary regulator of use an external control and very few internal controls once inside the wilderness. System trail assignments create a conflict between trail objectives and wilderness character objectives (recreation categories). Wilderness character is moderate-high in popular destinations, and high throughout recreation category 1 and 2 areas with localized impacts at campsites and in primary trail corridors. Uncontrolled growth of day hiking will have a cumulative effect on visitor's seeking solitude in a few areas during a short time of the year.</p>
Alternative 2 – Modified	<p>Generally, the effects of Alternative 2 - Modified are very similar to Alternative 2. The distinguishing feature in both alternatives is the manner of controlling use, the destination quota.</p> <p>Overall, the intensity of impacts to wilderness character with this alternative will be low to moderate and moderate to high at less than 25 site specific locations. These moderate to high impacts will be at fewer locations than in Alternatives 1, 2 and 3. Moderate impacts will occur in locations that can sustain higher levels of use and have been popular for decades by both commercial and non commercial visitors. These locations will be consistent with the recreation category desired conditions. Most locations of moderate impacts to wilderness character are the same in all action alternatives.</p> <p>Impacts to wilderness character are primarily to naturalness and opportunities for solitude and/or primitive and unconfined recreation. Impacts to naturalness are minor in the long term. Impacts to opportunities for solitude occur in high use corridors and occasionally in other areas of the wilderness but tend to be short in duration and are avoidable. Opportunities for unconfined recreation are moderate in this alternative to a portion of the public (clients of commercial pack stock and visitors wanting few to no encounters with pack stock) where travel is either prohibited or limited.</p> <p>Impacts to a visitor's experience would be short in duration, particularly at popular destinations and on primary trails. While some impacts to natural conditions such as locally severe trail impacts may be longer term, they are not likely to have permanent adverse effects. Some long term adverse effects to wilderness character may result site specifically with trail development decisions as affected trails lose their primitive characteristics when improved and developed to facilitate uses. The same action (trail development) that may occur over the long term would enhance ecological and natural qualities of wilderness character.</p> <p>There would be no regional, long term adverse impacts. Beneficial effects in this alternative include improved wilderness character of many destinations where impact sources (pack stock) are removed. However, there will still be sources of impacts from other visitors at these locations. It is likely that the severity of the impact will be reduced over the short and long term. Some visitors that rely upon commercial pack stock support would be permanently affected by closure of these areas.</p> <p>There would be no irretrievable or irreversible adverse effects from this alternative, since a strong element of the alternative is managing for conditions and adapting techniques, controls and regulations to achieve the desired conditions. A monitoring component identifies indicators and thresholds for when to implement adaptive measures. This monitoring strategy is embedded in this alternative to provide the assurance we need to modify and manage actions over time to prevent any irretrievable losses to the wilderness resource.</p>

<p>Alternative 2</p>	<p>Overall, impacts to wilderness character with this alternative will be at a moderate intensity at fewer site specific locations than Alternative 1. Impacts to a visitor’s experience would be short in duration, particularly at popular destinations and on primary trails. While some impacts to natural conditions such as locally severe trail impacts may be longer term, they are not likely to have permanent adverse effects. Some long term adverse effects to wilderness character may result site specifically with trail development decisions as trails lose their primitive characteristics with improvements and development to facilitate uses. The same action (trail development) that may occur over the long term would enhance ecological and natural qualities of wilderness character.</p> <p>There would be no regional, long term adverse impacts. Beneficial effects in this alternative include the improved wilderness character of many destinations where impact sources (pack stock) are removed. However, there will still be sources of impacts. It is likely that the severity of the impact will be reduced over the short and long term. Some visitors that rely upon commercial pack stock support would be permanently affected by closure of these areas.</p>
<p>Alternative 3</p>	<p>Overall, impacts to wilderness character with this alternative will be moderate intensity at fewer site specific locations than Alternative 1 but more locations than Alternative 2. Impacts to a visitor’s experience would be short in duration, particularly at popular destinations and on primary trails. There would be a higher risk of destinations becoming more impacted over the long-term than in Alternative 2 with an external versus internal control. These would likely be long-term minor to moderate local impacts.</p> <p>While some impacts to natural conditions such as locally severe trail impacts, may be longer term, they are not likely to have permanent adverse effects. Some long-term adverse effects to wilderness character may result site specifically with trail development decisions as trails loose their primitive characteristics with improvements and development to facilitate uses. There would more occurrences of this than in Alternative 2. The same action (trail development) that may occur over the long-term would enhance ecological and natural qualities of wilderness character.</p> <p>Beneficial effects in this alternative include improved wilderness character of many destinations where impact sources (pack stock) are removed. There will still be sources of impacts, however, it is likely that the severity of the impact will be reduced over the short and long term.</p>
<p>Alternative 4</p>	<p>Overall, impacts to wilderness character with this alternative will be moderate intensity at fewer site specific locations than Alternative 1, 2, and 3. Impacts to a visitor’s experience would be short in duration, but could be greater at popular destinations and on primary trail compared to Alternatives 1, 2 and 3. While some impacts to natural conditions such as locally severe trail impacts may be longer term, they are not likely to have permanent adverse effects. Beneficial effects in this alternative include improved wilderness character at many destinations where impact sources (pack stock) are removed. There will still be sources of impacts; it is likely that the severity of the impact will be reduced over the short and long-term.</p>
<p>Alternative 5</p>	<p>In this alternative commercial pack stock use would be eliminated. Without commercial pack stock there would be a reduction of encounters and less crowding between parties—especially on the primary trails—leading to an improvement to the experience of hiking visitors.</p> <p>Impacts associated with commercial pack stock use would diminish over time but may persist as sites, trails, and use trails will still receive public use. The majority of visitation would continue but some visitors that choose to use pack stock for their experience will not be able to find that opportunity.</p> <p>In this alternative, minor to moderate impacts would occur locally and wilderness wide with continued visitation. The intensity of these impacts would diminish over the short to long term. Moderate impacts that were associated or partially attributable to pack stock would likely diminish in the long term (10-20 years). There would be beneficial affects to wilderness character with the reduction of site specific impacts and increased opportunities for solitude that would occur by reducing overall wilderness use by 10%. There would be adverse impacts to a large sector of the pubic that desires or depends on pack stock support for their wilderness experience.</p>
<p>Trails</p>	
<p>Alternative 1</p>	<p>The “No Action” Alternative has the fewest control mechanisms on use types and levels and the greatest amount of conflict between trail management levels and the desired condition and management of destinations. Trail levels in this inventory are substantially inconsistent with current on-the-ground conditions. Trail management in this alternative have the greatest potential impacts on physical resources, allowing for the continuation and likely expansion of degraded trail conditions in some areas, and continued negative resource effects.</p> <p>There is substantial conflict with recreation categories and desired area management in this alternative. If implemented, many trails would have an unnecessarily high level of development and management intrusion on the wilderness character and on physical resources (for instance, over 15% of the total system and 28% of the Inyo system is designated at Class 4, a level defined as “rarely present in wilderness”). There are major inconsistencies with on-the-ground conditions and a high probability of physical resource impacts from inadequately developed and maintained trails (for instance, 37% of the Sierra system is designated TC1, and</p>

	<p>nearly 50 miles of managed trail is not on this inventory). Trail management designations for trails with similar characteristics are highly inconsistent between forests in this alternative.</p> <p>This alternative allows commercial stock on any system trail. With no internal controls, there is the lowest predictability of use type and level for each system trail. This will likely cause some continued and potential expansion of resource effects, including some localized severe impacts and inefficient distribution of maintenance funds. Various use trails could be requested, approved or prohibited annually, meaning this alternative would provide very little long-term predictability of use trail approvals, prohibitions or use levels. Currently, 102 use trails (99 miles) are approved for commercial use.</p> <p>Since any trail could potentially be requested for sanding of snow to allow early season passage (though very few would likely be requested in most years), there is a higher potential for expansion of effects from sanding—both beneficial effects in the immediate vicinity of the sanding, and greater potential adverse effects at trails and destinations accessed earlier in the season.</p> <p>Overall, physical trail-related impacts in this alternative will be minor to moderate at the local level, with some isolated moderate to severe effects on certain resources at highly localized sites. Most localized adverse impacts are short term and could be actively mitigated, but without active repair many will likely continue into the long-term (20 years or more). Trail impacts to physical resources at the watershed scale are negligible to minor intensity, while regional impacts resulting from inconsistency with area management are moderate.</p>
<p>Alternative 2 - Modified</p>	<p>In general, the primary consequences from trail-related actions in this alternative would be a net improvement in the trail system and on the associated resources in the trail corridor and improved consistency between trail and area management. These benefits will be primarily evident in the following ways.</p> <p>Trail management and desired area management are most closely aligned, with few anomalies between trail classes and desired conditions. For example, less than 1% of the total system is designated TC4 in this alternative and only 4 miles of TC3 trail is accessing the most primitive (Recreation Category 1) areas. This will result in greatly reduced potential trail conflicts with wilderness character.</p> <p>Trail classes are most closely aligned with current observed trail development levels. This will have beneficial effects by avoiding the need to upgrade many trails, unless there is an overarching benefit to do so. Very few trails are designated at levels below what currently exists, so there will be minimal changes in management that could allow a gradual loss of infrastructure, which in turn would cause resource impacts if use continues at current levels or that would affect the existing users of these trails.</p> <p>This alternative has the highest level of consistency of trail management between the two managing forests.</p> <p>Internal controls using the “destination management” concept ensures a high level of predictability of use types and numbers. Trail development is very consistent with anticipated use and on-the-ground conditions, resulting in greater trail stability and reduced physical resource impacts.</p> <p>Commercial stock is prohibited from approximately 10% of system trails, which were determined unstable with even low levels of recurring stock use, ensuring that the majority of stock use is limited to trails most capable of remaining stable under anticipated use. Reduced maintenance costs on these trails allows for more efficient distribution of trail maintenance and reconstruction funds and more stable conditions on other system trails.</p> <p>This alternative allows for stabilizing nine miles of NSCS trail, then allowing future commercial use. This provides added flexibility for commercial operators to access areas, once resource and trail stability issues are corrected.</p> <p>Commercial stock is limited to use trails which have relatively few risk factors and a high likelihood of continued stability. Highly dispersed undefined routes are approved for very limited use with temporal controls. In this alternative, anticipated use is highly predictable, and these use trails should remain stable or even improve slightly under the prescribed use levels.</p> <p>Limiting commercial stock access over snow-drifted passes until the destination system and use trails are ready for such use will have moderate beneficial effects to these destination trails and resources.</p> <p>Over the short term, this alternative will have negligible to minor localized and regional beneficial impacts, by reducing one of the contributing sources of adverse effects on the most susceptible trails. Physical trail and resource stability will not likely improve substantially during the short term, but will improve over the long term as physical treatments and/or natural recovery occurs. Over the long-term, it is expected that there will be minor beneficial effects at the wilderness scale, with moderate to beneficial effects to resources and trails at the local level. There will likely be some minor reduction in user conflicts at remote destinations.</p>
<p>Alternative 2</p>	<p>In general, the primary consequence from trail-related actions in this alternative would be a net improvement in the trail system and on the associated resources in the trail corridor and improved congruency between trail and area management. These benefits will be primarily evident in the following ways.</p> <p>Trail management and desired area management are more closely aligned than in Alternative 1 and 3, resulting in reduced potential conflicts with wilderness character. For example 9% of the total system is designated TC4 in this alternative.</p> <p>Trail system management shows greater inter-forest consistency. Internal controls allow for greater predictability of use types and numbers, so trail development</p>

	<p>will likely be very consistent with anticipated use and on-the-ground conditions, resulting in greater trail stability and reduced physical resource impacts.</p> <p>Commercial stock is prohibited from 8% of system trails, which were determined unstable with recurring stock use, ensuring that the majority of stock use is limited to trails most capable of remaining stable under anticipated use. Private equestrians will be advised that these trails are not recommended for stock, resulting in improved visitor expectation and safety. Since the NRFS designation does not distinguish between commercial and private, there may be some confusion for private stock about which trails are actually risky versus those that have resource effects. Reduced maintenance costs on these trails allows for more efficient distribution of trail maintenance and reconstruction funds leading to more stable conditions on other system trails over the long-term.</p> <p>One trail would be approved for sanding in this alternative, ensuring relatively localized effects, and ensuring that there would be no expansion of these effects to other trails.</p> <p>Commercial stock are limited to 100 use trails (102 miles), including some undefined (cross-country) routes, and use levels on each trail are limited by destination quotas. In this alternative, anticipated use is highly predictable, and these use trails should remain stable or improve slightly under these use levels.</p> <p>Over the short term, this alternative will have minor localized and regional beneficial impacts, by reducing one of the contributing sources of adverse effects. Physical trail stability conditions will not likely improve substantially until the long-term, as physical treatments and/or natural recovery occurs. Over the long-term, the localized beneficial impacts will be moderate, as funding can be distributed across the system more effectively, and more trails are managed at stable levels. There should be some minor reduction in user conflicts at remote destinations.</p>
<p>Alternative 3</p>	<p>Trail management levels are very consistently aligned with desired destination management levels, with a minimal amount of conflict with recreation categories (for instance, less than 1% of trail system is TC4). This alternative very closely aligns trail management with anticipated use types and levels and on-the-ground conditions. There are fewer internal controls than Alternative 2, so there is less predictability about commercial use levels. This may cause slightly less efficient distribution of maintenance funding. 107 use trails are approved, including undefined or cross-country routes, and fewer destination controls are present, so there is a higher potential for resource impacts and potential for increase of evidence of use trails until monitoring determines that mitigation or closure would be needed. This would likely have a minor to moderate effect at the wilderness scale, and moderate to severe effects at specific use trails with high risk factors.</p> <p>“Not Recommended for Stock” designation is purely a public advisory in this alternative and does not restrict commercial use. Around 140 miles of trail (~15% of system) is designated NRFS due to trail difficulty and awkward conditions for stock. This will likely provide better/safer experience to private equestrians. Alternative 3 has more trails available to commercial stock than Alt 2, with 63 miles (approximately 6%) of system designated as “Not Suitable to Commercial Stock” (NSCS), but little or no noticeable effect likely, since additional trails available are simply awkward for stock, and should remain stable under anticipated use. Reduced costs of maintenance and reconstruction on NRFS and NSCS trails allows for slightly better condition on overall system, resulting in more stable trails and resource condition.</p> <p>Over the short term, this alternative will have negligible to minor localized and regional impacts, by reducing one of the contributing causes of adverse effects, but physical trail stability conditions will not likely improve substantially until the long-term, as physical treatments and/or natural recovery occurs. Some of these beneficial effects are highly dependent upon funding levels.</p> <p>Since any trail could potentially be requested and approved for sanding of snow to allow early season passage (though very few would likely be requested in most years), there is a higher potential for expansion of effects from sanding than in Alternative 2. Sanding will likely occur on between one and five trails annually, depending upon the severity of the winter. Sanding protects immediate trail corridor from widening and multiple trails, but may allow early access to trails and areas still wet and easily damaged.</p> <p>Over the long-term, the beneficial impacts will be moderate, as more trails are managed at stable levels and which do not exceed area needs. At the regional scale, this alternative will have negligible adverse impact for both the long and short terms. Over the long term, the close alignment of trail management and desired area management should have moderate beneficial effects on wilderness resources. desired area management should have moderate beneficial effects on wilderness resources.</p>
<p>Alternative 4</p>	<p>This alternative provides the most restrictive controls to commercial stock use, and limits them to the lowest number of system and use trails. 173 miles (approximately 18% of system) is designated Not Suitable for Commercial Stock (NSCS), effectively confining commercial stock to the 80% of higher development (and generally higher use) trails. 43 use trails (~30 miles) are approved for commercial stock, and no undefined cross-country routes were approved, so this alternative provides the lowest potential for expansion of use trails. However, there is potential for more adverse impacts on the limited number of approved use trails. With no destination controls, there is less predictability of how much use will be present on each system or use trail.</p> <p>The trail system has most primitive character, relative to anticipated use types and levels so will provide least appearance of management intrusion and more primitive character. No trails are designated TC4, and over 25% of system is designated TC1. Lower development levels are likely more susceptible to instability, so there is a higher likelihood of adverse physical resource and trail degradation over the long term. The same trails are designated “Not Recommended for [private] Stock” as in Alternatives 3, and 5, providing a clear expectation and better/safer experience to private equestrians.</p>

	<p>In this alternative, no trails are eligible for sanding to provide early-season access, so there is a likely reduction in impacts on trails and destinations beyond the drifts or passes which would otherwise be sanded. There would likely be an increase in site specific impacts to trail structures and resources in the immediate trail vicinity from non-commercial equestrians and hikers bypassing snowdrifts.</p> <p>In remote locations, there would be minor to moderate benefits through reduced conflicts between different user types, as users choose to segregate. It is likely there will be an increase in localized conflicts between users in high-use trail corridors and destinations. On the regional scale, there will be a minor reduction in conflict overall. Over the long term there will be localized moderate improvements on stability of specific trails and resources with no commercial stock present. At the watershed scale, these improvements would be negligible to minor. In the long-term, the remainder of trails may have minor to moderate adverse localized impacts resulting from inadequate development relative to use levels.</p>
Alternative 5	<p>In this alternative, with the complete elimination of commercial stock from all trails, one of the contributors of trail-related impacts will not be present on any trail, so matching trail management to desired area management is more tied to the anticipated private use and recreation categories.</p> <p>This alternative provides a very high consistency of trail management and desired area management. Reductions in overall stock use will result in some reduction in maintenance needs, reconstruction frequency and scale, and overall costs. This will allow mitigation of local resource problems on all trails, resulting in improved trail and resource stability.</p> <p>The same trails as in Alternative 3 and 4 will be designated “Not Recommended for Stock,” which will provide clear visitor expectations and a better/safer experience for private equestrians. It is likely that private equestrian use will increase slightly, and would be expected to remain mostly on the more developed, comfortable and stable trail system, which would result in very limited effect on trail or resource stability.</p> <p>Use trails will not be used by commercial operators, but most will likely continue to be used at slightly lower levels by private equestrians and hikers. There is a lower likelihood for expansion of use trails, and slightly lower intensity of impacts, so some use trails would likely show minor improvement over the long-term.</p> <p>Overall, this alternative would provide a reduced intensity of adverse impacts on physical resources. Over the short term, there would be negligible to minor beneficial impacts, until physical mitigation is actually implemented. In the long-term, this mitigation and other trail management would be more effective and long-lasting, resulting in a more stable system. User conflicts between equestrians and non-stock users will be reduced almost completely, except in high-use corridors, where minor conflicts between private stock users and non-stock parties may continue.</p>
Socioeconomics and Operations	
Alternative 1	<p>This alternative will continue 2001 Wilderness Plan management and lift the 20% court-ordered reduction in use. This will likely lower some of the costs to commercial pack stock operations and may allow some increase in revenue. The regional economy will experience negligible economic gain from this revenue increase. Under this alternative, there are no known effects to the social environment.</p>
Alternative 2 – Modified	<p>This alternative will provide some modest opportunities for growth in pack station revenue (compared to Alternative 1), but will also implement a number of controls that will likely increase the costs to pack stations providing commercial services in the Ansel Adams and John Muir Wildernesses. These cost increases are likely to be minimal-to-moderate and long-term. This will likely push the costs of commercial pack stock supported trips higher than their current levels. Compared to the No Action, the regional economy will likely experience increased employment and labor income contributions from commercial pack stock operations. When compared to the economy as a whole, however, these increases are likely to be negligible-to-minor. Under this alternative, there are no known effects to the social environment.</p>
Alternative 2	<p>Effects are similar to Alternative 2 – Modified.</p>
Alternative 3	<p>For Alternative 3, the operations and economic effects are expected to be similar to that for Alternative 2. There are no known social effects associated with Alternative 3.</p>
Alternative 4	<p>This alternative will impose restrictions on commercial pack stations that will likely cause the greatest cost increases when Alternatives 1-4 are compared. Compared to Alternatives 2 and 3, Alternative 4 will likely result in decreased commercial pack stock-related employment and labor income contributions. The effects to the regional economy are expected to be negligible and virtually undetectable. There may be some minor social effects as some low income groups find that the price of commercial packs stock trips have rose to unaffordable levels.</p>
Alternative 5	<p>This alternative eliminates commercial pack stock in the Ansel Adams and John Muir Wildernesses. With this alternative, there will be no commercial pack stock-related labor income and employment contributions to the regional economy. The effect of this is likely to be minor and long-term. There may be some social effects associated with this alternative. Groups and individuals that rely upon commercial pack stock to access the wilderness will experience major effects.</p>

	Likewise those that have close ties to the historical and cultural significance of pack stock in the wilderness will experience major effects (although there is no abolishment of private stock under this alternative). Conversely, others will approve of the elimination of commercial pack stock in the wilderness and will likely believe that their wilderness experience will be enhanced.
Hydrology and Soils	
Alternative 1	<p>Water quality is generally good and will remain so except at few very local areas where there may be slight adverse water quality impacts. There will remain areas of local soil erosion, bare soil and sedimentation into surface water from commercial grazing, campsites and trails. Of 60 streams found to be functional at risk, (151 evaluated) an estimated 30% could have improved condition, 15% could have a more degraded condition; 55% will remain in their current condition. Meadow hydrologic function has the greatest potential for increased downward trend and least potential for improvement. Of the 41 meadows found to currently have hydrologic function alteration (237 evaluated), about 24% are projected to have improved condition, 63% should remain in the same condition, and about 12% could have a downward trend.</p> <p>Past and present grazing from production livestock and pack stock is the largest contributor to meadow hydrologic function alteration. Although it is assumed that grazing would continue at the same levels and in the same locations as in recent years, this is the only alternative where grazing would not be limited to certain meadows or limited by number of stock nights. Therefore, grazing could occur in almost any of the 1,500 meadows and grazing numbers could increase or decrease in almost any meadow.</p>
Alternative 2 – Modified	<p>Water quality is thought to be good and will remain so except at few very local areas where there may be slight degradation. There will remain areas of local soil erosion, bare soil and sedimentation into surface water from pack stock grazing, campsites and trails. There would be a very minor reduction of bare, compacted soil and sedimentation into surface water from designating stock holding camps, reducing the number of meadows where grazing is allowed, and limiting grazing stock nights in all meadows where grazing is allowed. Of 60 streams found to be functional at risk, (151 evaluated) it is estimated that 42% could have improved condition, about 1% could have a more degraded condition; about 57% should remain functional at risk. Meadow hydrologic function has some potential for improvement. Of the 41 meadows found to currently have hydrologic function alteration (230 evaluated), about 22% could have improved condition, 65% should remain in the same condition, and about 13% could have a downward trend.</p> <p>Past and present grazing from production livestock and pack stock is thought to be the largest contributor to meadow hydrologic function alteration. Unlike Alternative 1, Alternatives 2-4 limit grazing to those meadows that have been analyzed and designated as suitable for grazing. Under Alternative 2 – Modified, meadows where streams are rated non-functional or functional at-risk with a downward trend are rested for grazing until conditions improve enough to support use. The two exceptions are Jackson Meadow and Purple Meadow. Jackson Meadow has portions where streams were rated functional at-risk, but those sections would be closed to grazing and the segments with streams at PFC would be grazed. Purple Meadow, where the stream was rated functional at-risk with a downward trend in 2001, showed an upward trend in 2004 and 2005. Therefore, it is determined to be resilient and able to support about 1/3 of the grazing that it experienced in the past. This alternative also limits grazing in those suitable meadows to a given number of stock nights. The restriction of grazing to meadows found to be suitable for grazing and not highly vulnerable to impacts should limit future adverse grazing impacts.</p>
Alternative 2	<p>Water quality is thought to be good and will remain so except at few very local areas where there may be slight degradation. There will remain areas of local soil erosion, bare soil and sedimentation into surface water from pack stock grazing, campsites and trails. There would be a very minor reduction of bare, compacted soil and sedimentation into surface water from designating stock holding camps, reducing the number of meadows where grazing is allowed, and limiting grazing stock nights in all meadows where grazing is allowed. Of 60 streams found to be functional at risk, (151 evaluated) it is estimated that 36% could have improved condition, 2% could have a more degraded conditions; 62% will remain functional at risk. Meadow hydrologic function has some potential for improvement. Of the 93 meadows found to currently have hydrologic function alteration (230 evaluated), about 21% could have improved condition, 66% should remain in the same condition, and about 13% could have a downward trend.</p> <p>Past and present grazing from production livestock and pack stock is the largest contributor to meadow hydrologic function alteration. Unlike Alternative 1, Alternatives 2-4 limit grazing to those meadows that have been analyzed and designated as suitable for grazing. They also limit grazing in those suitable meadows to a given number of stock nights. The restriction of grazing to meadows found to be suitable for grazing and not highly vulnerable to impacts should limit future adverse grazing impacts.</p>
Alternative 3	<p>Water quality is generally good and will remain so except at few very local areas where there may be slight degradation. There will remain areas of local soil erosion, bare soil and sedimentation into surface water from pack stock grazing, campsites and trails. Meadow/wetland condition should improve overall relative to Alternative 1. Grazing would be prohibited in meadows that currently contain streams that are functional at-risk with a downward trend. Of 60 streams found to be functional at risk (with any trend), (an estimated 40% could have improved condition, 3% could have a more degraded conditions; roughly 57% will remain functional at risk. There would be a very minor reduction of bare, compacted soil and sedimentation into surface water from designating stock holding camps.</p>

	<p>Meadow hydrologic function has some potential for improvement relative to Alternative 1. Of the 41 meadows found to currently have hydrologic function alteration (237 evaluated), about 29% could have improved condition, 59% should remain in the same condition, and about 12% could have a downward trend.</p> <p>Past and present grazing from production livestock and pack stock is the largest contributor to meadow hydrologic function alteration. Unlike Alternative 1, Alternatives 2-4 limit grazing to those meadows that have been analyzed and designated as suitable for grazing. They also limit grazing in those suitable meadows to a given number of stock nights. Therefore, Alternative 3 limits the future adverse impacts that could occur to hydrologic and soil resources to a lower intensity and smaller extent relative to Alternative 1. Alternative 3 would have similar impacts as Alternative 2, although there could be slightly more widespread adverse effects from trails and campsites and slightly less widespread adverse effects from grazing in meadows.</p>
Alternative 4	<p>Water quality is assumed to be good and will remain so except at few very local areas where there may be slight degradation. There is a greater potential for local improved water quality relative to Alternative 1. There will remain areas of local soil erosion, bare soil and sedimentation into surface water from pack stock grazing, campsites and trails. Of 60 streams found to be functional at risk, (151 evaluated) an estimated 48% could have improved condition, 0% should have a more degraded conditions; 52% should remain functional at risk. Meadow hydrologic function has the second highest potential for improvement of the five alternatives. Of the 41 meadows found to currently have hydrologic function alteration (237 evaluated), about 37% could have improved condition, 61% should remain in the same condition, and about 2% could have a downward trend. There would be a minor reduction of bare, compacted soil and sedimentation into surface water from designating stock holding and spot/dunnage camps.</p> <p>Past and present grazing and activities associated with grazing (trailing, stock movement) from production livestock and pack stock is the largest contributor to meadow hydrologic function alteration. Unlike Alternative 1, Alternatives 2-4 limit grazing to those meadows that have been analyzed and designated as suitable for grazing. They also limit grazing in those suitable meadows to a given number of stock nights. Therefore, Alternative 4 limits the future adverse impacts that could occur to hydrologic and soil resources to a lower intensity and smaller extent relative to Alternative 1. Alternative 4 would have similar impacts as Alternatives 2 – Modified, 2, and 3, although there should be slightly less widespread adverse effects from trails, campsites and meadow grazing.</p>
Alternative 5	<p>Water quality is generally good and will remain so except at few very local areas where there may be slight degradation. This alternative has the greatest potential for local improved water quality of the five alternatives. There will remain areas of local soil erosion, bare soil and sedimentation into surface water from campsites and trails. Of 60 streams found to be functional at risk, (151 evaluated) estimated 58% could have improved condition, 0% could have a more degraded conditions; 42% should remain functional at risk. Meadow hydrologic function has the highest potential for improvement, but still only 41% of the degraded meadows are expected to have improved conditions and 2% could still have a downward hydrologic function trend. There would be a minor reduction of bare, compacted soil and sedimentation into surface water from removal of commercial stock holding sites.</p> <p>With removal of all commercial pack stock grazing, there would be the greatest certainty that meadows would experience beneficial effects to soil and hydrologic resources. Overall, there should be slightly less widespread adverse effects from trails, campsites and meadow grazing.</p>
Wildlife	
Common to all Alternatives	<p>Threatened and Endangered Species: Implementation of any Alternatives would not affect the bald eagle and Paiute cutthroat trout or their habitat found within the analysis area. Implementation of Alternatives 1 through 4 may affect but would not adversely affect the Sierra Nevada bighorn sheep. Alternative 5 would not affect the Sierra Nevada bighorn sheep or its habitat.</p> <p>Forest Service Region 5 Sensitive Species: Implementation of Alternatives 1 through 4 may affect individuals of the following species but would not contribute to a trend toward federal listing of any of these species, or lead to a loss of their viability in the planning (analysis) area: Yosemite toad, mountain yellow-legged frog, willow flycatcher, great gray owl, American marten, Pacific fisher, California wolverine, Sierra Nevada red fox, California spotted owl, Townsends big-eared bat, and the pallid bat. Implementation of Alternative 5 would not affect any of these species.</p> <p>Management Indicator Species or Species Group: Implementation of any Alternative would not result in the loss of viability of any other MIS (i.e., Not on the federal threatened, endangered or proposed species list or Forest Service Region 5 sensitive species list) found within the planning (analysis) area.</p> <p>No other federally listed threatened, endangered, proposed, or Forest Service Region 5 sensitive species or their habitat would be affected by implementation of any of the alternatives.</p>
Alternative 1	<p>The majority of 267 Yosemite toad occupied breeding meadows within the AA/JM Wildernesses would likely be unaffected by commercial pack stock use if grazing patterns continue as reported and observed from 2001 through 2004. Eighty-seven of the 267 occupied breeding meadows would be more likely to have commercial pack stock grazing overlap where impacts to Yosemite toad breeding habitats may occur.</p> <p>Actual grazing use overlap and subsequent impacts would be highly variable based on past use with many meadows likely to receive very light to no use, and therefore a high probability of non-substantive impacts to toad breeding habitat. A small percentage of the 87 occupied breeding meadows (likely < 10%) would</p>

	<p>likely have substantive trampling and chiseling impacts from commercial pack stock grazing in Yosemite toad breeding sites. The 20% ground disturbance standard would be implemented to limit the amount of disturbance in critical breeding areas such as streambanks and lakes and ponds where toads may be found. Impacts in Yosemite toad breeding sites could substantially increase if meadows are grazed at maximum forage utilization levels allowed in the Ansel Adams, John Muir, and Dinkey Lakes Wilderness Plan.</p> <p>Gradual implementation of range unsuitable meadow determinations as reasonably foreseeable action per Wilderness Plan direction may reduce the total number of Yosemite toad occupied breeding meadows where grazing impacts would likely occur.</p> <p>Thirteen meadows identified as suitable unoccupied willow flycatcher habitat would be approved for grazing. Habitat structural characteristics could be impacted if meadows are grazed to maximum allowable forage utilization levels.</p> <p>The alternative allows for the highest level of potential dispersed impacts to MIS mule deer, yellow warbler, and meadow and meadow edge bird species and their habitats since it has the least restrictive management control over campsite use, destination impacts such as access and social trails, grazing impacts, and approved system and use trails. All meadows are open to commercial pack stock grazing. Two hundred forty six meadows analyzed are likely to have some level of commercial pack stock grazing use where MIS habitat impacts are most likely to occur. Four meadows would be closed to grazing. Sixty one meadows with hydrologic functioning problems that are impacting MIS wildlife habitat conditions would continue to be open for grazing where grazing has the potential to exacerbate the problems, or slow restoration rates. Habitat structural characteristics could be impacted if meadows are grazed to maximum allowable forage utilization levels</p> <p>Mountain yellow-legged frog stream habitat could be potentially impacted at two meadows approved for commercial pack stock grazing.</p> <p>There would be some potential for a reduced level of human disturbance to MIS wildlife species and habitats on approximately 7 miles of system trail closed to commercial stock as a result of resource concerns, and 102 miles on 94 use trails where commercial pack stock would be prohibited. There may be some localized minor level of riparian habitat improvement on these trails, if sections with resource impacts begin to re-vegetate, and narrow in width such as where trails course through meadows, and at stream and spring crossing areas.</p> <p>Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of impacted areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas.</p>
<p>Alternative 2 – Modified</p>	<p>Alternative 2 – Modified manages for an increased level of protection for Yosemite toad meadow breeding habitats since grazing would be managed to avoid Yosemite toad occupied breeding habitats. Fifty two meadows approved for commercial packer stock grazing overlap with Yosemite toad breeding areas. Thirty four meadows that are approved for grazing in Alternative 1 are either unsuitable (28) for grazing or rested from grazing (6) in this alternative and would have full protection for the breeding habitats. One hundred ninety seven occupied Yosemite toad breeding meadows outside of grazing zones would be fully protected since grazing would be prohibited. Suitable/unsuitable determinations would be implemented immediately.</p> <p>The alternative allows for some level of control of potential dispersed impacts to MIS mule deer, yellow warbler, and meadow and meadow edge bird species and their habitats since it designates overnight stock holding camps, implements destination quotas that would limit destination impacts such as access and social trails, grazing impacts. All meadows outside of grazing zones are closed to commercial pack stock grazing. One hundred forty three meadows analyzed are likely to have some level of commercial pack stock grazing use where MIS habitat impacts are most likely to occur. A subset of 110 meadows would be closed to grazing as a result of unsuitable for grazing determinations. Thirty four meadows with hydrologic functioning problems that are impacting MIS wildlife habitat conditions would continue to be open for grazing where grazing has the potential to exacerbate the problems, or slow restoration rates.</p> <p>Thirteen meadows identified as suitable unoccupied willow flycatcher habitat would be approved for grazing. Habitat structural characteristics could be impacted if meadows are grazed to maximum allowable use levels.</p> <p>Mountain yellow-legged frog stream habitat could be potentially impacted at one meadow approved for commercial pack stock grazing.</p> <p>There would be some potential for a reduced level of human disturbance to MIS wildlife species and habitats on 73 miles of system trail not suitable for commercial stock, and 80 miles on 82 use trails where commercial pack stock would be prohibited. There may be some localized minor level of riparian habitat improvement on these trails, if impacted sections narrow in width such as where trails course through meadows, and at stream and spring crossing areas.</p> <p>Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of impacted areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas.</p>
<p>Alternative 2</p>	<p>Alternative 2 manages for an increased level of protection for occupied Yosemite toad meadow breeding habitats. Fifty-six meadows approved for commercial packer stock grazing overlap with Yosemite toad breeding areas. Thirty meadows that are approved for grazing in Alternative 1 are unsuitable for grazing in this alternative and would have full protection for the breeding habitats. A 5% critical area maximum allowable disturbance standard would be implemented in all other Yosemite toad breeding habitat areas where commercial pack stock grazing would be approved to minimize trampling and chiseling effects to the breeding habitats.</p>

	<p>and minimize the potential for stock trampling of metamorph toads. Suitable/unsuitable determinations would be implemented immediately.</p> <p>The alternative allows for some level of control of potential dispersed impacts to MIS mule deer, yellow warbler, and meadow and meadow edge bird species and their habitats since it designates overnight stock holding camps, implements destination quotas that would limit destination impacts such as access and social trails, grazing impacts. All meadows outside of grazing zones are closed to commercial pack stock grazing. One hundred thirty nine meadows analyzed are likely to have some level of commercial pack stock grazing use where MIS habitat impacts are most likely to occur. A subset of 108 meadows would be closed to grazing as a result of unsuitable for grazing determinations. Forty one meadows with hydrologic functioning problems that are impacting MIS wildlife habitat conditions would continue to be open for grazing where grazing has the potential to exacerbate the problems, or slow restoration rates.</p> <p>Thirteen meadows identified as suitable unoccupied willow flycatcher habitat would be approved for grazing. Habitat structural characteristics could be impacted if meadows are grazed to maximum allowable use levels.</p> <p>Mountain yellow-legged frog stream habitat could be potentially impacted at one meadow approved for commercial pack stock grazing.</p> <p>There would be some potential for a reduced level of human disturbance to MIS wildlife species and habitats on 73 miles of system trail not suitable for commercial stock, and 80 miles on 82 use trails where commercial pack stock would be prohibited. There may be some localized minor level of riparian habitat improvement on these trails, if impacted sections narrow in width such as where trails course through meadows, and at stream and spring crossing areas.</p> <p>Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of impacted areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas.</p>
<p>Alternative 3</p>	<p>Alternative 3 manages for an increased level of protection for Yosemite toad meadow breeding habitats. Fifty-three meadows approved for commercial packer stock grazing overlap with Yosemite toad breeding areas. Thirty three meadows that are approved for grazing in Alternative 1 are either unsuitable (32) for grazing or rested from grazing (1) in this alternative and would have full protection for the breeding habitats. A 5% critical area maximum allowable disturbance standard would be implemented in all other Yosemite toad breeding habitat areas where commercial pack stock grazing would be approved to minimize trampling and chiseling effects to the breeding habitats, and minimize the potential for stock trampling of metamorph toads. Suitable/unsuitable determinations would be implemented immediately.</p> <p>The alternative allows for some level of control of potential dispersed impacts to MIS mule deer, yellow warbler, and meadow and meadow edge bird species and their habitats since it designates overnight stock holding camps, implements destination quotas that would limit destination impacts such as access and social trails, grazing impacts. All meadows outside of grazing zones are closed to commercial pack stock grazing. One hundred forty three meadows analyzed are likely to have some level of commercial pack stock grazing use where MIS habitat impacts are most likely to occur. A subset of 110 meadows would be closed to grazing as a result of unsuitable for grazing determinations. Thirty four meadows with hydrologic functioning problems that are impacting MIS wildlife habitat conditions would continue to be open for grazing where grazing has the potential to exacerbate the problems, or slow restoration rates.</p> <p>Thirteen meadows identified as suitable unoccupied willow flycatcher habitat would be approved for grazing. Habitat structural characteristics could be impacted if meadows are grazed to maximum allowable use levels.</p> <p>Mountain yellow-legged frog stream habitat could be potentially impacted at one meadow approved for commercial pack stock grazing.</p> <p>There would be some potential for a reduced level of human disturbance to MIS wildlife species and habitats on 63 miles of system trail not suitable for commercial stock, and 87 miles on 87 use trails where commercial pack stock would be prohibited. There may be some localized minor level of riparian habitat improvement on these trails, if impacted sections narrow in width such as where trails course through meadows, and at stream and spring crossing areas.</p> <p>Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of impacted areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas.</p>
<p>Alternative 4</p>	<p>Alternative 4 manages for an increased level of protection for Yosemite toad meadow breeding habitats. Fifty-six meadows approved for commercial packer stock grazing overlap with Yosemite toad breeding areas. Thirty meadows that are approved for grazing in Alternative 1 are unsuitable for grazing in this alternative and would have full protection for the breeding habitats. A 5% critical area maximum allowable disturbance standard would be implemented in all other Yosemite toad breeding habitat areas where commercial pack stock grazing would be approved to minimize trampling and chiseling effects to the breeding habitats, and minimize the potential for stock trampling of metamorph toads. Suitable/unsuitable determinations would be implemented immediately.</p> <p>The alternative allows for some level of control of potential dispersed impacts to MIS mule deer, yellow warbler, and meadow and meadow edge bird species and their habitats since it designates overnight stock holding camps, implements destination quotas that would limit destination impacts such as access and social trails, grazing impacts. All meadows outside of grazing zones are closed to commercial pack stock grazing. One hundred twenty meadows analyzed are likely to have some level of commercial pack stock grazing use where MIS habitat impacts are most likely to occur. A subset of 138 meadows would be closed to grazing at an unknown future date as a result of unsuitable for grazing determinations. Twenty seven meadows with hydrologic functioning problems that are impacting MIS</p>

	<p>wildlife habitat conditions would continue to be open for grazing where grazing has the potential to exacerbate the problems, or slow restoration rates.</p> <p>Thirteen meadows identified as suitable unoccupied willow flycatcher habitat would be approved for grazing. Habitat structural characteristics could be impacted if meadows are grazed to maximum allowable use levels.</p> <p>Mountain yellow-legged frog stream habitat would not be impacted since all three meadows would be closed to grazing.</p> <p>There would be some potential for a reduced level of human disturbance to MIS wildlife species and habitats on 173 miles of system trail not suitable for commercial stock, and 165 miles on 153 use trails where commercial pack stock would be prohibited. There may be some localized minor level of riparian habitat improvement on these trails, if impacted sections narrow in width such as where trails course through meadows, and at stream and spring crossing areas.</p> <p>Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of impacted areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas.</p>
<p>Alternative 5</p>	<p>There would be no commercial pack stock grazing that would overlap with Yosemite toad occupied breeding habitats, or willow Flycatcher and great gray owl meadow suitable unoccupied habitats. Elimination of human and pack stock disturbance on trails, camps, and grazing areas associated with commercial pack stock operations would improve MIS mule deer, yellow warbler, meadow and meadow edge bird guild species habitats, as well as use of these habitats by these species.</p> <p>Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of impacted areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas. Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of impacted areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas.</p>
<p>Vegetation</p>	
<p>Alternative 1</p>	<p>Grazing Resources: The area used by commercial pack stock would be a minor portion of the total wilderness area, but not limited to grazing zones. The direct, indirect, and cumulative effects of stock use on vegetation would not be visible and may not be measurable at the wilderness or geographic scale. These effects could be measurable and visible at the analysis unit scale and would be measurable and visible at the site specific scale, and especially in the analysis units and at those sites with substantial vegetation areas still recovering from past chronic and cumulative adverse impacts due to the impacts of historical uses such as production livestock grazing, water diversion, or mining. These include the Glacier Divide, Silver Peak, Cora, Sadler, Triple Divide, Lillian, Rush Creek, Fish Creek, McGee, Hilton, Cascade Valley, Pioneer, Graveyard, Hooper, and Silver Divide Analysis Units. The vegetative resources could trend away from desired conditions, over the long-term, at an estimated 37 of the locations visited during this project with implementation of Alternative 1.</p> <p>There would be increased adverse impacts with Alternative 1 over the other alternatives and opportunities for vegetative recovery in fewer locations. The degradation of these riparian areas would become more noticeable over the long-term and many areas with current patterns of repeated use would eventually have to be closed to grazing.</p> <p>Sensitive and Watch List Plants: Individual sensitive or watch list plants may be affected by commercial and private pack stock activities, hiker use, and trail management activities; however, these impacts would be minor, local, and short-term. There are some long-term moderate to severe impacts to sensitive plant habitat regionally from historic grazing that would be somewhat less likely to recover under this alternative.</p> <p>Under this alternative, the trails would be at the highest trail classes of any alternative, and the trail classes least matched to use, so the impacts to rare plants from trail maintenance and to some extent trail use, although slight, would be greatest of any alternative. There would be less possibility of impacts from avoidance of trail obstacles than in the other alternatives if maintenance actually matches trail class. Any trail impacts would be local, minor, and short-term.</p> <p>More meadows (527) with potential habitat for sensitive riparian species would be open for use under this alternative than any of the others. Sixteen of the meadows with potential habitat were found to have degraded conditions, mostly due to historic cattle and sheep grazing, and would remain degraded more than under Alternatives 4 and 5.</p> <p>Firewood: As in Alternatives 4 and 5, there would be no firewood brought in from outside the wilderness, eliminating risk of introducing pathogens and weed seeds from this source.</p> <p>Fens: A greater number of meadows with fens or fen characteristics (17) would remain in degraded conditions in this alternative than any other and the allowable trampling (20 percent) would be higher than in Alternatives 2, 3, and 4. The trampling would most likely be a local, minor, short-term effect, but degraded hydrologic conditions are likely to be long-term and more serious.</p> <p>Weeds: There would be some risk of weed introduction from pack stock use, hiker use, and trail maintenance since there are populations of weeds at trailheads and pack stations. This risk is about the same as Alternative 2 -Modified, 3, and 4, but higher than Alternative 5. Weed effects are generally long-term, but the severity and extent of negative impacts is site dependent.</p>

<p>Alternative 2 – Modified</p>	<p>Grazing Resources: The areas used by commercial pack stock are a minor portion of the total wilderness area and limited to grazing zones. The direct, indirect, and cumulative effects of stock use would not be visible and may not be measurable at the wilderness or geographic scale. These effects could be measurable and visible at the analysis unit scale and would be measurable and visible at the site-specific scale. The vegetative resources in most locations are expected to be maintained at or toward desired conditions. The vegetative resources could trend away from desired conditions, for the long-term, at an estimated 21 of the locations visited during this project.</p> <p>Sensitive and Watch List Plants: Individual sensitive or watch list plants may be affected by commercial and private pack stock activities, hiker use, and trail management activities; however, the effects of these activities would be minor, local, and short-term. There are some long-term moderate to severe impacts to riparian habitat regionally from historic grazing that would be more likely to recover than under Alternative 1.</p> <p>Under this alternative, the trail classes, and associated use and maintenance impacts to sensitive plants, would be lower than Alternatives 1 and 3, but higher than Alternatives 4 and 5, more consistent with use. The possibility of impacts from avoidance of trail obstacles would be higher than Alternative 1, about the same as Alternative 3, and lower than Alternatives 4 and 5. Any trail impacts would be local, minor, and short-term.</p> <p>Fewer meadows (116) with potential habitat for sensitive riparian species would be open for use under this alternative than Alternative 1, but more than under Alternative 5. Grazing use would be similar to Alternative 1 for the most part, but there may be some shifts in use due to meadow closures. Meadows with severe problems would be rested and those for which range readiness is probably never reached over most of the meadow would be closed, so the riparian potential habitat with the highest risks for degradation would not be available for use until recovered. Sixteen meadows with potential habitat for sensitive riparian plants would remain in degraded conditions. The overall effect would be a long-term beneficial reduction in impacts to potential habitat for sensitive riparian species.</p> <p>Fens: In this alternative, fens would be more protected from inadvertent commercial pack stock use than in Alternative 1 because no grazing would be permitted in fens. Fewer meadows with fens or fen characteristics (13) would remain in degraded condition than in Alternative 1, but more than Alternatives 4 and 5. There would be an overall long-term beneficial effects to fens under this alternative.</p> <p>Firewood: This alternative would have less risk of weed introduction than Alternatives 2 and 3 because of the use of charcoal. Adjustments in elevation closures at specific sites to reflect actual availability of firewood should protect subalpine soils and vegetation better than, or at least as well as, Alternative 1. Case-by-case approval of other campfire use could have a minimal negative impact on subalpine vegetation and careful monitoring would be required.</p> <p>Weeds: There would be some risk of weed introduction from pack stock use, hiker use, and trail maintenance since there are populations of weeds at trailheads and pack stations. This risk is about the same as Alternative 1, 2, 3, and 4, but higher than Alternative 5. If weeds were introduced, the effects would be long-term, moderate to severe, and although beginning locally, could easily become widespread.</p>
<p>Alternative 2</p>	<p>Grazing Resources: The areas used by commercial pack stock are a minor portion of the total wilderness area and limited to grazing zones. The direct, indirect, and cumulative effects of stock use would not be visible and may not be measurable at the wilderness or geographic scale. These effects could be measurable and visible at the analysis unit scale and would be measurable and visible at the site-specific scale. The vegetative resources in most locations are expected to be maintained at or to trend toward desired conditions. With implementation of Alternative 2, the vegetative resources could trend away from desired conditions, for the long-term, at an estimated 21 of the locations visited during this project.</p> <p>Sensitive and Watch List Plants: Individual sensitive or watch list plants may be affected by commercial and private pack stock activities, hiker use, and trail management activities; however, the effects of these activities would be minor, local, and short-term. There are some long-term moderate to severe impacts regionally from historic grazing that would be more likely to recover than under Alternative 1.</p> <p>Under this alternative, the trail classes, and associated use and maintenance impacts to sensitive plants, would be lower than Alternatives 1 and 3, but higher than Alternatives 4 and 5. The possibility of impacts from avoidance of trail obstacles would be higher than Alternative 1, about the same as Alternative 3, and lower than Alternatives 4 and 5. Any trail impacts would be local, minor, and short-term.</p> <p>Fewer meadows (116) with potential habitat for sensitive riparian species would be open for use under this alternative than Alternative 1, but more than under Alternative 5. Grazing use would be similar to Alternative 1 for the most part, but there may be some shifts in use due to meadow closures. Meadows with severe problems (and those for which range readiness is probably never reached over most of the meadow) would be closed, so the riparian potential habitat with the highest risks for degradation would be closed. Sixteen meadows with potential habitat for sensitive riparian plants would remain in degraded conditions. The overall effect would be a long-term beneficial reduction in impacts to potential habitat for sensitive riparian species.</p> <p>Firewood: Under this alternative, there would be the highest risk of the introduction of pathogens and/or weed seeds on firewood brought in from outside the wilderness and increased unauthorized gathering of wood and campfires by non-packer clients. Any campsite used by pack stock clients in the fire closure zone (up to 450 campsites) would be open for campfires with packed-in wood. If pathogens or weeds were introduced, the effects would be long-term, moderate to severe, and although beginning locally, could easily become widespread.</p> <p>Fens: In this alternative and Alternatives 3 and 4, fens would be more protected from inadvertent commercial pack stock use than in Alternative 1 because of the 5</p>

	<p>percent trampling limit. Fewer meadows with fens or fen characteristics (16) would remain in degraded condition than in Alternative 1, but more than Alternatives 4 and 5. There would be overall long-term beneficial effects to fens under this alternative.</p> <p>Weeds: There would be some risk of weed introduction from pack stock use, hiker use, and trail maintenance since there are populations of weeds at trailheads and pack stations. This risk is about the same as Alternative 1, 3, and 4, but higher than Alternative 5. If weeds were introduced, the effects would be long-term, moderate to severe, and although beginning locally, could easily become widespread.</p>
Alternative 3	<p>Grazing Resources: The areas used by commercial pack stock are a minor portion of the total wilderness area and limited to grazing zones. The direct, indirect, and cumulative effects of stock use would not be visible and may not be measurable at the wilderness or geographic scale. These effects could be measurable and visible at the analysis unit scale and would be measurable and visible at the site-specific scale. The vegetative resources in most locations are expected to be maintained at or to trend toward desired conditions. With implementation of Alternative 2, the vegetative resources could trend away from desired conditions, for the long-term, at an estimated 21 of the locations visited during this project.</p> <p>Sensitive and Watch List Plants: Individual sensitive or watch list plants may be affected by commercial and private pack stock activities, hiker use, and trail management activities; however, the effects of these activities would be minor, local, and short-term. There are some long-term moderate to severe impacts regionally from historic grazing that would be more likely to recover than under Alternative 1.</p> <p>Under this alternative, the trail classes, and associated use and maintenance impacts to sensitive plants, would be lower than Alternatives 1 and 3, but higher than Alternatives 4 and 5. The possibility of impacts from avoidance of trail obstacles would be higher than Alternative 1, about the same as Alternative 3, and lower than Alternatives 4 and 5. Any trail impacts would be local, minor, and short-term.</p> <p>Fewer meadows (116) with potential habitat for sensitive riparian species would be open for use under this alternative than Alternative 1, but more than under Alternative 5. Grazing use would be similar to Alternative 1 for the most part, but there may be some shifts in use due to meadow closures. Meadows with severe problems (and those for which range readiness is probably never reached over most of the meadow) would be closed, so the riparian potential habitat with the highest risks for degradation would be closed. Sixteen meadows with potential habitat for sensitive riparian plants would remain in degraded conditions. The overall effect would be a long-term beneficial reduction in impacts to potential habitat for sensitive riparian species.</p> <p>Firewood: Under this alternative, there would be the highest risk of the introduction of pathogens and/or weed seeds on firewood brought in from outside the wilderness and increased unauthorized gathering of wood and campfires by non-packer clients. Any campsite used by pack stock clients in the fire closure zone (up to 450 campsites) would be open for campfires with packed-in wood. If pathogens or weeds were introduced, the effects would be long-term, moderate to severe, and although beginning locally, could easily become widespread.</p> <p>Fens: In this alternative and Alternatives 3 and 4, fens would be more protected from inadvertent commercial pack stock use than in Alternative 1 because of the 5 percent trampling limit. Fewer meadows with fens or fen characteristics (16) would remain in degraded condition than in Alternative 1, but more than Alternatives 4 and 5. There would be overall long-term beneficial effects to fens under this alternative.</p> <p>Weeds: There would be some risk of weed introduction from pack stock use, hiker use, and trail maintenance since there are populations of weeds at trailheads and pack stations. This risk is about the same as Alternative 1, 3, and 4, but higher than Alternative 5. If weeds were introduced, the effects would be long-term, moderate to severe, and although beginning locally, could easily become widespread.</p>
Alternative 4	<p>Grazing Resources: The areas used by commercial pack stock are a minor portion of the total wilderness area and limited to grazing zones. The direct, indirect, and cumulative effects of stock use would not be visible and may not be measurable at the wilderness or geographic scale. These effects could be measurable and visible at the analysis unit scale and would be measurable and visible at the site-specific scale. The vegetative resources in most locations are expected to be maintained at or to trend toward desired conditions. The vegetative resources could trend away from desired conditions, for the long-term, at an estimated 20 of the locations visited during this project.</p> <p>Sensitive and Watch List Plants: Individual sensitive or watch list plants may be affected by commercial and private pack stock activities, hiker use, and trail management activities; however, the impacts of these activities would be minor, local, and short-term for the most part. There would be more restrictions on use in this alternative than Alternatives 1, 2, and 3, so there could be some use displaced to adjacent lands (outside wilderness, National Parks, or other National Forests) where there are populations or potential habitat for these sensitive plants, but most of these populations are either on National Parks or National Forests, so there would be protection. Displacement of use would be less likely than in Alternative 5.</p> <p>Under this alternative, the trail classes, and associated maintenance, would be the lowest of any of the alternatives. However, there would be pack stock use, which there would not be in Alternative 5. There would be more risk from avoidance of trail obstacles than in the other alternatives because of the low maintenance levels. Trail impacts would be minor, local, and most likely short-term.</p> <p>Fewer meadows (116) with potential habitat for sensitive riparian species would be open for use under this alternative than Alternative 1, but more than under Alternative 5. More meadows would be closed to grazing than in Alternatives 2 and 3, so there may be more shifts in use to meadows not currently used. Meadows</p>

	<p>with moderate to severe problems (and those for which range readiness is probably never reached) would be closed, so the riparian potential habitat for sensitive and watch list plants with the highest risks for degradation would be closed to commercial pack stock. Thirteen meadows with potential habitat for sensitive riparian species would remain in degraded conditions. There would be more local long-term beneficial effects of closing meadows than in Alternatives 1, 2, and 3, but there would still be some meadows with negative effects from pack stock use that would remain degraded.</p> <p>Firewood: As in Alternatives 1 and 5, there would be no firewood brought in from outside the wilderness, eliminating risk of introducing pathogens and weed seeds from this source.</p> <p>Fens: Under this alternative, fewer fens would be at risk of degrading and more degraded fens would begin recovery than in Alternatives 1, 2, and 3. Fifteen meadows with fens or fen characteristics would remain in degraded conditions. There would be less protection than in Alternative 5, since most of the risk to fens is from commercial pack stock.</p> <p>Weeds: There would be some risk of weed introduction from pack stock use, hiker use, and trail maintenance since there are populations of weeds at trailheads and pack stations. This risk is about the same as Alternative 1, 2, and 3 but higher than Alternatives 5.</p>
<p>Alternative 5</p>	<p>Grazing Resources: No areas of the wilderness would be used by commercial pack stock. The direct, indirect, and cumulative beneficial effects due to increased vegetative seral status would not be visible and may not be measurable at the wilderness or geographic scale. These beneficial effects could be measurable and visible at the analysis unit scale and would be measurable and visible at the site-specific scale. The vegetative resources in most locations are expected to be maintained at or to trend toward desired conditions. The vegetative resources could trend away from desired conditions, for the long-term, at an estimated 18 of the locations visited during this project.</p> <p>Sensitive and Watch List Plants: There would be no commercial pack stock impacts, but private stock use would continue and could increase. Individual sensitive or watch list plants may be affected by private pack stock, hiker use, and trail management activities; however, these activities would not cause a trend toward listing in this or any other alternative.</p> <p>Under this alternative, the trail classes, and associated maintenance impacts to sensitive plant populations and habitat, would be lower than Alternatives 1, 2, and 3, but slightly higher than Alternative 4, and maintenance needs would be less because of the removal of commercial pack stock. There would be the possibility of impacts from avoidance of obstacles by hikers and private pack stock, but the risk would be less than Alternative 4.</p> <p>There would be no commercial pack stock impacts to sensitive plants or their habitat in meadows in the Ansel Adams and John Muir Wildernesses. There could be some pack stock use displaced to locations outside of these wilderness areas on the Forests, National Parks, or other adjacent lands, where there are populations of these sensitive plants or potential habitat.</p> <p>Firewood: As in Alternatives 1 and 4, there would be no firewood brought in from outside the wilderness, eliminating the risk of introducing pathogens and weed seeds from this source.</p> <p>Fens: Since most of the risk to fens is from commercial pack stock, Alternative 5 would provide the best protection for fens, but there still could be impacts from private stock use. Five meadows with fens or fen characteristics that have degraded conditions would continue to have degraded conditions.</p> <p>Weeds: Commercial pack stock would no longer be a possible vector for weed distribution into the wilderness from the pack stations or other populations in and near the wilderness, so this alternative would have the lowest risk of weed expansion in the wilderness.</p>

Understanding and using the attached Trail Tables (Tables 2.26 and 2.27):

System Trail Tables:

The System Trail tables list all trails which are included in any of the past or potential trail inventories for all five alternatives. These tables are listed separately by forest. If a trail is considered part of the transportation system in an alternative, it is designated with a Trail Class from 1-4. If it is NOT on the system in an alternative, it will have a “0” in the Trail Class column.

Multiple segments of some trails are listed in order to capture changes in potential actions which vary along the length of trail. For instance, in one alternative only a short section of trail may be on the system, whereas in another alternative, an additional length of trail may be included in the system. Other trails may have multiple trail classes at different points along the trail. In some cases, multiple segments are shown where the trail crosses a wilderness or forest boundary.

Trails with an NS behind the Trail Class (for example: 2 NS) indicate that this section of trail is “Not Suitable for Commercial Stock”. An asterisk attached to the NS (for example: 2 NS*), indicates that the trail is “Not Suitable for Commercial Stock” until repaired.

A trail number is shown after the trail name. This is the designated trail system number, and in most cases is the same or similar to numbers assigned to each trail in past inventories. Some trail numbers or names may have changed as the trail networks have been reviewed.

A reference number is used to distinguish segments of a trail.

Use Trail Table

All use trails or routes which have been addressed in any of the alternatives are listed in this table. Trails are generally listed as either “A” as approved or “P” as prohibited. When there is an asterisk in the approval column, it refers to a clarifier in the far right column. Some of these stipulations apply to just some of the alternatives. Additionally, some of these trails were not addressed as use trails in this alternative, but instead were listed as system trails in the system trail table under this alternative. Trails listed as N/A had not been addressed in the proposed action, either because they were overlooked, or criteria regarding which trails were being addressed have slightly changed.

Numerical Discrepancies:

Slight discrepancies in trail mileages or other numbers may occasionally occur within this document for a variety of reasons. Some variance occurs simply as a result of rounding numbers. Trail mileages – especially on trails that have not been recently surveyed – may be estimated, derived from old inventories, or measured from GIS information that has not been verified on the ground. Certain trails were split into segments based on changes in proposed actions, leading to further estimating and potential errors. During the multi-year analysis process and while writing this document, various updates and corrections have been made to some mileages of specific trails, and these changes may not have been carried through the document.

Where discrepancies have been detected, they have been of an inconsequential scale, and do not affect the actions on described segments of trail or geographic features. As more trails are accurately inventoried during future survey efforts, corrected mileages will be entered into inventory databases. Over time, these corrections will likely change mileages and other numbers listed in the various tables in this document.

Table 2.26 System Trails

Inyo National Forest Trails

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
Ansel Adams East – Inyo NF												
I-1.0	BLOODY CANYON	2516	3	2 NS	2	2	1 NS	2		2.11	AA Wilderness Boundary	Lower Sardine lake (Outlet)
I-2.0	BLOODY CANYON	2516	3	1 NS	1	2	1 NS	1	NRFS	1.54	Lower Sardine lake (Outlet)	INF/YNP Boundary Mono Pass
I-3.0	FISH CREEK	2622	3	3	3	3	2	3		2.65	Jct.2623 (Rainbow Falls Tr.) AA Wild Boundary	AA/JM WildBoundary (@ Crater Creek Crossing)
I-4.0	RAINBOW FALLS	2623	2	3	3	3	3	3		0.27	AA Wilderness Boundary @ Boundary Creek	DPP National Park Boundary East
I-5.0	RAINBOW FALLS	2623	2	3	3	3	3	3		0.52	DPP National Park Boundary East	DPP National Park Boundary South
I-6.0	RAINBOW FALLS	2623	2	3	3	3	3	3		0.21	DPP National Park Boundary South	Lower Rainbow Falls
I-7.0	RED CONES CUTOFF	2635	3	2	2	2	2	2		1.24	Jct.2707	Jct.2000.3 PCT @ Red Cones
I-8.0	UPPER CRATER MEADOWS	2645	3	2	2	2	2	2		1.93	JM/AA WildBoundary @ Crater Meadow	Jct.2704 (Mammoth Pass)
I-9.0	LION POINT	2646	2	1	1	2	1	0		2.96	Jct.2601	Lion Point
I-10.0	MAMMOTH PASS - RED'S MDW	2704	3	3	3	3	3	3		2.46	AA Wilderness Boundary	AA Wilderness Boundary
I-11.0	MCCLEOD LAKE SPUR	2704B	3	3	3	3	2	2		0.26	Jct.2704 @ Mammoth Pass	AA Wilderness Boundary
I-12.0	MAMMOTH PASS -CRATER CUTOFF	2707	3	2	3	3	2	2		1.65	AA Wilderness Boundary past McCleod Lk.	JM Wilderness Boundary
I-13.0	RIM	2723	2	1 NS	0	1	0	0	NRFS	0.50	Jct.2707 past McCleod Lake	AA/JM Wilderness Boundary

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
I- 14.0	GIBBS LAKE	2613	2	2 NS	2	2	2 NS	2	NRFS	0.43	AA Wilderness Boundary	Gibbs Lake (Outlet)
I- 15.0	GLACIER CANYON	2510	1	1 NS	1	1	1 NS	1	NRFS	0.74	AA Wilderness Boundary	1st Dana Lake
I- 16.0	ASHLEY LAKE	2607	2	2	2	2	2	2		1.25	Jct.2636 - Signed	Ashley Lk. NW side of Outlet
I- 17.0	SUPERIOR LAKE	2617	3	3	3	3	3	3		4.24	Jct.2503 JMT near N end DPP	Jct.2636 (Holcomb Lk. Tr.)
I- 18.0	SUPERIOR LAKE	2617	3	2	2	2	2	2		1.12	Jct.2636 (Holcomb Lk. Tr.)	Superior Lake Inlet, Campsite, NW end
I- 19.0	SUMMIT MEADOW C/O (From HOLCOMB Trail)	2618	2	2	2	2	2	2		2.01	Jct. 2601 near Summit Mdw.	Jct. 2636 near King Creek
I- 20.0	HOLCOMB LAKE	2636	3	2	2	2	2	2		1.50	Jct.2617 - Signed, Cabin Ruins nearby	Holcomb Lake outlet, East end
I- 21.0	ANONA LAKE (Formerly Fern Lake)	2643	3	2	2	2	1	1		1.27	Jct.2618 - Signed	Anona Lake
I- 22.0	JOHN MUIR	2503	3	3	3	3	3	3		14.02	North DPP/INF Boundary	Jct.2000.3 PCT @ 1000 Island Lk Outlet
I- 23.0	PACIFIC CREST NST	2000.3	4	3	4	3	3	3		2.04	JM/AA Wilderness Boundary @ Red Cones	AA Wilderness Boundary near Reds Meadow
I- 24.0	PACIFIC CREST NST	2000.3	4	3	4	3	3	3		1.87	INF/DPP E. Boundary near Reds Meadow	DPP/INF N. Boundary
I- 25.0	PACIFIC CREST NST	2000.3	4	3	4	3	3	3		5.61	DPP/INF N. Boundary	AA Wilderness Boundary (West) @ Agnew Meadow
I- 26.0	PACIFIC CREST NST	2000.3	4	3	4	3	3	3		14.83	AA Wilderness Boundary (East) @ Agnew Meadow	INF/YNP Boudary @ Donohue Pass
I- 27.0	EMILY LAKE	2503B	3	2 NS*	2 NS*	2 NS*	2 NS	2		1.59	Jct.2503 JMT near Trinity Lks.	Emily Lake @ Large Camp near Outlet
I- 28.0	MINARET CREEK	2621	3	3	3	3	3	3		5.19	Jct.2503 JMT @ Johnston Mdw.	NW end Minaret Lk.
I- 29.0	MINARET MINE	2621A	2	2	2	2	2	2		1.94	Jct.2621 (old road bed) (2.5 miles E of Minaret Lk.)	Minaret Mine
I- 30.0	DEADHORSE LAKE	2621B	2	0	0	1	0	0	NRFS	1.00	Jct.2621	Deadhorse Lake

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
I- 31.0	CECILE LAKE (Minaret Creek Trail)	2621D	2	1 NS	1 NS	1	0	1	NRFS	0.55	Jct.2621 @ NW end Minaret Lk.	Cecile Lake South end
I- 32.0	PARKER LAKE	2602	3	2	2	2	2	2		1.64	AA Wilderness Boundary	Parker Lake (E end near outlet)
I- 33.0	PARKER BENCH	2603	3	3	3	3	3	3		0.55	AA Wilderness Boundary	Jct.2602 (Just south of Parker Lake)
I- 34.0	RIVER NORTH	2610	4	3	3	3	2	2		4.18	Jct.2614 past Olaine Lk.- Signed	Jct.2000.3 PCT (E of 1000 Island Lake)
I- 35.0	SAN JOAQUIN PEAK C/O	2620	1	0	0	2	0	0		2.00	Jct.2000.3 (PCT)	Mono County Line/San Joaquin Peak
I- 36.0	BADGER LAKE SPUR	2624	0	2	2	2	2	2		0.20	Jct.2000.3 PCT (E of Jct.2606, W of Jct.2505)	Badger Lakes (North End)
I- 37.0	AGNEW PASS	2642	3	3	3	3	2	2		0.70	Jct.2505 @ Summit Lk.	Jct. 2000.3 PCT - Signed
I- 38.0	SUMMIT MEADOW (King Creek)	2601	3	3	3	3	2	2		0.85	Jct.2634 @San Joaquin River Bridge (AA Wild Bdy)	DPP/INF Boundary
I- 39.0	SUMMIT MEADOW (King Creek)	2601	3	3	3	3	2	2		4.05	DPP/INF Boundary	INF/SNF Boundary @ Ridgeline
I- 40.0	RIVER SOUTH	2615	4	2	3	3	2	2		0.97	Jct.2000.3 PCT near Agnew Mdw.	Jct.2614 (0.9 mile from Agnew Meadow)
I- 41.0	AGNEW CAMPGROUND C/O	2616	0	2	2	2	2	2		0.10	AA Wilderness Boundary	Jct.PCT (2000.3)
I- 42.0	ALGER LAKES	2502	3	2	2	2	2	2		10.09	Jct.2605 N end Gem Lk.	INF/YNP Boundary @ Parker Pass
I- 43.0	GEM PASS SNOW BYPASS	2502A	0	2	2	2	2	2		0.34	Jct.2502 @ Gem Pass	Jct.2502 North of Gem Pass (1/3m)
I- 44.0	CLARK LAKES	2505	3	3	3	3	2	2		3.92	Jct.2610 Camp/Creek, below Badger Lks	Jct.2605 W end Gem Lake
I- 45.0	FERN LAKE (June Lk Area)	2604A	3	2 NS	2	2 NS	2 NS	2		0.15	AA Wilderness Boundary	Fern Lake (North End)
I- 46.0	RUSH CREEK	2605	3	3	3	3	3	3		0.86	AA Wilderness Boundary	AA Wild Boundary (just before Tramway/Tracks)
I- 47.0	RUSH CREEK	2605	3	3	3	3	3	3		6.07	AA Wilderness Boundary (E end of Gem Lake)	Jct.2000.3 PCT W of Waugh Lk.

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
I- 48.0	WEBER LAKE	2605A	3	2	3	3	2	2		1.49	Jct.2605 E end Waugh Lk.	Weber Lake (E side)
I- 49.0	WEBER LAKE SPUR	2605B	0	2	2	2	1	0		0.20	Jct.2605A (Weber Lake)	Camp, West side Weber Lake
I- 50.0	SPOOKY MEADOW	2606	2	2 NS	2 NS	2	2 NS	2	NRFS	0.10	AA Wilderness Boundary (below Spooky Meadow)	Drift Fence below lower meadow
I- 50.1	SPOOKY MEADOW	2606	2	2	2	2	2 NS	2	NRFS	2.40	Drift Fence below lower meadow	Jct.2000.3 PCT (East of Jct.2610)
I- 51.0	SPOOKY TO CLARK CUTOFF	2606A	0	2	2	2	2	2		0.29	Jct. 2606 @ small Lk. - Signed	Jct. 2505 @ Clark Lk. (near Agnew Pass)
I- 52.0	LAURA LAKE	2503D	3	2	2	2	1	1	NRFS	0.66	Jct.2503 JMT	Laura Lake S side, campsites
I- 53.0	SHADOW CREEK	2614	4	3	3	3	3	3		5.30	Jct.2000.3 PCT near Agnew Mdw.	Ediza Lake, Jct.2614CNS, SE end of Lake
I- 54.0	SHADOW CREEK (Iceberg Lake)	2614	2	2 NS	2 NS	2 NS	1 NS	2	NRFS	0.94	Ediza Lake, Jct.2614CNS, SE end of Lake	Iceberg Lake, outlet, N end
I- 55.0	SHADOW CREEK (Cecile)	2614	2	1 NS	1 NS	1 NS	1 NS	1	NRFS	1.82	Iceberg Lake, outlet, N end	Cecile Lake, outlet, N end
I- 56.0	NYDIVER LAKES	2614A	2	1	1	1	1 NS	1		0.60	Jct.2614 (1/2 mile E of Ediza Lk.)	Camps @ 1st bench below lakes
I- 57.0	CABIN LAKE	2614B	3	2 NS	2	2	1 NS	1		0.84	Jct.2614 (1/3 mile E of Ediza Lk.)	Cabin Lake (N end, outlet)
I- 58.0	EDIZA LAKE SPUR	2614C	0	2	2	2	1	1		0.56	Jct.2614 (W end)	W end Ediza Lk - Campsites
I- 59.0	GARNET LAKE TO EMERALD LAKE	2503E	2	1 NS	0	2	0	0		1.47	Jct.2503FNS @ Large Packer Campsite	Jct.2503 JMT above 1000 Island Lk.
I- 60.0	GARNET LAKE CAMPS	2503F	2	2	2	2	1	2		1.60	Jct.2503 JMT NW of Garnet Outlet	Northwest end Garnet Lake - Campsites
I- 61.0	1000 ISLAND LAKE	2565	3	2	2	2	2	2		1.19	Jct.2000.3 PCT @ E end 1000 Isle Lk	W end 1000 Island Lake (Campsites)
I- 62.0	GARNET-RIVER CUTOFF	2637	3	1 NS	1	2	1 NS	1	NRFS	1.00	Jct.2503 (JMT) @ Garnet Lk. Outlet	Jct.2610 (River North Trl.)
I- 63.0	ALTHA LAKE (from Garnet-River Cutoff)	2637A	3	1 NS	1	2	1 NS	1	NRFS	0.32	Jct.2637 bottom of steep draw/slot	Altha Lk. - Large Campsite

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
I-64.0	DAVIS LAKE	2501	2	2	2	2	2	2		0.86	Jct.2000.3 PCT	Davis Lake (N end near outlet)
I-65.0	MARIE LAKES	2520	2	2	2	2	2	2		0.65	Jct.2000.3 PCT NW of 2605 (Rush Creek Tr.)	Marie Meadow (jct. Use Tr.)
I-66.0	MARIE LAKES	2520	2	1 NS	1 NS	1	1 NS	1	NRFS	0.99	Marie Meadow (jct. Use Tr.)	1st Marie Lake
Bishop/Humphreys – Inyo NF												
I-67.0	BISHOP PASS	3104	4	3	3	3	3	3		5.05	JM Wilderness Boundary	INF Boundary @ Pass
I-68.0	MARIE LOUISE LAKE	3104C	0	2	2	2	2 NS	2		0.48	Jct.3104	Mary Louise Lake
I-69.0	CHOCOLATE-RUWAU LOOP (to Bull Lake)	3104D	3	2	2	2	2	2		0.43	Jct.3104 signed (near Bull Lake)	Bull Lake Inlet
I-70.0	CHOCOLATE-RUWAU LOOP (Bull to Choc. 2)	3104D	3	2 NS	2 NS	2	1 NS	1	NRFS	0.50	Bull Lake Inlet	Chocolate Lake #2 North Camps
I-70.1	CHOCOLATE-RUWAU LOOP (Choc. 2 - Ruwau)	3104D	3	1 NS	2 NS	2 NS	1 NS	1	NRFS	0.84	Chocolate Lake #2 North Camps	Ruwau Lake Outlet
I-70.2	CHOCOLATE-RUWAU LOOP (Ruwau - Long Lk)	3104D	3	2 NS	2	2	1 NS	1	NRFS	0.66	Ruwau Lake Outlet	Jct.3104 signed (above Long Lake)
I-71.0	GABLE LAKES	3005	3	2 NS	2 NS	2 NS	2 NS	2	NRFS	1.22	JM Wilderness Boundary	Approx 2 miles up trail, top of set of switchbacks
I-72.0	GABLE LAKES	3005	3	1 NS	1 NS	1 NS	1 NS	1	NRFS	1.79	Approx 2 miles up trail, top of set of switchbacks	Mine above 1st Gable Lake
I-73.0	ELDERBERRY CANYON	3011	3	0	0	0	0	0		1.50	JM Wilderness Boundary	Lambert Mine
I-74.0	ITALY PASS	2908	2	2 NS	2 NS	2 NS	1 NS	2	NRFS	1.81	Jct.3002ANS near Honeymoon Lake	Granite Park, Lakes and Slabs
I-75.0	ITALY PASS	2908	2	1 NS	1 NS	1 NS	1 NS	1	NRFS	2.37	Granite Park, Lakes and Slabs	INF Boundary @ Pass
I-76.0	HORTON LAKES	3006	3	2	2	2	2	2		4.43	JM Wilderness Boundary	Lower Horton Lake
I-77.0	BASIN MOUNTAIN	3006A	2	0	0	0	0	0		3.00	Jct.3006 (Just past Wilderness Boundary)	Mine remnant in basin

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
I- 78.0	LONGLEY RESERVOIR	3007	0	2	2	2	2	2		2.22	JM Wilderness Boundary	Longley Res. (outlet/dam)
I- 79.0	LAMARCK LAKES (to Grass Lk Jct)	3004	3	3	3	3	2	3		0.43	JM Wilderness Boundary	Jct.Grass Lake Spur Trail (#3004A)
I- 80.0	LAMARCK LAKES	3004	3	2	2	2	1 NS	2		1.25	Jct.Grass Lake Spur Trail (#3004A)	Jct.Lamarck Col Trail (#3004CNS)
I- 80.1	LAMARCK LAKES (Upper Lake Spur)	3004	3	1 NS	2 NS	2 NS	1 NS	2		0.25	Jct.Lamarck Col Trail (#3004CNS)	Upper Lamarck Lake
I- 81.0	GRASS LAKE SPUR	3004A	0	2	3	3	2	2		0.47	Jct.3004	Grass Lake E end.
I- 82.0	GRASS LAKE OUTLET	3004B	0	1 NS	2 NS	2 NS	0	1	NRFS	0.83	JM Wilderness Boundary	Grass Lake
I- 83.0	LAMARCK COL	3004C	0	1 NS	2	2	1 NS	1	NRFS	2.59	Jct.3004 (Lamarck Lk)	Tarn below Col
I- 84.0	PINE CREEK PASS	3002	3	3	3	3	3	3		4.51	JM Wilderness Boundary	INF Boundary @ Pass
I- 85.0	HONEYMOON LAKE SPUR	3002A	2	2	2	2	2	2		0.10	Jct.Pine Creek Pass (#3002)	Camps, Eastside Honeymoon Lake
I- 86.0	PIUTE PASS	3001	4	3	3	3	3	3		4.52	JM Wilderness Boundary	INF Boundary @ Pass
I- 87.0	SABRINA BASIN	3101	4	3	3	3	3	3		4.80	JM Wilderness Boundary	Jct. Hungry Packer Lake Trail, (#3101F)
I- 88.0	SABRINA BASIN	3101	4	2	2	2	2	2		0.51	Jct. Hungry Packer Lake Trail, (#3101F)	Midnight Lake
I- 89.0	DONKEY LAKES	3101A	3	2	2	2	2	1		1.05	Jct.3101 near Blue Lake	Donkey Lake
I- 90.0	BABOON LAKE	3101B	3	1	1	2	1 NS	1	NRFS	1.17	Jct. 3101A (Donkey Lake)	Baboon Lake
I- 91.0	EMERALD LAKES	3101C	0	2	2	2	1	2		0.42	Jct.3101 (Sabrina Basin) past Blue Lake	Camps @ Emerald Lake
I- 92.0	DINGLEBERRY STOCK FORD	3101D	0	3	3	3	3	0		0.16	Jct.3101 (Sabrina Basin)	Jct.3101 (Sabrina Basin)
I- 93.0	TOPSY TURVY LAKE (to falls)	3101E	0	2	2	2	2	1		0.34	Jct.3101 (past Dingleberry Lake)	Campsite before Pee Wee lake (before Topsy)

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini		
I- 94.0	HUNGRY PACKER LAKE	3101F	3	2	2	2	2	2		1.24	Jct.3101	Hungry Packer Lake		
I- 95.0	MOONLIGHT LAKE (Falls camp)	3101G	3	2	2	2	2	1		0.40	Jct.3101C (near Sailor Lake)	Camps @ Moonlight Falls before Lake		
I- 96.0	TREASURE LAKES	3104B	3	3	3	3	2	2		2.18	Jct.3104 (just past Wild B)	Creek Xing Between Lks. 1 & 2		
I- 97.0	TYEE LAKES (to South Fk)	3102	4	3	3	3	2	NS	2	1.38	JM Wilderness Boundary	Tyee Lakes #3, Outlet		
I- 98.0	TYEE/GEORGE LAKES (to Sabrina)	3102	4	2	2	2	2	NS	2	NRFS	3.73	Tyee Lakes #3, Outlet	Jct.3101 (0.8 m from TH)	
Fish Creek, Convict, McGee – Inyo NF														
I- 99.0	JUNCTION (Pond Lily Lake)	2619	2	0	0	0	0	0		2.80	Jct. 2622.2 (Fish Creek) 2.7miles NW Island xing	Middle Fork San Joaquin		
I- 100.0	FISH CREEK	2622	3	3	3	3	3	3		17.64	AA/JM Wild Boundary (@ Crater Creek Crossing)	Jct.2000.3 PCT		
I- 101.0	UPPER CRATER MEADOWS	2645	3	2	2	2	2	2		0.64	Jct.2000.3 PCT @ Upper Crater Mdw.	AA/JM Wild Boundary (@ Crater Creek Crossing)		
I- 102.0	DEER CREEK	2706	3	2	2	2	2	1		1.68	Jct. 2000.3 PCT @ Deer Crk.	Campsite/Meadow below lakes		
I- 103.0	DEER CREEK	2706	3	1	1	2	1	1		2.09	Campsite/Meadow below lakes	Jct.2708 @ Deer Lakes		
I- 104.0	MAMMOTH PASS -CRATER CUTOFF	2707	3	3	3	3	2	2		1.27	JM Wilderness Boundary	Jct.2000.3 PCT @ Up Cra Mdw.		
I- 105.0	MAMMOTH CREST	2708	3	2	2	2	1	2		3.70	JM Wilderness Boundary	Deer Lakes, Campsites Eastern Lake		
I- 106.0	MAMMOTH CREST (Deer Lks to Duck Pass)	2708	3	1	NS	1	NS	1	0	1	NRFS	1.78	Deer Lakes, Campsites Eastern Lake	Jct.2710 Duck Pass Tr @ Pass (500ft. East)
I- 107.0	PUMICE BUTTE	2713	1	1	0	1	0	0		2.20	Jct.2000.3	Pumice Butte		
I- 108.0	RIM	2723	2	1	0	1	0	0	NRFS	1.02	AA/JM Wilderness Boundary	Jct.2708 @ Mammoth Crest		
I- 109.0	EMERALD LAKE TO SKELTON LAKE	2709A	3	3	3	3	2	3		0.37	Jct.2709 - Signed	Jct.2709BNS -W end Emerald Lake, Signed		

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
I-110.0	EMERALD LAKE TO SKELTON LAKE	2709A	2	2 NS	2 NS	2	2 NS	2	NRFS	0.84	Jct.2709BNS -W end Emerald Lake, Signed	Jct. 2710 - 300 ft. before Skelton Lk.
I-111.0	SKY MEADOWS	2709B	0	2 NS	2 NS	2 NS	2 NS	2	NRFS	2.00	Jct.2709A @ Emerald Lake W end	Small Lake @ top of W end Mdw.
I-112.0	DUCK PASS	2710	3	3	3	3	3	3		5.58	JM Wilderness Boundary	Jct.2000.3 PCT @ Duck Creek
I-113.0	ARROWHEAD LAKE SPUR	2710B	0	2	2	2	2	2		0.61	Jct.2710 - 1 mile up (Signed)	Arrowhead Lake Inlet (W end)
I-114.0	WOODS LAKES	2710C	3	2	2	2	1 NS	1		1.12	Jct. 2710 @ Skelton Lake	2nd Woods Lake
I-115.0	HEART LAKE	2719	0	3	3	3	3	3		0.28	JM Wilderness Boundary	Heart Lake
I-116.0	VALENTINE LAKE	2801	3	2	2	2	2 NS	2		2.06	JM Wilderness Boundary	Valentine Lake outlet
I-117.0	CONVICT CREEK	2802	3	2	2	2	2	2	NRFS	1.91	JM Wilderness Boundary (W end of Convict Lake)	Washout at Convict Cr and Genevieve Outlet Creek
I-117.1	CONVICT CREEK	2802	3	2 NS	2 NS	2 NS	2 NS	2	NRFS	1.21	Washout at Convict Cr and Genevieve Outlet Creek	Northeast end of Mildred Lake
I-117.2	CONVICT CREEK	2802	3	2	2	2	2 NS	2	NRFS	1.06	Northeast end of Mildred Lake	North end Dorothy lake, at Bighorn Lake Trail Jct.
I-117.3	CONVICT CREEK	2802	3	2	2	2	2	2	NRFS	3.33	North end Dorothy lake, at Bighorn Lake Trail Jct.	Cloverleaf lake
I-118.0	DOROTHY LAKE SPUR	2802A	0	2	1	1	1	1		0.95	Jct. 2802 @ Dorothy Lake Outlet	Camps @ SE end of Dorothy Lake
I-119.0	LAUREL LK. TO EDITH LK.	2804	3	2	2	2	2	2		3.80	Rd.4S86	Edith Lake (UT continues to Cloverleaf Lake)
I-120.0	BALDWIN CANYON	2902C	3	2	2	2	2	2	NRFS	1.20	Jct.2902 - McGee Pass Trail	Jct Baldwin Cutoff
I-121.0	BALDWIN CANYON	2902C	3	2	2	1 NS	1 NS	1	NRFS	0.50	Jct Baldwin Cutoff	Tarn approx 1/2 mile above Baldwin Cutoff Jct
I-121.1	BALDWIN CANYON	2902C	3	1 NS	2	1 NS	1 NS	1	NRFS	2.70	Tarn approx 1/2 mile above Baldwin Cutoff Jct	Scheelore Mine - end of road
I-122.0	STEELHEAD LAKE	2902D	3	2	2	2	2	2		1.31	Jct. 2902 past Baldwin Canyon	Steelhead Lake

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
I- 123.0	GRASS LAKE SPUR (McGee)	2902E	0	2	2	2	2	1		0.15	Jct.2902D	Grass Lake
I- 124.0	BALDWIN CUTOFF	2902F	0	2	0	2	0	0		0.25	McGee Pass Trail (below Steelhead Jct)	McGee Pass Trail (Above Steelhead jct)
I- 125.0	BIG MCGEE LAKE	2902G	2	2	2	2	2	0		0.50	Jct.2902	Big McGee Lake, campsites W end
I- 126.0	HOPKINS PASS	2907	2	1 NS	0	0	0	0		1.00	Jct.2902.1, campsites at west side of McGee Lake	INF Boundary @ Pass
I- 127.0	MCGEE PASS	2902	4	3	3	3	3	3		14.40	JM Wilderness Boundary (W of Buzztail Spring)	Jct. 2000.3 PCT @Tully Hole
I- 128.0	PIKA LAKE	2710D	0	2	2	2	2 NS	2		1.08	Jct.2710 @ Duck Pass, Signed	Pika Lake Outlet
I- 129.0	PURPLE LAKE - CASCADE VALLEY	2712	3	3	3	3	3	2		2.87	Jct.2000.3 (PCT) near Purple Lake Outlet	Jct.2622
I- 130.0	RAM LAKE (To camps)	2807	3	2	2	2	2	2		1.08	Jct.2000.3 (PCT) near Purple Lake Outlet	Ram Camp Meadow, Jct.spur to sites
I- 131.0	RAM LAKE (To bench)	2807	3	1	1	1	1 NS	1	NRFS	0.65	Ram Camp Meadow, Jct.spur to sites	Bench below and west of Ram Lake
I- 131.1	RAM LAKE (To Lake)	2807	3	1 NS	1	1	1	1	NRFS	0.70	Bench below and west of Ram Lake	Ram Lake, West end
I- 132.0	PACIFIC CREST NST	2000.3	4	3	4	3	3	3		19.55	INF/SNF @ Silver Pass	JM/AA Wilderness Boundary @ Red Cones
I- 133.0	LEE CREEK	2810	2	2	2	2	2	2		0.40	Jct.2902 (in SNF) (East of PCT Jct., W of Tully Lake)	"Sheep Camp"
I- 134.0	LEE CREEK	2810	2	1 NS	1 NS	2 NS	1 NS	1	NRFS	1.10	"Sheep Camp"	NE Lee Lake
I- 135.0	HORTENSE LAKE	2811	2	0	0	0	0	0		1.50	Jct.2000.3 PCT near Silver Pass	Hortense Lake
I- 136.0	TULLY LAKE	2902H	0	2	2	2	1 NS	1	NRFS	0.30	Jct.2902 North of Lake	Tully Lake, campsite
John Muir Southeast – Inyo NF												
I- 137.0	BAXTER PASS	3427	3	1 NS	1 NS	1 NS	1 NS	1	NRFS	6.32	JM Wilderness Boundary	INF Boundary @ Pass

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
I-138.0	BIRCH LAKE (lower)	3302	2	2	2	2	2	2		2.59	JM Wilderness Boundary	1/3 mile below Birch Lake (willows, rocky)
I-139.0	BIRCH LAKE (top .4 mile)	3302	2	1 NS	2	1	1 NS	1	NRFS	0.40	1/3 mile below Birch Lake (willows, rocky)	Birch Lake
I-140.0	NEW ARMY PASS	3513	3	3	3	3	3	3		4.79	Jct.3516 (@ Cottonwood Crk Xing)	INF Boundary @ Pass
I-141.0	COTTONWOOD LAKE #1 CUTOFF	3513A	3	3	3	3	2	2		0.30	Jct.3513 (east of Lake 1)	Jct.3516 (East of Lake 1)
I-142.0	COTTONWOOD LAKE #2 CUTOFF	3513B	0	2 NS	2 NS	2 NS	1 NS	2	NRFS	0.90	Jct.3513 (between Lks.1 & 2)	Jct.3516 (@ Lk.3)
I-143.0	COTTONWOOD LAKES	3516	4	3	3	3	3	3		2.83	GT/JM Wilderness Boundary	Jct.3513B @ Cottonwood Lake #3, North End
I-144.0	COTTONWOOD LAKES	3516	4	2	2	2	2	3		0.35	Jct.3513B @ Cottonwood Lake #3, North End	Cottonwood Lake #5
I-145.0	MUIR LAKE	3516C	3	2	2	2	2	2		0.60	Jct.3516	Muir Lake
I-146.0	CIRQUE LAKE	3523	1	3	3	3	2	2		0.47	Jct.3513	Jct.3523ANS (@ South Fork Creek crossing)
I-147.0	CIRQUE LAKE	3523	1	2	2	2	1	2		0.77	Jct.3523ANS (@ South Fork Creek crossing)	Cirque Lake
I-148.0	SOUTH FORK COTTONWOOD CREEK	3523A	2	2 NS	2 NS	2 NS	1 NS	2	NRFS	0.74	GT/JM Wilderness Boundary	Jct.3523
I-149.0	LITTLE COTTONWOOD CREEK	3610	1	2	2	2	2	2		0.21	GT/JM Wilderness Boundary	Jct.3516 (before Golden Trout Camp)
I-150.0	BAKER SUMMIT	3103	3	2	2	2	2	2		2.46	JM Wilderness Boundary	JM Wilderness Boundary
I-151.0	GOLDEN TROUT LAKE	3306	2	2 NS	2 NS	2 NS	1 NS	2	NRFS	1.86	JM Wilderness Boundary	Golden Trout Lake Outlet
I-152.0	GOLDEN TROUT LAKE NORTH SPUR	3306A	1	1 NS	1 NS	1 NS	1 NS	1	NRFS	0.94	Jct.3306 (no sign, 1.9m up 3306)	Upper, 2nd Lake
I-153.0	KEARSARGE PASS	3307	4	3	3	3	3	3		3.99	JM Wilderness Boundary	INF Boundary @ Pass
I-154.0	MATLOCK LAKE	3307B	3	2	3	3	2	2		0.57	Jct.3307 (tween Gilbert & Flower Lks.)	Matlock Lake

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
I-155.0	GRAND GROUP MINE	3315	2	1	2	2	2	1		1.50	JM Wilderness Boundary	Grand Group Mine
I-156.0	PARKER CANYON	3423	1	0	0	1	0	0		4.50	JM Wilderness Boundary	Parker Lakes
I-157.0	SARDINE LAKE	3425	1	1	1	1	1	1		5.00	Rd.13S17B @ Wild Boundary	Sardine Lake
I-158.0	TUTTLE CREEK ASHRAM	3521	2	2	2	2	2	NS	2	0.80	JM Wilderness Boundary	Monastery
I-159.0	DIAZ CREEK	3526	2	0	0	0	0	0	NRFS	3.50	JM Wilderness Boundary	INF Boundary
I-160.0	MEYSAN LAKES	3403	3	3 SP	3 SP	3 SP	3 SP	3	NA	3.64	JM Wilderness Boundary	Grass Lake (Signed), Meadow, Camps
I-161.0	MEYSAN LAKES	3403	3	2 SP	2 SP	2 SP	2 SP	2	NA	1.08	Grass Lake (Signed), Meadow, Camps	Meysan Lake
I-162.0	NORTH FORK BIG PINE CREEK	3205	4	3	3	3	3	3		5.11	JM Wilderness Boundary	Jct. 3205C/3205F @ 4th lake
I-163.0	NORTH FORK BIG PINE CREEK	3205	4	2	2	2	2	2		1.35	Jct. 3205C/3205F @ 4th lake	6th Lake - campsite
I-164.0	BLACK LAKE LOOP	3205C	3	3	3	3	2	2		1.65	Jct.3205 (near 1st Lake)	Jct.3205 (@ 4th Lake)
I-165.0	PALISADE GLACIER	3205D	2	2 NS	2 NS	2 NS	1 NS	2	NRFS	0.87	Jct.3205 (tween 3 & 4 Lake)	Sam Mack Meadows @ Cr Xing (jct. Use trl.)
I-166.0	PALISADE GLACIER	3205D	2	1 NS	1 NS	2 NS	1 NS	1	NRFS	1.09	Sam Mack Meadows @ Cr Xing (jct. Use trl.)	Moraine (trl.dissapates before glacier)
I-167.0	FOURTH LAKE CUTOFF	3205E	0	2	2	2	1 NS	1		0.20	Jct.3205C	Jct.3205
I-168.0	FIFTH LAKE SPUR	3205F	0	2	2	2	2	2		0.40	Jct.3205/3205C (@ 4th Lk.)	Jct.3205 (@ 5th Lk.)
I-169.0	SIXTH LAKE HIKER	3205G	0	1 NS	1 NS	1 NS	1 NS	1	NRFS	0.50	Jct.3205	Sixth Lake
I-170.0	SUMMIT LAKE	3205H	0	2	2	2	2	2		0.20	Jct.3205 (past 4 & 5 Lks.)	Summit Lake (large campsite)
I-171.0	JIGSAW PASS	3206	1	0	0	0	0	0		2.50	Jct.3205 near 5th Lake	Jct. 3104 (Bishop Pass)

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
I- 172.0	NORTH FORK LONE PINE CREEK	3404A	1	1 SP	1 SP	1 SP	1 SP	1	NA	3.88	Jct.3404 @ N.Fork Lone Pine Crk.	Iceberg Lake
I- 173.0	RED LAKE	3303	2	2	2	2	1 NS	2		3.39	JM Wilderness Boundary	Red Lake
I- 174.0	STECKER FLAT	3303A	2	1	1	2	1	1		1.47	JM Wilderness Boundary	Stecker Flat
I- 175.0	SAWMILL PASS	3401	3	2	2	2	1 NS	2		6.58	JM Wilderness Boundary	INF Boundary @ Pass
I- 176.0	SOUTH FORK BIG PINE CREEK	3207	3	2	2	2	1 NS	2		1.20	JM Wilderness Boundary	Willow Lake
I- 177.0	SOUTH FORK BIG PINE CREEK	3207	3	1 NS	1	2	1 NS	1	NRFS	1.22	Willow Lake	Brainard Lake
I- 178.0	SHEPHERD PASS	3402	2	2	2	2	2 NS	2		9.25	JM Wilderness Boundary	Edge of Moraine, rocky, loose and steep
I- 179.0	SHEPHERD PASS	3402	2	1	1	2	1 NS	1	NRFS	0.50	Edge of Moraine, rocky, loose and steep	INF Boundary @ Pass
I- 180.0	JUNCTION PASS	3402B	1	1 NS	1 NS	1 NS	0	1	NRFS	2.74	Jct.3402 (3/4m past "Anvil Camp")	INF Boundary @ Pass
I- 181.0	GEORGE CREEK	3422NS	1	0	0	0	0	0	NRFS	5.50	JM Wilderness Boundary	Williamson Lake
I- 182.0	TABOOSE PASS	3304	3	2	2	2	2 NS	2	NRFS	6.23	JM Wilderness Boundary	INF Boundary @ Pass
I- 183.0	SHINGLE MILL BENCH	3304A	2	1	0	1	0	0		1.68	Jct.3304 Taboose Pass)	Shingle Mill Bench
I- 184.0	MOUNT WHITNEY	3404	4	4 SP	4 SP	4 SP	3 SP	4	NA	7.84	JM Wilderness Boundary (near N.Fk Lone Pine Cr)	INF Boundary @ Trail Crest
Mono Creek, Rock Creek – Inyo NF												
I- 185.0	HILTON LAKES	2904	4	3	3	3	3	3		3.38	JM Wilderness Boundary	Jct.2942 (between 2nd & 3rd Lk.)
I- 186.0	PINE GROVE TO HILTON LAKES	2904A	0	2 NS	2 NS	2 NS	2 NS	2	NRFS	0.16	JM Wilderness Boundary	Jct.2904
I- 187.0	HILTON CUTOFF	2904B	0	0	0	0	0	0		0.77	Jct.2904	Jct.2904

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
I- 188.0	HILTON RIDGE	2904C	0	0	0	0	0	0		2.44	Jct.2904	Jct.2942 near Davis Lake
I- 189.0	MCGEE CREEK TO HILTON CREEK	2941	0	3	3	3	3	2		0.72	JM Wilderness Boundary	Jct.2942 (Hilton Creek Trl. Just into Wilderness)
I- 190.0	HILTON CREEK (to Jct above Lake 2)	2942	4	3	3	3	3	3		4.70	JM Wilderness Boundary	Hilton Lake Trail Jct above Lake 2
I- 191.0	HILTON CREEK (to 3rd Lake)	2942	4	2	3	3	2 NS	3		1.20	Hilton Lake Trail Jct above Lake 2	3rd Hilton Lake Outlet
I- 192.0	HILTON CREEK (to 4th Lake)	2942	4	2	2	2	2 NS	2		0.59	3rd Hilton Lake Outlet	Hilton Lake #4
I- 193.0	DAVIS LAKE SPUR	2942A	0	2	2	2	1	0		0.20	Jct.2942	Camps East of Inlet Creek
I- 193.1	DAVIS LAKE SPUR	2942A	0	2	2	2	1 NS	0		0.60	Camps East of Inlet Creek	Penninsula @ North end of Lake, across inlet creek
I- 194.0	MONO PASS	2901	4	3	3	3	3	3		3.27	JM Wilderness Boundary near Mack Lake	Mono Pass (INF Boundary)
I- 195.0	MONO PASS PACK STATION	2901A	0	3	3	3	3	3		0.32	JM Wilderness Boundary near Mack Lake	Jct.2901
I- 196.0	RUBY LAKE	2901B	3	2	2	2	2	2		0.30	Jct.2901 approx. 2 miles up/S	Ruby Lake
I- 197.0	LITTLE LAKES VALLEY	2912	3	3	3	3	3	3		3.09	Jct. 2901 (0.5 mile from TH)	Morgan Pass
I- 198.0	LONG LAKE SPUR	2912A	0	2	1	2	2	2		0.13	Jct.2912 (Morgan Pass) S end Long Lake	Camps, S side long Lake
I- 199.0	CHICKENFOOT LAKE	2912B	0	2	2	2	2	2		0.31	Jct.2912 (Morgan Pass) N end of Long Lake	Camps, S side Chickenfoot Lake
I- 200.0	GEM LAKES	2912C	3	2 NS	2	2	2 NS	2		0.39	Jct.2912 near Morgan Pass	Gem Lakes
I- 201.0	MORGAN PASS	2911	3	3	3	3	2	2		1.66	JM Wilderness Boundary	Morgan Pass
I- 202.0	TAMARACK LAKES	3003	3	3	3	3	2	2		2.57	JM Wilderness Boundary	Jct. Dorothy Lake Trail (# 3003F)
I- 203.0	TAMARACK LAKES	3003	3	2	2	2	2	2		1.35	Jct. Dorothy Lake Trail (# 3003F)	N end 2nd Tamarack Lake

Ref #		Trail Name	Trail #	Alt 1 TC	Alt 2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
I-	204.0	FRANCIS LAKE	3003E	3	2	2	2	2 NS	2	NRFS	0.80	Jct.3003 near Kenneth Lake	Francis Lake
I-	205.0	DOROTHY LAKE LOOP	3003F	3	2	3	3	2	2		2.77	JM Wilderness Boundary	Jct.3003 (S of Francis Lk. Jct.)

Sierra National Forest Trails

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
Ansel Adams West – Sierra NF												
S- 1.0	ROCK LAKE	26E02	1	1	1	1	1	1		0.15	String Meadow 26E04 (Sec. 22)	AA/JM Wild Boundary (Sec. 22)
S- 2.0	ROCK LAKE	26E02	1	1	1	1	1	1		0.49	AA/JM Wild Boundary (Sec. 24)	Rock Creek 26E25
S- 3.0	ROCK LAKE	26E02	1	2	2	2	2	2		0.50	Rock Creek 26E25	AA/JM Wild Boundary (Sec. 25)
S- 4.0	BOHNA'S COW CAMP	26E04A	1	0	0	0	0	0		2.00	String Meadow Trail 26E04	String Meadow Trail 26E04
S- 5.0	RUBE MEADOW	26E24	1	1	1	2	1	1		2.95	Ca. Riding & Hiking 24E03	Miller's Crossing 26E63
S- 6.0	ROCK CREEK	26E25	1	1	1	2	1	1		1.00	Ca. Riding & Hiking 24E03	String Meadow 26E04
S- 7.0	ROCK CREEK	26E25	1	2	2	2	2	2		3.82	String Meadow 26E04	Rock Lake 26E02
S- 8.0	BEAR MEADOW	26E26	1	2	2	2	2	2		1.58	Ca. Riding & Hiking 24E03	String Meadow 26E04
S- 9.0	RATTLESNAKE BRIDGE CUTOFF	26E52	1	1	1	1	1	1		2.27	Ca. Riding & Hiking 24E03	Tule Lake 27E70
S- 10.0	FOUR FORKS	26E55	1	2	1	2	1	1		3.29	Ca. Riding & Hiking 24E03	Rattlesnake Bridge Cutoff 26E52
S- 11.0	MILLER'S CROSSING	26E63	2	2	2	2	2	2	NRFS	5.00	Ca. Riding & Hiking 24E03	San Joaquin River/BL-HS Boundary
S- 12.0	MILLER'S CROSSING	26E63	2	2	2	2	2	2	NRFS	1.00	San Joaquin River/BL-HS Boundary	Cassidy Meadow 26E23
S- 13.0	MILLER'S CROSSING	26E63	2	1	1	2	1	1		6.00	Cassidy Meadow 26E23	String Meadow 26E04
S- 14.0	LONG CREEK	25E14	1	1	1	1	1	1		4.43	Chetwood Cabin 25E23	Camp north of Long Creek (Sec. 30)

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
S- 15.0	SNAKE MEADOW	25E20	2	2	2	2	2	2		1.87	Mammoth 26E01	Iron Creek 25E02
S- 16.0	MAMMOTH	26E01	3	3	3	3	2	2		9.75	Ansel Adams Wilderness Boundary	Sierra/Inyo Forest Boundary
S- 17.0	JUNCTION BUTTE	26E16	1	1	1	1	1	1	NRFS	2.36	Mammoth 26E01	San Joaquin River/BL-HS Boundary
S- 18.0	UPPER FRENCH	26E56	0	1	1	1	1	1	NRFS	3.39	Mammoth 26E01	Stairway Creek Sec. 30
S- 19.0	CHIQUITO PASS	23E01	3	2	3	3	2	2		0.35	Ansel Adams Wilderness Boundary	Yosemite NP Boundary
S- 20.0	CHIQUITO LAKE ACCESS	23E02	0	2	2	2	2	2		0.08	Ansel Adams Wilderness Boundary	Chiquito Lake @ Chiquito Pass 23E01
S- 21.0	QUARTZ MOUNTAIN - CHIQUITO	23E08	0	2	3	3	2	2		0.25	Ansel Adams Wilderness Boundary	Chiquito Pass 23E01 @ Yosemite Boundary
S- 22.0	GRAVEYARD CUTOFF	28E16	1	2	2	2	2	2		2.12	Goodale Pass 28E20	Devils Bathtub 27E03
S- 23.0	CORA LAKE SPUR	24E01A	0	1	2	2	2	1		0.50	Isberg 24E01 (Sec 20)	Isberg 24E01 (Sec 33)
S- 24.0	IRON CREEK	25E02	3	2	2	2	2	2		7.42	Mammoth 26E01	Stevenson 25E01
S- 25.0	CORA CREEK	25E04	2	2	2	2	2	2		4.16	Stevenson 25E01	Gauging Station Cabin (Sec. 5)
S- 26.0	CHETWOOD CABIN	25E23	3	2	3	3	2	2		2.11	Stevenson 25E01	Isberg 24E01
S- 27.0	HOLE	25E24	1	1	1	1	1	1		0.52	Ansel Adams Wilderness Boundary	Isberg 24E01
S- 28.0	SOUTH FORK	25E33	1	1	1	1	1	1	NRFS	0.93	Ansel Adams Wilderness Boundary	French 26E16
S- 29.0	HELL'S HALF ACRE	25E36	1	1	1	1	1	1	NRFS	0.03	Ansel Adams Wilderness Boundary	French 26E16
S- 30.0	FRENCH	26E16	2	2	2	2	2	2		7.59	Ansel Adams Wilderness Boundary	Ansel Adams Wilderness Boundary
S- 31.0	MONO HOT SPRINGS	27E25	1	1	1	2	1	1		1.27	Ansel Adams Wilderness Boundary	Ansel Adams Wilderness Boundary

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
S- 32.0	RATTLESNAKE CREEK	27E44	1	2	2	2	2	2		1.80	Ansel Adams Wilderness Boundary	Mono Crossing 27E33
S- 33.0	IRON LAKE	26E07	1	2	2	2	1	1		3.69	Mammoth 26E01	Iron Lake
S- 34.0	JACKASS LAKES	24E05	1	2	2	2	2	1		1.50	Ansel Adams Wilderness Boundary	Norris Lake 24E25
S- 35.0	JACKASS LAKES	24E05	1	1	1	1	1	1		0.63	Norris Lake 24E25	Upper Jackass Lake
S- 36.0	FERNANDEZ ACCESS	24E12	3	2	2	3	2	2		0.48	Ansel Adams Wilderness Boundary	Ca. Riding & Hiking 24E03
S- 37.0	NORRIS LAKE	24E25	3	3	3	3	3	3		1.75	Ansel Adams Wilderness Boundary	Jackass Lake 24E05
S- 38.0	CASSIDY MEADOW	26E23	1	1	1	1	1	1		1.70	Ca. Riding & Hiking 24E03	Millers Crossing 26E63
S- 39.0	RATTLESNAKE LAKE	26E27	0	1	1	1	1	1		0.23	Cassidy Meadow 26E23	Rattlesnake Lake
S- 40.0	STEVENSON	25E01	3	3	3	3	3	3		8.50	Isberg 24E01	Hemlock Crossing
S- 41.0	STEVENSON	25E01	3	2	2	2	2	2		2.00	Hemlock Crossing	Falls Camp just north of Stevenson Mdw.
S- 42.0	STEVENSON	25E01	3	1	1	1	1	1		1.00	Falls Camp just north of Stevenson Mdw.	Ritter Creek (Sec. 9)
S- 43.0	LILLIAN LAKE LOOP	24E04	3	3	3	3	3	3		5.66	South Junction CR&H 24E03 Sec.33	North Junction CR&H 24E03 Sec. 22
S- 44.0	LILLIAN ACCESS	24E04C	0	2	2	2	2	1		0.25	Lillian Lake 24E04	Lillian Lake
S- 45.0	RAINBOW LAKE	24E19	1	1	1	2	1	1		1.41	Ca. Riding & Hiking 24E03	Rainbow Lake
S- 46.0	FLAT LAKE	24E19A	0	1	1	1	1	1		0.25	Rainbow Lake 24E19	Flat Lake
S- 47.0	CALIFORNIA RIDING & HIKING (Fernandez Tr)	24E03	3	3	3	3	2	2		8.00	Yosemite NP Bdy @ Fernandez	Ansel Adams Wilderness Boundary
S- 48.0	CALIFORNIA RIDING AND HIKING	24E03	3	3	3	3	2	2	NRFS	4.30	Ansel Adams Wilderness Boundary	San Joaquin River/BL-HS Boundary

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
S-49.0	CALIFORNIA RIDING AND HIKING	24E03	3	2	3	3	2	2		1.50	San Joaquin River/BL-HS Boundary	Cassidy Meadow 26E23
S-50.0	CALIFORNIA RIDING AND HIKING	24E03	3	2	2	2	2	2		3.50	Cassidy Meadow 26E23	Heitz Meadow (Bear Mdw Jnct)
S-51.0	CALIFORNIA RIDING AND HIKING	24E03	3	2	1	2	2	2		8.50	Heitz Meadow (Bear Mdw Jnct)	Rattlesnake Crossing (SJ River)
S-52.0	CALIFORNIA RIDING AND HIKING	24E03	3	2	2	2	2	2		2.50	Rattlesnake Crossing (SJ River)	Ansel Adams Wilderness Boundary
S-53.0	ONION SPRINGS MEADOW	27E19.2	1	0	0	0	0	0		2.00	Warm Creek Trail	Wilderness Boundary near Onion Springs Rd
S-54.0	MONO MEADOW	27E21	2	3	3	3	2	2		3.08	Ansel Adams Wilderness Boundary	Ansel Adams Wilderness Boundary
S-55.0	CHINA CAMP	27E23	1	2	2	2	1	1		3.20	Mono Crossing 27E33	Warm Creek 27E46
S-56.0	MONO CROSSING	27E33	1	2	2	2	2	2		1.50	Ansel Adams Wilderness Boundary	Mono Crossing
S-57.0	MONO CROSSING	27E33	1	1	1	2	1	1		1.50	Mono Crossing	Tule Lake 27E70
S-58.0	MONO CROSSING	27E33	1	2	2	2	2	2		1.25	Tule Lake 27E70	Mono Meadow 27E21
S-59.0	WARM CREEK	27E46	1	2	2	2	1	1		1.49	Ansel Adams Wilderness Boundary	Tule Lake 27E70
S-60.0	TULE LAKE	27E70	2	2	2	2	2	2		1.25	Mono Meadow 27E21	Mono Crossing 27E33
S-61.0	TULE LAKE	27E70	2	1	1	2	1	1		3.00	Mono Crossing 27E33	Rattlesnake Bridge Cutoff 26E52
S-62.0	DORIS LAKE	27E71	2	3	3	3	3	3		0.23	Mono Meadow 27E21	Doris Lake
S-63.0	NORTH MONO CROSSING	27E73	1	1	1	2	1	1		2.17	China Camp 27E23	Mono Crossing 27E33
S-64.0	SODA SPRINGS	27E75	1	1	1	1	0	0		0.83	Ansel Adams Wilderness Boundary	Mono Meadow 27E21
S-65.0	ISBERG	24E01	3	3	3	3	3	3		9.52	Ansel Adams Wilderness Boundary	YNP Boundary

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
S- 66.0	MCCLURE LAKE	24E06	2	2	2	2	2	2		0.86	Isberg 24E01	McClure Lake
S- 67.0	TIMBER CREEK	24E13	2	2	2	2	2	2		5.26	Ca. Riding & Hiking 24E03	Joe Crane Lake 24E14
S- 68.0	JOE CRANE LAKE	24E14	3	2	2	3	2	2		1.34	Isberg 24E01	Joe Crane Lake
S- 69.0	VANDEBERG ACCESS	24E04A	0	2	1	2	1	1		0.10	Jct.Lillian Lake Trail (#24E04)-west	Vandeburg Lake, North Shore
S- 69.1	VANDEBERG ACCESS	24E04A	0	1 NS	1 NS	2	1 NS	1		0.09	Vanderburgh Lake, North Shore	Jct.Lillian Lake Trail (#24E04)-east
S- 70.0	STANIFORD LAKE	24E04B	0	2	2	2	2	0		0.25	Lillian Lake 24E04 Sec.30	"Big" Staniford Lake (west side)
S- 71.0	WALTON	24E20	3	2	2	3	2	2		0.26	Ansel Adams Wilderness Boundary	Ca. Riding & Hiking 24E03
S- 72.0	CHITTENDEN LAKE	24E23	1	1	1 NS	1	1 NS	1	NRFS	0.97	Lillian Lake 24E04	Chittenden Lake
S- 73.0	LADY LAKE	24E37	2	2	3	3	2	2		0.58	Lillian Lake 24E04	Lady Lake
S- 74.0	POST PEAK	24E02	3	3	3	3	2	2		4.87	Ca. Riding & Hiking 24E03	YNP Boundary
S- 75.0	SLAB LAKE	24E15	1	1	1	2	1 NS	1		2.17	Post Peak 24E02	Slab Lake
S- 76.0	RUTHERFORD LAKE	24E16	2	2	2	2	2	2		0.24	Anne Lake 24E38	Rutherford Lake
S- 77.0	POST CREEK	24E17	1	2	1	2	1	1		3.87	Timber Creek 24E13	Post Peak 24E02
S- 78.0	ANNE LAKE	24E38	2	2	2	2	2	2		0.62	Ca. Riding & Hiking 24E03	Anne Lake
Bishop/Humphreys – Sierra NF												
S- 79.0	MERRIAM LAKE	29E13	0	2	2	2	2 NS	2	NRFS	1.55	French Canyon 30E02	Merriam Meadow north end
S- 80.0	PILOT KNOB	29E16	1	0	0	0	0	0		2.00	French Canyon Trail 30E02	Piute Canyon Trail 30E01

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
S- 81.0	FRENCH CANYON	30E02	3	3	3	3	3	3		4.91	Piute Canyon 30E01	Pine Creek Pass Inyo N.F. Boundary
S- 82.0	L LAKE	30E02A	1	2	2	2	2	2		1.54	French Canyon 30E02	L Lake
S- 83.0	MOON LAKE CUTOFF	30E02B	2	0	0	2	0	0		0.50	L lake Trail	L Lake Trail
S- 84.0	LOWER HONEYMOON LAKE	29E49	0	1	1	1	1	1		0.80	Piute Canyon 30E01	Lower Honeymoon Lake
S- 85.0	PIUTE CANYON	30E01	3	3	3	3	3	3		11.26	PCT 20E00	Piute Pass Inyo NF Boundary
S- 86.0	MURIEL LAKE	30E01B	0	2	2	2	2	1		0.75	Piute Canyon 30E01	Muriel Lake
S- 87.0	GOLDEN TROUT LAKE	30E06	0	0	1	1	1	1		1.16	Piute Canyon 30E01 (Sec. 18)	Sierra Club Camp
S- 88.0	GOLDEN TROUT LAKE	30E06	0	0	3	3	3	2		1.16	Sierra Club Camp	Piute Canyon 30E01 (Sec. 20)
S- 88.1	GOLDEN TROUT LK - PIUTE CYN SPUR	30E06A	0	2	0	0	0	0		0.40	Piute Canyon 30E01	Camps at Golden Trout and Sierra Club Camp
S- 89.0	DESOLATION LAKE	30E03	1	1	1	2	1	1		2.24	Piute Canyon 30E01	Desolation Lake
S- 90.0	HUMPHREYS LAKE	30E04	1	1	1	1	1	1		2.11	Piute Canyon 30E01	Upper Humphrey's Lake
Fish Creek – Sierra NF												
S- 91.0	ROCK LAKE	26E02	1	1	1	1	1	1		1.60	AA/JM Wild Boundary (Sec. 22)	AA/JM Wild Boundary (Sec. 24)
S- 92.0	ROCK LAKE	26E02	1	2	2	2	2	2		1.83	AA/JM Wild Boundary (Sec. 25)	Margaret Lakes 26E03
S- 93.0	MARGARET LAKES	26E03	3	3	3	3	2	2		3.86	Ansel Adams Wilderness Boundary	AA/JM Wild Boundary
S- 94.0	MARGARET LAKES (to Big Margaret)	26E03	3	3	3	3	2	2		4.00	AA/JM WildBoundary	Big Margaret Lake
S- 95.0	MARGARET LAKES (Big Marg to Rainbow Outlet)	26E03	3	2 NS*	2	2	1 NS	1		1.25	Big Margaret Lake	Baby Lake

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
S- 96.0	MARGARET LAKES (Baby Lk - Silver Cr)	26E03	3	1 NS	1 NS	1	1 NS	1	NRFS	0.75	Baby Lake	Silver Creek 27E63
S- 97.0	STRING MEADOW	26E04	1	2	2	2	1	1		8.75	AA Wild Boundary	AA/JM Wilderness Boundary
S- 98.0	STRING MEADOW	26E04	1	2	2	2	1	1		2.25	AA/JM Wilderness Boundary	Silver Creek 27E63
S- 99.0	STRING MEADOW CUTOFF	26E66	0	1	1	1	0	0		0.40	String Meadow 26E04 (Sec. 15)	Rock Lake 26E02
S- 100.0	SHARKTOOTH LAKE	27E01	1	1	1	1	1	1	NRFS	2.92	Silver Creek 27E63	Silver Divide (sec 20)
S- 101.0	SHARKTOOTH LAKE	27E01	1	1 NS	1 NS	1	0	1	NRFS	1.00	Silver Divide (Sec 20)	Sharktooth Lake
S- 102.0	SHARKTOOTH LAKE	27E01	1	1	1	1	1	1	NRFS	5.58	Sharktooth Lake	Minnow Creek 27E02
S- 103.0	SILVER CREEK (Coyote Lk to Silver Cr Jct)	27E63	1	2	2	2	1	1		3.50	Margaret Lakes 26E03	String Meadow 26E04
S- 104.0	SILVER CREEK	27E63	1	1 NS	1 NS	1	1 NS	1	NRFS	3.00	String Meadow 26E04	Fish Creek 2622 Inyo Admin Boundary
S- 105.0	MINNOW CREEK	27E02	3	3	3	3	3	2		9.38	Fish Creek 2622 Inyo Admin Boundary	Goodale Pass 28E20
S- 106.0	CASCADE VALLEY CUTOFF	27E12	2	2	2	2	2	2		1.08	Minnow Creek 27E02	Fish Creek 2622 Inyo Admin Boundary
S- 107.0	LOST KEYS	27E13	1	1	1	2	1	1		0.51	Minnow Creek 27E02	Middle Lost Keys Lake
S- 108.0	PETER PANDE LAKE	27E14	2	2	2	2	2 NS	2	NRFS	1.80	Minnow Creek 27E02	Peter Pande Lake
S- 109.0	LONG CANYON	27E15	1	1 NS	1 NS	2	1 NS	1	NRFS	0.50	1/2 mile before Beetlebug Lake	Beetlebug Lake
S- 110.0	LONG CANYON	27E15	1	2	2	2	2	2		2.21	Minnow Creek 27E02	1/2 mile before Beetlebug Lake
S- 111.0	OLIVE LAKE	27E16	1	2	2	2	2	2		1.38	Minnow Creek 27E02	Olive Lake
S- 112.0	WILBUR MAY LAKE	27E68	2	2	2	2	2	2		0.48	Minnow Creek 27E02	Wilbur May Lake

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
S- 113.0	GOODALE PASS	28E20	3	2	3	3	2	2		1.20	Goodale Pass	PCT 20E00
Florence/Bear – Sierra NF												
S- 114.0	CIRQUE LAKE	28E23	0	1	1	1	1	1		7.00	Bear Creek 29E01	Cirque Lake
S- 115.0	SEVEN GABLES	28E08	2	1	2	2	2	2	NRFS	1.50	PCT 20E00	Mdw on west side of Sec 18
S- 116.0	SEVEN GABLES	28E08	2	1 NS	1 NS	1	1 NS	1	NRFS	1.00	Mdw on west side of Sec 18	Lower Seven Gables Lake
S- 117.0	CORBETT LAKE	27E69	1	2	2	2	2	2		1.07	John Muir Wilderness Boundary	Corbett Lake
S- 118.0	CRATER LAKE	27E05	1	3	3	3	2	2		2.30	John Muir Wilderness Boundary	Dutch Lake
S- 118.1	CRATER LAKE	27E05	1	2	3	3	2	2		1.20	Dutch Lake	Crater Lake
S- 119.0	HOT SPRINGS PASS	27E20	1	2	2	2	1	1		3.00	John Muir Wilderness Boundary (Sec. 5)	John Muir Wilderness Boundary (Sec. 34)
S- 120.0	HOT SPRINGS PASS	27E20	0	2	2	2	1	1		4.29	John Muir Wild Bdy (Sec. 35 near Summit Lake)	Florence Lake 27E81
S- 121.0	DUTCH OVEN	27E52	1	2	2	2	1	1		6.11	Crater Lake 27E05	Hot Springs Pass 27E20
S- 122.0	SUMMIT LAKE	27E67	1	1	1	1	0	0		4.00	Hot Springs Pass 27E20	Hot Springs Pass 27E20 @ Summit Lake
S- 123.0	FLORENCE FERRY	28E25	1	2	2	2	2	2		0.42	John Muir Wilderness Boundary	Florence Lake 27E81
S- 124.0	LAKE CAMP	26E40.04	1	0	0	0	0	0		1.50	Dusy-Ershim OHV trail	Lakecamp Lake
S- 125.0	HELL HOLE	27E04	1	2	2	2	1 NS	0		0.99	John Muir Wilderness Boundary	Hell Hole Meadow
S- 126.0	POISON MEADOW	27E26	0	1	1	1	1	0		1.55	John Muir Wilderness Boundary	Cirque Lake 28E23
S- 127.0	HOOPER DIVERSION	28E45	1	2	2	2	1 NS	1		4.98	John Muir Wilderness Boundary	Gordon Lake

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
S- 128.0	LAKE ITALY	29E08	2	2	2	2	2	2		1.20	PCT 20E00	Hilgard Meadow
S- 129.0	LAKE ITALY	29E08	2	1 NS	1 NS	2 NS	1 NS	1	NRFS	5.34	Hilgard Meadow	Italy Pass (Sierra/Inyo Forest Boundary)
S- 130.0	FLORENCE LAKE	27E81	3	3	3	3	3	3		8.96	John Muir Wilderness Boundary	PCT 20E00
S- 131.0	BLAYNEY HOT SPRINGS	27E81A	0	2	0	3	2	2		0.50	Florence Lake 27E81	South Fork San Joaquin River (Sec. 14)
S- 132.0	SALLIE KEYES CUTOFF (Muir Trail Ranch - PCT)	30E09	2	3	3	3	3	3		0.62	Florence Lake 27E81	PCT 20E00
S- 133.0	PACIFIC CREST TRAIL	20E00	4	3	4	3	3	3		15.00	Sequoia/Kings NP Boundary	Kip Camp, Bear Creek jct
S- 134.0	ROSE LAKE	28E19	2	2	2	2	2	2		1.37	PCT 20E00	Rose Lake
S- 135.0	SANDPIPER LAKE	28E24	2	2	2	2	2	2		0.50	PCT 20E00	Lou Beverly
S- 136.0	SANDPIPER LAKE	28E24	2	2 NS*	1	2	1 NS*	1		1.29	Lou Beverly	Sandpiper Lake
John Muir Southwest – Sierra NF												
S- 137.0	BLACKCAP	29E03	3	3	3	3	3	3		11.00	John Muir Wilderness Boundary	Bench Valley 29E25
S- 138.0	BLACKCAP	29E03	3	2	2	2	2	2		4.50	Bench Valley 29E25	Portal Lake
S- 139.0	WOODCHUCK	29E04	3	3	3	3	3	3		12.16	John Muir Wilderness Boundary	Halfmoon Cutoff 29E27
S- 140.0	WOODCHUCK	29E04	3	2	2	2	2	2		3.25	Halfmoon Cutoff 29E27	Blackcap 29E03 sec 22
S- 141.0	BENCH VALLEY	29E25	2	2	2	2	2 NS	2	NRFS	4.79	Blackcap 29E03	Horsehead Lake
S- 142.0	HALFMOON CUTOFF	29E27	1	3	3	3	2	2		2.12	Woodchuck 29E04	Blackcap 29E03
S- 143.0	CROWN BASIN	29E09	1	1	1	1	1	1		1.00	Blackcap 29E03	Crown Basin Sec. 26

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
S- 144.0	COYOTE PASS (to mdw below pass)	29E31	1	2	2	2	2	2		6.64	Crown Valley 29E06	Mountain Meadow
S- 145.0	CROWN VALLEY	29E06	3	3	3	3	3	3		4.00	John Muir Wilderness Boundary	Tehipite 29E45
S- 146.0	CROWN VALLEY	29E06	3	2	2	2	2	2		6.00	Tehipite 29E45	Crown Lake (Sec. 29)
S- 147.0	CROWN VALLEY	29E06	3	3	3	3	3	3		1.50	Crown Lake (Sec. 29)	Woodchuck 29E04 (at Crown Pass)
S- 148.0	DUCK LAKE	28E03	1	2	2	2	2	2		0.68	Cabin 29E39	Duck Lake
S- 149.0	HOFFMAN MOUNTAIN	28E41	1	2	2	2	2	2		1.53	Cabin 29E39	John Muir Wilderness Boundary
S- 150.0	CHAIN LAKES	29E33	1	2	2	2	2	2		1.60	Cabin 29E39	Chain Lakes
S- 151.0	REDDYS HOLE	28E30	1	1	1	1	1 NS	1		6.82	Burnt Corral 27E06/Thompson Lake Jct	Mosquito Pass 29E35
S- 152.0	RAE LAKE	29E19	1	2	2	2	2	2		0.26	Mosquito Pass 29E35	Rae Lake
S- 153.0	MOSQUITO PASS	29E35	1	2	2	2	2 NS	2	NRFS	2.93	Hell for Sure 29E52	Upper Indian Lake
S- 154.0	DALE LAKE	29E52A	0	2	2	2	2	2		0.65	Hell for Sure 29E52	Dale Lake
S- 155.0	BURNT CORRAL	27E06	1	2	2	2	1	1		4.00	Blackcap 29E03	Thompson Lake 29E57 at Reddy's Hole Jct.
S- 156.0	HOBLER LAKE	28E44	1	2	2	2	2	2		1.77	Blackcap 29E03	Burnt Corral 27E06
S- 157.0	THOMPSON LAKE	29E57	1	2	2	2	1	1		5.59	Florence Lake 27E81	Burnt Corral 27E06 at Reddy's Hole Jct.
S- 158.0	MEADOW BROOK	29E21	1	2	2	2	2	2		5.93	Blackcap 29E03	Hell For Sure 29E52
S- 159.0	HELL FOR SURE	29E52	2	2	2	2	2	2		5.00	Blackcap 29E03	Disappointment Lake
S- 160.0	HELL FOR SURE	29E52	2	2	2	2	2	2		1.00	Disappointment Lake	Hell For Sure Lake

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
S- 161.0	HELL FOR SURE	29E52	2	1 NS	1 NS	1	1 NS	1	NRFS	0.84	Hell for Sure Lake	Kings Canyon NP Bdy (Hell For Sure Pass)
S- 162.0	UPPER GERALDINE	28E14	1	1	1	1	1	1		0.49	Spanish Loop 28E12	Upper Geraldine Lake
S- 163.0	OBELISK	28E43	1	1	1	1	0	0		0.57	Spanish Loop 28E12	John Muir Wilderness Boundary
S- 164.0	RODGERS CREEK	29E05	1	1	1	2	1	1		1.97	Spanish Loop 28E12	Tehipite 29E45
S- 165.0	BLUE CANYON	29E30	1	2	2	2	2	2		3.20	Crown Valley 29E06	Kings Canyon Nat. Park Boundary
S- 166.0	TEHIPITE	29E45	2	2	2	2	2	2		2.86	Crown Valley 29E06	Kings Canyon Nat. Park Boundary
S- 167.0	MARSH LAKE	28E39	1	2	2	2	2	2		0.80	Woodchuck 29E04	Marsh Lake
S- 168.0	CHUCK PASS	29E37	2	2	2	2	2	2		4.44	Crown Valley 29E06	Cabin 29E39
S- 169.0	WOODCHUCK LAKE LOOP	29E38	2	2	2	2	2 NS	2		4.02	Woodchuck 29E04 Sec. 27	Woodchuck 29E04 Sec. 25
S- 170.0	CABIN	29E39	1	2	2	2	2	2		3.02	Woodchuck 29E04	Chain Lakes 29E33
S- 171.0	CABIN	29E39	1	1	1	1	1	1		1.75	Chain Lakes 29E33	Crown Valley 29E06
S- 172.0	SPANISH LAKE	28E09	1	2	2	2	1	1		1.34	Spanish Loop 28E12	End of Spanish OHV Route 11S07A
S- 173.0	TWIN LAKES	28E10	1	1	1	1	1	1		0.85	Spanish Lake 28E09	Twin Lakes
S- 174.0	SPANISH LAKE LOOP	28E12	1	2	2	2	2	2		6.31	Satham 28E40	Crown Valley 29E06
S- 175.0	STATHAM	28E40	1	2	2	2	2	2		3.70	John Muir Wilderness Boundary	Crown Valley 29E06
Mono Creek, Rock Creek – Sierra NF												
S- 176.0	BEAR CREEK (to Twin Falls)	28E01	3	2	3	3	2 NS	2	NRFS	2.56	John Muir Wilderness Boundary	Twin Falls

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
S-176.1	BEAR CREEK (Twin Falls to PCT)	28E01	3	2 NS*	3	3	2 NS	2	NRFS	3.60	Twin Falls	PCT 20E00
S-177.0	BEAR RIDGE	28E17	2	3	3	3	2	2		4.90	John Muir Wilderness Boundary	PCT 20E00
S-178.0	BEAR CREEK CUTOFF	28E26	2	3	3	3	2	2		2.66	John Muir Wilderness Boundary	Bear Cr 28E01
S-179.0	PACIFIC CREST TRAIL	20E00	4	3	4	3	3	3		12.00	Kip Camp, Bear Creek jct	Silver Pass Inyo Admin Boundary
S-180.0	DEVILS BATHTUB	27E03	2	2	2	2	2	2		2.89	Ansel Adams Wilderness Boundary	John Muir Wilderness Boundary
S-181.0	DEVILS BATHTUB	27E03	2	2	2	2	2	2		1.35	John Muir Wilderness Boundary	Devil's Bathtub (Outlet)
S-182.0	HIGH SIERRA PACK STATION	29E01A	0	3	3	3	3	1		0.50	Ansel Adams Wilderness Boundary	Ansel Adams Wilderness Boundary
S-183.0	GOLDEN LAKE	29E10	2	2 NS	2 NS	2 NS	2 NS	2	NRFS	0.81	Mono Creek 29E01	Golden Lake
S-184.0	FOURTH RECESS LAKE	29E41	0	2	2	2	2	2		0.51	Mono Creek 29E01	4th Recess Lake
S-185.0	THIRD RECESS LAKE	29E48	1	1 NS	1 NS	2 NS	1 NS	1	NRFS	1.45	Mono Creek 29E01	3rd Recess Lake
S-186.0	GRAVEYARD LAKES (Lower Lake)	28E15	3	2	2	2	2 NS	2		0.94	Goodale Pass 28E20	1st Graveyard Lake - North End
S-187.0	UPPER GRAVEYARD LAKES	28E15A*	3	2 NS	0	1	1 NS	1	NRFS	0.70	1st Graveyard Lake - North End	Upper (largest) Graveyard Lake
S-188.0	ARROWHEAD LAKE	28E20A	0	2	1	2	2 NS	2		1.50	Goodale Pass 28E19	Arrowhead Lake
S-189.0	FEATHER LAKE	28E20B	0	1	1	1	0	0		1.00	Arrowhead Lake	Feather Lake
S-190.0	MONO CREEK	29E01	3	3	3	3	3	3		0.19	Ansel Adams Wilderness Boundary	Ansel Adams Wilderness Boundary
S-191.0	MONO CREEK	29E01	3	3	3	3	3	3		1.11	John Muir Wilderness Boundary	PCT 20E00 (Sec 21)
S-192.0	MONO CREEK	29E01	3	3	3	3	3	3		11.15	PCT 20E00 (Sec 16)	Mono Pass/Forest Boundary

Ref #	Trail Name	Trail #	Alt 1 TC	Alt2 Mod. TC	Alt 2 TC	Alt 3 TC	Alt 4 TC	Alt 5 TC	NRFS Alts 2-5	Seg Mile	Beginning Termini	End Termini
S- 193.0	HOPKINS PASS	29E07	2	2	2	2	2	2		2.80	Mono Creek 29E01	Meadow - 1 mile below pass
S- 193.1	HOPKINS PASS	29E07	2	2	0	0	0	0		0.50	Meadow - 1 mile below pass	Lake 1/2 mile below pass
S- 193.2	HOPKINS PASS	29E07	2	1 NS	0	0	0	0		0.50	Lake 1/2 mile below pass	Hopkins Pass
S- 194.0	HOPKINS LAKE SPUR	29E22	2	2	2	2	2	2		0.66	Hopkins 29E07	Lower Hopkins Lake
S- 195.0	LAUREL LAKE	28E21	2	2	2	2	2	2		1.90	Mono Creek 29E01	Laurel Creek Meadow (Sec. 1)
S- 196.0	LAUREL LAKE	28E21	2	1	1	1	1	1		1.00	Laurel Creek Meadow (Sec.1)	Laurel Lake
S- 197.0	GRINNELL LAKE	28E21A	2	0	0	0	0	0		0.50	Laurel Lake 28E21	Grinnell Lake
S- 198.0	PIONEER BASIN (Mono Cr to Mudd Lk)	29E47	3	2	2	2	2	1		1.50	Mono Creek 29E01	Mudd Lake
S- 199.0	PIONEER BASIN (to camps NE of lake.)	29E47	2	2	0	2	2	2		0.50	Mudd Lake	Campsite at "camp meadow" NE of Lake.
S- 200.0	PIONEER BASIN (Westside)	29E47A	3	2 NS*	2	2	2	1		0.75	Mudd Lake	Lake 10,840
S- 200.1	PIONEER BASIN (Westside)	29E47A	3	1 NS*	1	1	1 NS	1		0.75	Lake 10,840	Pioneer Basin 3rd Lake (10,862)
S- 201.0	UPPER PIONEER CUTOFF	29E47C	3	1 NS	0	2	1 NS	1		1.00	Campsite at "camp meadow"	Lake 10,862 (3rd Lk)
S- 202.0	SECOND RECESS	28E22	2	2	2	2	2	1	NRFS	1.56	Mono Creek 29E01	South end of Meadow
S- 203.0	GOODALE PASS	28E20	3	3	3	3	3	2		4.50	Ansel Adams Wilderness Boundary near Edison Lk	Graveyard Lakes 28E15
S- 204.0	GOODALE PASS	28E20	3	2	3	3	2	2		2.20	Graveyard Lakes 28E15	Goodale Pass
S- 205.0	MOTT LAKE	28E13	3	2	2	2	2	1	NRFS	1.92	PCT 20E00	Mott Lake
S- 206.0	VOLCANIC KNOB	28E18	0	2	2	2	2	2		1.00	PCT 20E00	Volcanic Knob at snow survey cabin
S- 207.0	VOLCANIC KNOB	28E18	0	1	1	1	1	1		1.10	Volcanic Knob at snow survey cabin	Lake 10,800

Table 2.27 Use Trails

Ref #	Use Trail Name	UT ID#	Est. Miles	Alt 1	Alt 2 Mod	Alt 2	Alt 3	Alt 4	Stipulation/Clarifier
Ansel Adams East									
UT 1	Lower Rainbow Falls (bench south of Rainbow Falls,	CCD02	1.75	A	P	P	P	P	
UT 2	Lion Point Trail to creek 3/4 mile east (Old French Trail)	CCD04	0.66	A	A	A	A	P	For hunting season only
UT 3	Deer Lake Camp spur	CCD08	0.23	A	A	A	A	A	Inherent Camp Trail
UT 4	Holcomb Lake - from outlet Holcomb to grazing area west of Holcomb	KNG01	0.30	SYS	P	P*	P*	P	* until use trail is stabilized or rerouted
UT 5	Deadhorse Lake	MIN01	0.61	SYS	P	P	P	P	
UT 6	San Joaquin Peak	RIH01	2.83	A	A	A*	SYS	P	For hunting season only
UT 7	Badger Lake Meadow	RIH02	0.25	A	A	A	A	A	Grazing Access
UT 8	Crest Creek	RUS01	1.89	A	A	A	A	P	For hunting season only
UT 9	Lost Lake	RUS02	1.69	A	A	A	A	P	For hunting season only
UT 10	Weber to Sullivan Lake	RUS03	0.34	P	P	P	P	P	
UT 11	Crest Creek bypass	RUS08	1.45	P	P	P	P	P	
UT 12	Clarice Lake (from the John Muir Trail)	SHE01	0.19	A	A*	A	P	P	*Approved for limited use.
UT 13	Upper Ediza Use Trail - to meadows west of lake	SHE05	0.37	P	P	P	P	P	
UT 14	Garnet campsite to Emerald Lake (former John Muir trail)	THI01	1.22	A	SYS*	P	SYS	P	*NSCS
UT 15	Trail to grazing at inlet of Garnet Lake	THI02	0.69	A	P	P	P	P	
UT 16	Marie Lakes meadow (grazing access, Donohue camp to Marie Mdw)	URU02	0.38	A	P	P	P	P	
UT 17	Upper Davis Lake	URU04	0.82	P	P	P	P	P	
UT 18	Davis Lake to Rodgers Lake (grazing access)	URU05	0.62	A	A*	A	A*	P	*Identify best route to grazing.
Ansel Adams West									
UT 19	Rock Creek Trail to Rube Meadow Trail along Rock Creek	ARC01	0.96	P	A	A	A	P	
UT 20	"No name"/"Tule" Lake	ARC02	0.55	P	A	A	A	A	
UT 21	Rockbound Lake	BEC01	1.68	A	P	P	P	P	

Ref #	Use Trail Name	UT ID#	Est. Miles	Alt 1	Alt 2 Mod	Alt 2	Alt 3	Alt 4	Stipulation/Clarifier
UT 22	Straube/Spano Meadow to Iron Lake trail	CAR01	1.89	A	A	A	A	P	
UT 23	East Fork Cargyle Creek	CAR02	1.71	P	P	P	P	P	
UT 24	Lost Lake (Stevenson Tr. To Lost Lake)	COR01	0.84	P	A	NA	A	P	
UT 25	Pine Flat	JUN01	1.28	A	A	A	A	A	
UT 26	Dike Creek	LAC01	0.51	A	A	A	A	A	
UT 27	Fernandez Pass Trail to Fernandez Lake	LIL02	0.53	A	A	A	A	P	
UT 28	Flat to Monument Lakes	LIL04	0.39	P	A	A	A	P	
UT 29	Onion Springs road to John Muir Wilderness boundary east of Saddle Mtn	ONS01	3.56	A	A	A	A	P	For hunting season only
UT 30	Devil's Bathtub Cutoff	ONS02	1.81	P	A	A	A	A	(1 hour trail ride)
UT 31	Saddle Mountain Cutoff (shortcut from packstation to approved use trail)	ONS03	1.96	P	P	NA	P	P	
UT 32	High Sierra Pack Station to Twin Meadow	ONS04	1.37	P	A	A	A	P	Onion Springs Road to Devil's bathtub trail
UT 33	Trail to Staniford Lake over saddle from Lillian Trail near Vandenberg.	STA01	0.27	A	P	P	P	P	Allow access via Lillian Lake Loop system trail.
UT 34	Anne Lake Grazing (north of lake)	TRD01	0.18	P	A	A	A	A	
UT 35	Post Creek to Timber Creek Trail.	TRD02	1.37	P	A	A	A	P	Low use to avoid well-defined trail forming.
UT 36	Post Creek (Post Creek Trail 24E17 to campsite #31 elev. 9045)	TRD04	0.32	P	A	NA	A	P	
Bishop/Humphreys									
UT 37	Hurd Lake	BIS02	0.42	A	A	A	A	A	
UT 38	Ledge Lake (past Saddlerock)	BIS03	0.27	P	P	P	P	P	
UT 39	Long Lake camp spur	BIS04	0.27	A	A	A	A	A	
UT 40	Margaret Lakes	BIS06	0.38	P	P	P	P	P	
UT 41	Ruwau Lake (from Bishop Pass trail to upper/south side of lake)	BIS07	0.17	P	P	P	P	P	
UT 42	Timberline Tarn	BIS08	0.07	A	P	P	P	P	
UT 43	Saddlerock Lake campsites	BIS09	0.18	A	A	A	A	P	Only to camps, not to Ledge Lake
UT 44	Bishop Pass trail bypass (old Bishop Pass Trail at lower canyon)	BIS10	0.41	P	P	P	P	P	
UT 45	Eastern/Northern trail paralleling Merriam Creek	FRE02	1.02	P	P	P	P	P	West/Southern of two routes is system trail.

Ref #	Use Trail Name	UT ID#	Est. Miles	Alt 1	Alt 2 Mod	Alt 2	Alt 3	Alt 4	Stipulation/Clarifier
UT 46	Upper Merriam (from meadow to lake)	FRE03	0.59	A	P	P	P	P	
UT 47	Shepherd Lake (Lower French Cyn)	FRE07	1.58	A	P	NA	P	P	
UT 48	Merriam Lake to La Salle Lake	FRE08	1.28	P	P	P	P	P	
UT 49	Royce Lake	FRE11	2.48	A	A	A	A	P	
UT 50	L Lake to Steelhead Lake (from Moon Lake Trail on east side of L Lake)	FRE16	1.19	P	P	NA	P	P	
UT 51	Steelhead Lake to junction in French Canyon	FRE18	1.25	P	P	P	P	P	
UT 52	Puppet, Star, Rust use trails	FRE25	3.59	P	P	P	P	P	
UT 53	Puppet, Paris to Chevaux Lakes	FRE26	2.10	P	P	P	P	P	Southside of Puppet
UT 54	Alsace Lake	FRE27	0.43	A	P	P	P	P	
UT 55	Paris Lake to Roget Lake	FRE29	1.09	P	P	P	P	P	
UT 56	Merriam Lake use trail on south/west side of creek from French Canyon Trail	FRE40	1.08	A	SYS	SYS	SYS	SYS	
UT 57	Pine Cr Pass to French Lake	FRE54	0.89	A	A	A	A	P	
UT 58	French Lake to junction at French Canyon	FRE60	1.20	P	P	P	P	P	
UT 59	Lower Honeymoon from 30E01 (Piute Trail) to lake	GLA01	0.80	A	SYS	SYS	SYS	SYS	
UT 60	Packsaddle Lake	GLA02	1.09	A	A	A	A	P	
UT 61	Golden Trout Lake spur trails to designated campsites	GLA05	0.45	A	A	A	A	A	Designate best access to camp sites
UT 62	Muriel Lake from Piute Pass	GLA14	0.76	A	SYS	SYS	SYS	SYS	
UT 63	Goethe Lake	GLA15	1.16	P	P	P	P	P	
UT 64	Wahoo Lake	GLA17	0.74	P	A*	A*	A*	P	*Low use to avoid well-defined trail forming.
UT 65	Chalfant	GRP01	0.56	P	P	P	P	P	
UT 66	Sonny Boy Mine	HOR01	1.86	A	A	A	A	P	
UT 67	Upper Horton Lake	HOR03	1.97	P	P	P	P	P	
UT 68	Hanging Valley mine (abandoned mining roads)	HOR07	4.61	A	A	A	P	P	
UT 69	Tomahawk Lake to Knob Lake	HUM 29	1.15	A	P	P	P	P	
UT 70	Piute Canyon Trail to Tomahawk Lake	HUM30	0.75	P	A*	A*	A*	P	*Low use to avoid well-defined trail forming.

Ref #	Use Trail Name	UT ID#	Est. Miles	Alt 1	Alt 2 Mod	Alt 2	Alt 3	Alt 4	Stipulation/Clarifier
UT 71	From Desolation Lake Trail to Tomahawk Lake (via Mesa Lake)	HUM35	1.55	A	A*	A*	A*	P	*Low use to avoid well-defined trail forming.
UT 72	Birchim Lake	PIN01	0.31	P	P	P	P	P	
UT 73	Lower Pine Lake Trail to campsites at outlet	PIN05	0.11	A	A	A	A	A	
UT 74	Piute Lake North shore campsites	PIU01	0.20	A	A	A	A	A	
UT 75	Piute Snow Survey cabin	PIU02	0.15	A	A	A	A	A	
UT 76	Dingleberry Lake to Fishgut Lake	SAB01	0.99	P	P	P	P	P	
UT 77	Blue Lake Inlet to Donkey Lake (following creek to Donkey Outlet)	SAB04	0.49	P	P	P	P	P	
UT 78	Donkey Lake to Baboon Lake (paralleling the Baboon outlet creek)	SAB08	0.51	P	P	P	P	P	
UT 79	Blue Lake Inlet camps	SAB09	0.12	A	A	A	A	A	Only to bench camps - not to inlet stream
UT 80	Topsy Turvy Lake from Hungry Packer Trail (across slabs)	SAB10	0.13	A	P	A	A	P	
UT 81	Treasure Lakes camps	TRS01	0.17	A	A	A	A	A	Inherent Camp Trail
Fish Creek, Convict, McGee									
UT 82	Pond Lily Lake	CAS01	0.67	A	A	A	A	A	Low use to avoid well-defined trail forming.
UT 83	2nd Crossing campsite	CAS04	0.11	A	A	A	A	A	Campsite only; Not to grazing area
UT 84	PCT to campsites at Cascade bench (south of Duck Lake from PCT)	CAS05	1.12	A*	P	P	P	P	*Approved to hunting camp
UT 85	Duck Pass snow bypass	COD03	0.04	A	A	A	A	A	for snow bypass only
UT 86	Genevieve Outlet camp	CON04	0.46	A	P	A	A	P	Campsite not approved in Alt 2 Modified
UT 87	Cloverleaf use trail (North of creek)	CON05	0.38	A*	P	A*	P	P	*until system trail repaired.
UT 88	Bighorn Lake	CON07	1.33	P	P	P	P	P	
UT 89	Mildred - Bright Dot	CON08	0.77	P	P	P	P	P	
UT 90	Rainbow Lake to Sedge Lake	MAR01	0.42	P	P	P	P	P	
UT 91	Saddle Mtn Trail - John Muir boundary to Fern Lake	MAR02	1.75	P	P	P	P	P	Other (south) half approved in ONS AU
UT 92	Tobacco Flat	MCG01	2.21	A	A	A*	A	A*	*For hunting season only
UT 93	Baldwin Cutoff	MCG02	0.19	A	SYS	A*	A*	P	Until McGee/Steelhead junction repairs.
UT 94	Round Lake campsite	MCG03	0.10	A	A	A*	A*	P	*Approve new route to relocated campsite

Ref #	Use Trail Name	UT ID#	Est. Miles	Alt 1	Alt 2 Mod	Alt 2	Alt 3	Alt 4	Stipulation/Clarifier
UT 95	Meadow Lake from Steelhead Trail	MCG04	0.34	P	A*	A*	A*	P	* Do not approve use beyond (to Golden Lake)
UT 96	"CCC Camp" site access	MCG08	0.10	A	A	A	P*	P*	
UT 97	Duck Lake Camp (Northside spur)	PPB01	0.59	A	P	A	P	P	
UT 98	Purple Bench Shortcut between PCT and Cascade Trail near Purple outlet	PPB08	0.22	P	P	P	P	P	
UT 99	Ram to Franklin Lakes	PPB13	1.94	P	P	P	P	P	
UT 100	Ram to Virginia Lakes	PPB14	2.77	P	P	P	P	P	
UT 101	Brave Lake trail (from near Grassy Lake)	SIL04	1.00	A	A	A	A	P	
UT 102	Olive Lake Bench	SIL08	0.26	P	A*	P	A*	P	*to grazing only
UT 103	Peter Pande Tarn	SIL13	0.77	P	A	P	P	P	Limited use
UT 104	Pick and Shovel Mine	SIL14	0.16	A	A	A	A	A	
UT 105	Goodale Pass Bypass (Toward Lake of Lone Indian)	SIL15	0.47	P	A*	A*	A*	P	*Snow bypass only
UT 106	Grassy Lake Box Canyon Grazing Access (from lower Peter Pande Tr)	SIL16	0.40	P	A*	NA	A*	P	*Accesses grazing. Limited use until Peter Pande Tr stabilized.
UT 107	Papoose Lake to Lake of Lone Indian on East side of creek	SIL17	0.17	P	P	P	P	P	
UT 108	North side of Tully Hole meadow	UFC01	0.24	P	P	A*	A*	P	(Camp Access)
UT 109	Cecil Lake (above Lee Lake)	UFC02	1.35	P	P	P	P	P	No access provided to Lee Lake
UT 110	Red and White Lake	UFC07	0.81	P	P	A*	A*	P	Limited use for base camp day rides
UT 111	Tully Lake use trail along outlet creek from McGee Trail	UFC08	0.16	A	P	P	P	P	System trail to Tully Lk camps from North/east.
Florence/Bear									
UT 112	Cirque Lake	APO05	7.56	A	SYS	SYS	SYS	SYS	
UT 113	Depressed Lake (from Cirque Lake Trail)	APO02	2.07	P	A	A	A	P	
UT 114	Apollo/Orchid Lake from Pacific Crest Trail (PCT) to Apollo Lake	APO04	1.77	P	A	A	A	P	Limited Use
UT 115	Corbett Lake Trail to Cunningham Lake	BOL01	1.45	P	A	A	A	P	For hunting season only
UT 116	Kings Castle	BOL02	2.59	P	A	A	A	P	For hunting season only
UT 117	Dutch Oven Meadow to Summit Lake	DUT01	1.30	P	A	A	A	A	
UT 118	Lost Lake to Thompson Lake	DUT02	1.37	P	A	A	A*	A*	*Only south part approved

Ref #	Use Trail Name	UT ID#	Est. Miles	Alt 1	Alt 2 Mod	Alt 2	Alt 3	Alt 4	Stipulation/Clarifier
UT 119	Dutch to Hidden Lake	DUT03	0.33	A	A	A	A	P	
UT 120	Ershim Lake (Lower to Upper lake)	ERS01	0.54	A	P	P	P	P	
UT 121	Heather Lake use trail	FLE01	1.24	P	A	A	A	P	Limited Use
UT 122	Infant Buttes use trail	HOO02	0.42	P	A	A	A	P	For hunting season only
UT 123	Senger Creek to Turret Lake (southern of two routes)	NPT01	3.12	P	A	NA	A*	P	*Approve only NPT01 (southern route)
UT 124	Tombstone	SAK01	2.21	P	A	A	A	P	For hunting season only
UT 125	Hot Springs Pass Trail to Blayney Meadow	SAK03	3.51	P	A	A	A	P	
UT 126	Sallie Keyes Cutoff use trail	SAK04	1.89	P	P	P	P	P	
UT 127	Senger Creek from PCT to Deer Camp west of creek/mdw	SAK08	1.18	A	A	A	A	A	
UT 128	Senger Creek/Turret Lake (Northern approach over saddle)	SAK10	1.23	P	P	P	P	P	
UT 129	Sandpiper Lake to Three Island Lake	SEL01	1.01	P	P	P	P	P	
UT 130	Marshall Lake	SEL02	0.15	A	A	A	A	A	
UT 131	Marie Lake cutoff use trail	SEL03	0.77	P	P	P	P	P	
UT 132	Selden Pass	SEL04	2.10	P	P	P	P	P	
UT 133	Rose outlet (along lakeshore)	SEL05	0.77	P	P	P	P	P	
UT 134	Marie to Sandpiper/Medley Lakes	SEL06	1.04	P	P	P	P	P	
UT 135	Old PCT west of Rosemarie meadow paralleling outlet creek	SEL07	1.11	A	A*	P	P	P	*Only to camp at north end of meadow.
UT 136	Ward Mountain Lake use trail	WAM01	4.81	P	A	A	A	P	
John Muir Southeast									
UT 137	Birch Creek hunting	BIR01	0.13	A	A	NA	A	P	Hunting Season use
UT 138	Birch Creek hunting	BIR02	0.33	A	A	NA	A	P	Hunting Season use
UT 139	Kid mtn spring (old trail to camp and spring)	BIR03	0.83	P	A	NA	A	P	Hunting Season use
UT 140	4th & 5th Lakes (around lakes)	COT01	1.33	A	P	P	P	P	
UT 141	2nd to 3rd lake (west side of 2nd)	COT03	1.09	P	P	P	P	P	
UT 142	Hidden Lake	COT05	0.15	P	A	A	A	P	Low Use

Ref #	Use Trail Name	UT ID#	Est. Miles	Alt 1	Alt 2 Mod	Alt 2	Alt 3	Alt 4	Stipulation/Clarifier
UT 143	Windy Gap use trail	COT06	1.03	A	A	A	A	P	hunting season
UT 144	Frog Pond Camp (at 3rd Lake outlet)	COT08	0.25	A	A	A	A	A	Designate best route to camp
UT 145	Thunder and Lightning Lake	COY01	0.63	P	A	NA	A	P	
UT 146	Little Onion Valley to Sardine Canyon	KEA04	0.54	A	A	A	A	A	
UT 147	Flower Lake to Bench Lakes	KEA05	0.43	P	P	P	P	P	
UT 148	Matlock to Bench Lake	KEA06	0.31	A	A	A	A	A	for dunnage trips only
UT 149	Black Lake to Coyote Ridge	NFB01	1.78	A	A	A	A	P	
UT 150	Heidi Cabin	NFB05	0.17	A	A	A	A	A	Hunting Season use
UT 151	2nd Lake Snow cabin	NFB06	0.18	A	A	A	A	A	
UT 152	4th to 5th Lake	NFB07	0.12	A	A	A	A	A	To camp on saddle.
UT 153	campsites at Fifth Lake	NFB08	0.20	A	A	A	A	P	Approve only to appropriate campsites
UT 154	Snow Survey site	NFB09	0.10	A	A	A	A	A	
UT 155	Sawmill Pass Snow Bypass	SAW01	0.35	A	A	A	A	P	until system trail issues corrected
UT 156	Taboose Pass Snow Bypass trail	TAB01	0.36	P	A	A	A	P	until system trail is repaired
UT 157	Shingle Mill Bench	TAB02	0.90	A	A	A	A	P	
John Muir Southwest									
UT 158	Lightning Corral Meadow/ Ambition Lake	BAS01	2.30	A	A	A	A	P	
UT 159	Portal Lake to Pearl Lake	BAS02	0.98	A	A	A	A	A	
UT 160	Maxson Basin/Maxson Lake	BAS03	1.55	A	A	A	A	A	
UT 161	Bench use trail from Crabtree to Horsehead	BEN01	1.66	P	P	P	P	P	
UT 162	Bench use trail from Fall Creek to Crabtree	BEN02	2.37	A	A	A	A	A	
UT 163	Meadowbrook to Bench Valley	BIM01	2.26	A	A*	A*	A*	A	*Until Bench Valley trail is repaired
UT 164	Bench Valley to Blackcap Basin	BIM02	2.54	P	P	P	P	P	
UT 165	Hummingbird Lake use trail	CRB01	1.13	P	A	A	A	P	
UT 166	Scepter Lake use trail	CRL01	0.66	P	A	A	A	A	

Ref #	Use Trail Name	UT ID#	Est. Miles	Alt 1	Alt 2 Mod	Alt 2	Alt 3	Alt 4	Stipulation/Clarifier
UT 167	Rae Lakes use trail	FLE03	1.00	P	P	P	P	P	
UT 168	Burnt Corral Trail to Reddy's Hole	HOB01	2.07	A	A	A	A	P	
UT 169	Maxson trailhead to North Fork Kings River	POC02	2.22	A	A	A*	A	P	*for low use
UT 170	Blackrock Lakes use trail	RMB03	0.78	A	A	A	A	P	
UT 171	Jigger Lakes from Meadow Brook Trail	RMB04	0.98	A	A	NA	A	A	
UT 172	Little Shot Lake	RMB05	0.35	P	A	NA	A	A	
UT 173	Fleming Creek to Meadowbrook use trail	RMB06	1.23	A	P	P	P	P	
UT 174	Blackcap trail to Fleming Creek	RMB07	1.75	A	A	A	A	A	
UT 175	Woodchuck Lake loop to Loper Peak	SOW01	0.78	A	A	A	A	A*	*to snow survey site only - not complete
UT 176	Marsh Lake (on North Side)	SOW02	0.81	P	P	P	P	P	
UT 177	Chimney Lake use trail	SOW03	0.30	A	P	P	P	P	
Mono Creek, Rock Creek									
UT 178	3rd & 4th Recess campsites near (Mono Creek) access	FOR02	0.21	A	A	A	A	A	designate best route to campsites
UT 179	Lower Graveyard Lake to Upper lakes	GRA01	1.90	SYS	SYS*	P	SYS	SYS*	*NSCS
UT 180	Feather & Arrowhead Lakes	GRA02	2.27	A	SYS	SYS	SYS	SYS*	*NSCS
UT 181	Hilton Lakes Mine (two former mining road/trails)	HIL02	2.38	A	A	A	A	A	
UT 182	Davis outlet	HIL05	0.26	A	A	NA	A	A	Campsite Access
UT 183	3rd Lake to 5th Lake use trail	HIL17	1.27	P	P	P	P	P	
UT 184	Patricia Lake	HIL19	0.72	P	P	A	P	P	
UT 185	Hilton Ridge trail	HIL21	2.41	SYS	P*	P*	P*	P	*Case by case approval for snow-drift bypass
UT 186	Lower Hopkins Lake north to upper Hopkins basin.	HOP01	0.44	A	P	P	P	P	*Upper 1/2 mile NSCS.
UT 187	Hopkins Pass from end of system trail to Hopkins Pass	HOP03	1.16	SYS	SYS*	A	A	P	*NSCS
UT 188	Laurel bench ("Mule camp") to Grinnell Lake	LAU01	1.07	SYS	P	P	P	P	
UT 189	Treasure Lake use trail (from bench above Long Lake to lakes)	LLV02	0.63	P	P	P	P	P	
UT 190	Chickenfoot Lake (from south side of lake)	LLV03	0.62	A	P	P	P	P	Access provided via system trail.

Ref #	Use Trail Name	UT ID#	Est. Miles	Alt 1	Alt 2 Mod	Alt 2	Alt 3	Alt 4	Stipulation/Clarifier
UT 191	Gem Lake (north side of lakes)	LLV04	0.61	P	P	P	P	P	
UT 192	Mono Pass Snow Bypasses	LLV05	0.54	A	A	P	P	P	
UT 193	Snow Bypass at "Ruby Pond"	LLV07	0.19	P	P	P	P	P	
UT 194	Bear Lake use trail (from Morgan Lakes Trail)	MRG01	0.20	P	P	A	A	P	
UT 195	Mudd Lake Mono Creek Campsite shortcut	PIO06	1.12	P	A*	P	A*	P	*Can be used to access dispersed grazing only
UT 196	Mudd Lake to "camp meadow" use trail	PIO09	0.72	A	P	P	P	P	(duplicates system trail)
UT 197	Pioneer Basin Trail to 4th lake (10,900);	PIO16	0.55	A	P	P	P	P	close and rehabilitate
UT 198	Mills Lakes	SEC02	0.83	P	P	P	P	P	
UT 199	Kenneth Lake from Tamarack Trail and north to Dorothy Loop	TAM03	0.65	A	A	A	A	P	Allow one UT to connect between Dorothy Loop.
UT 200	Dorothy Loop Cutoff (Tamarack Trail to Dorothy Lake Trail)	TAM04	0.68	A	P	P	P	P	
UT 201	Dorothy Inlet use trail that shortcuts south to Tamarack trail	TAM05	0.23	P	P	P	P	P	
UT 202	Trail from Lake 10,800 to upper lakes below Recess Peak	VOL01	1.85	A	A*	NA	A	P	*Low Use levels

Table 2.28 Trail Management Strategy by Trail Class – Ansel Adams and John Muir Wildernesses

Trail Attributes	Trail Class 1 ¹ Minimal/Undeveloped Trail	Trail Class 2 Simple/Minor Development Trail	Trail Class 3 Developed/Improved Trail	Trail Class 4 Highly Developed Trail	Trail Class 5 – Not Appropriate in Wilderness
Tread, Traffic Flow, Character	<ul style="list-style-type: none"> ♦ Tread generally followable, but may have sections that are intermittent, awkward or hard to follow. ♦ Minimal excavated tread – typically only to define managed route or to allow passage in steep terrain. ♦ Commonly steep for long sections**. ² ♦ Short segments may require route finding between defined sections Native materials	<ul style="list-style-type: none"> ♦ Tread readily discernible, graded, and continuous, but occasionally narrow and rough. ♦ In severe terrain may be wider and more developed to accommodate traffic. ♦ Some steep sections**, usually for short to moderate distances. ♦ Few or no constructed passing sections. ♦ Native materials 	<ul style="list-style-type: none"> ♦ Tread obvious and continuous. ♦ In severe terrain may be wider and more developed to accommodate traffic. ♦ Width accommodates unhindered one-lane travel with occasional constructed passing sections. ♦ Some steep sections**, typically for short segments. ♦ Native materials 	<ul style="list-style-type: none"> ♦ Tread wide and relatively smooth with few irregularities. ♦ Trailbed width may frequently accommodate two-lane travel to allow for frequent passing. ♦ Very few steep sections – typically well-graded. Native materials	
Constructed Features & Trail Elements	<ul style="list-style-type: none"> ♦ Minimal to non-existent ♦ Drainage is functional ♦ In-tread structures minimal, but as needed to protect resources and maintain drainage. ♦ Few or no constructed bridges or foot crossings, except minimum needed to protect resources. 	<ul style="list-style-type: none"> ♦ Structures are of limited size, scale, and number ♦ Drainage is functional ♦ Structures as needed to protect trail infrastructure and resources and maintain drainage. ♦ Primitive or simple constructed foot crossings and fords. 	<ul style="list-style-type: none"> ♦ Trail structures (walls, steps, drainage, raised trail) may be common and substantial ♦ Native trail bridges as needed for resource protection and to provide access appropriate to destination. Generally native materials used in wilderness, but engineered bridges may be appropriate as determined by further analysis ³	<ul style="list-style-type: none"> ♦ Trail structures frequent and substantial ♦ Trail bridges appropriate at water crossings. Generally native materials used in wilderness, but engineered bridges may be appropriate as determined by further analysis ⁴	

¹ Trail Class 1 Trails typically receive very low use by highly skilled wilderness travelers. TC-1 trails are the most primitive designed and managed trails, and may have features which are awkward or impractical for some users. Both stock and hikers may be present and managed on Class 1 trails.

² Grade variances are typically based upon consideration of soil type, hydrologic conditions, anticipated use levels, and other factors contributing to surface instability and erosion potential. Due to increased potential for rapid degradation of trail and connected resources, trails are not intentionally aligned at steeper trail grades in areas with high levels or numbers of risk factors.

³ Designed, non-native trail bridges would only be appropriate under exceedingly rare instances in wilderness, and would require further analysis to determine their appropriateness within wilderness. Native materials or those most in keeping with the natural environment will be preferred.

⁴ Designed, non-native trail bridges would only be appropriate under exceedingly rare instances in wilderness, and would require further analysis to determine their appropriateness within wilderness. Native materials or those most in keeping with the natural environment will be preferred.

Trail Attributes	Trail Class 1 Minimal/Undeveloped Trail	Trail Class 2 Simple/Minor Development Trail	Trail Class 3 Developed/Improved Trail	Trail Class 4 Highly Developed Trail
Obstacles	<ul style="list-style-type: none"> Awkward sections common Obstacles, such as logs, rocks, narrow passages may be present, in some cases requiring occasional dismount and/or high skill levels. Physical barriers, such as downed logs or rocks, when cleared, should allow passage for packs or saddles if either pack or saddle use may be present, to ensure that allowed use stays on trail alignment. Light vegetation likely encroaches into trailway – cleared primarily to define trail. 	<ul style="list-style-type: none"> Awkward sections occasionally present. Blockages cleared to define route and protect resources Physical barriers, such as downed logs or rocks, when cleared, allows for ready passage for packs or saddles if either pack or saddle use may be present. Light vegetation may encroach into trailway, 	<ul style="list-style-type: none"> Obstacles and awkward surfaces infrequent Trail is maintained to allow relatively easy travel by allowed use types. Vegetation removed to allow clear and open passage by all user types. 	<ul style="list-style-type: none"> Few or no notable obstacles exist Vegetation removed to allow clear and open passage by all user types.
Signs	<ul style="list-style-type: none"> Minimum required for basic direction at junctions. Generally limited to regulation and resource protection No destination signs present 	<ul style="list-style-type: none"> Minimum required for basic direction at junctions. Generally limited to regulation and resource protection Typically no destination signs present Basic informational signing at trailheads. 	<ul style="list-style-type: none"> Regulation, resource protection, user reassurance.⁵ Directional signs at junctions, or when confusion is likely. Destination signs rarely present Informational and interpretive signs may be present (outside of wilderness) 	<ul style="list-style-type: none"> Wide variety of signs likely present to manage large number of users. Informational and interpretive signs likely (outside of wilderness) Destination signs rarely present
Typical Recreation Setting & Environs	<ul style="list-style-type: none"> Natural, unmodified Could occur in any recreation category, but most commonly accesses more primitive recreation areas. 	<ul style="list-style-type: none"> Natural, essentially unmodified Potentially occurs in any recreation category, but typically accesses destinations with moderate use and management. 	<ul style="list-style-type: none"> Natural, slightly modified Most common in higher use travel corridors or leading to high use destinations with higher management. 	<ul style="list-style-type: none"> Relatively modified setting Only present in areas with very high use and intensive management. Rarely present in wilderness.

⁵ User reassurance markers will generally not be used on trails in the AA/JM Wildernesses unless exceptional confusion may exist. The PCT requires a high-level of user-consideration, and tends to have slightly more signs than other trails, including the use of “reassurance markers” where there is potential confusion about the desired route. In wilderness, these will be kept to a minimum. A PCT marker may be placed along the PCT on either side of a junction within the first 200 yards, then no more than 3 per mile if confusion with other trails or disturbed areas exists.

Trail Operation and Maintenance Considerations

These considerations are general guidelines to assist in developing trail prescriptions and subsequent program management, operations and maintenance. Trail O&M Considerations offer a general starting point and will likely be adapted to reflect financial or local considerations. The guidance outlined below reflects “typical” considerations for trails in different Trail Classes, recognizing that each trail may have a range of characteristics, variability, and unique management considerations.

Trail Attributes	Trail Class 1 Minimal/Undeveloped Trail	Trail Class 2 Simple/Minor Development Trail	Trail Class 3 Developed/Improved Trail	Trail Class 4 Highly Developed Trail
Trail Management	Typically managed to accommodate: Low use levels Highly skilled users, capable of travel off-trail, and following intermittent trails. In rugged terrain, conditions may be challenging and impractical for some trail users.	Typically managed to accommodate: Moderate use levels Mid-to-highly skilled users, capable of traveling over awkward condition/obstacles Users with some orienteering skill (trail may occasionally have confusing alignment). Trail suitable for both equestrians and hikers, but challenging and requiring good trail skills.	Typically managed to accommodate: Moderate to heavy use Users with intermediate skill level and experience Users with minimal orienteering skills (trail easy to follow). Moderately easy travel for managed use types Random potential for accessible use	Typically managed to accommodate: Very heavy use Users with minimal skills and experience Users with minimal or no orienteering skills (trail easy to follow). Relatively easy travel by managed use types
Maintenance Indicators	Resource protection Route definition Safety commensurate with targeted recreational experience	Resource protection Protection of trail infrastructure Safety commensurate with targeted recreational experience	Resource protection Protection of trail infrastructure and travelability of trail. Safety commensurate with targeted recreational experience	Resource Protection Protection of trail infrastructure and travelability of trail. Safety commensurate with targeted recreational experience
Maintenance Frequency & Intensity	Infrequent recurring maintenance – generally exceeds annual interval. Maintenance may not be scheduled except in response to reports of unusual resource problems or obstacles which effectively close the trail to intended use.	Maintenance scheduled to preserve the trail facility and route location. Maintenance interval may exceed one year, or in response to reports of unusual resource or trail problems.	Trail cleared to make available for use early in use season, and to preserve trail integrity. Maintenance interval typically annual or more frequently, or in response to reports of trail or resource damage or problem affecting managed use type and experience level.	Trail cleared to make available for use at earliest opportunity in use season. Typically, maintenance performed at least annually.

Table 2.29 Ansel Adams and John Muir Wilderness Typical Trail Design Targets

Typical Specifications:		Trail Class 1 ⁶	Trail Class 2	Trail Class 3	Trail Class 4	TC 5
Designed Typical Tread Width	Target width	Excavated only to define route or to allow passage on steep terrain. Typically < 12"	12" – 18"	24"	24"	Not Appropriate in Wilderness
	Exceptions	May have sections where trail is intermittent or lightly defined.	May be to 36" at switchbacks, turnpikes, fords and along precipices.	May be to 48" at switchbacks, turnpikes, fords, steep side slopes and precipices.	May be to 48" at switchbacks, turnpikes, fords, steep side slopes and precipices.	
Design Surface	Tread Type	Native, minimal excavation. May have originally been user-created.	Native, w/ moderate excavation and fill.	Native with some native on-site borrow as fill or tread materials.	Native with some native borrow as fill or tread materials.	
	Surface Obstacles	Roots, rocks, embedded logs <18", natural steps or jump-offs <30".	Embedded roots, rocks, logs <12". Occasional natural steps or jump-offs <24".	Generally clear. Occasional tread protrusions to 6", natural steps or jump-offs <18".	Smooth, few obstacles. Occasional protrusions <6". Natural steps < 12".	
	Steps - Target Rise : Run	<12"	<12" rise : 36" run	9" rise : 36" run	9" rise : 36" run	
Design Grade⁷	Target Range	< 35% (less in areas with high erosion potential)	< 20%	< 15%	< 12%	
	Short Pitch Max (Up to 200' lengths)	45% (less in areas with high erosion potential)	35%	25% (may exceed 25% for short distances if intensive tread structures installed.)	20% (may exceed 20% for short distances if intensive tread structures installed.)	
	Max Pitch Density⁸	< 30% of trail (less in areas with high erosion potential.)	< 10% of trail	<5% of trail	<5% of trail	
Design Cross-Slope	Target Range	No excavation unless natural side slope exceeds 30%.	5 – 10%	5%	5%	
	Maximum	Up to Natural side-slope unless exceeds 30%	15%	10%	10%	

⁶ TC-1 trails are the most primitive designed and managed trails, and may have features which are awkward or impractical for some users. Both stock and hikers may be present and managed at low levels on Class 1 trails.

⁷ Grade variances should be based upon consideration of soil type, hydrologic conditions, anticipated use levels, and other factors contributing to surface stability and erosion potential. Due to potential for rapid degradation of trail and connected resources, generally avoid designing trails at the upper ranges of trail grade in areas with high level of risk factors and erosion potential.

⁸ Maximum pitch density refers to the percentage of the trail that is within 3% of the Short Pitch Maximum Grade.

Typical Specifications:		Trail Class 1 ⁶	Trail Class 2	Trail Class 3	Trail Class 4	TC 5
Design Clearing⁹	Width	4 – 5', with some intrusion of light vegetation into clearing area likely.	5' – 6' with some slight intrusion of light vegetation into clearing area likely.	Stock Trails = 6' – 7' Hiker Only = 5' – 6'	Stock Trails = 6' – 8' Hiker Only = 5' – 7'	
	Height	7-8', with some intrusion of light vegetation into clearing area likely.	8' with some slight intrusion of light vegetation into clearing area likely.	Stock trails = 8-10' Hiker only Trails = 8'	Stock trails = 10' Hiker Only = 8'	
Design Turns	Minimum Radius	If designed, typically 3'	4' – 5'	5' – 6'	6' – 8'	

⁹ Physical barriers, such as downed logs or rocks, when cleared, should allow passage for packs or saddles if either pack or saddle use may be present.

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Table 2.30 Summary of Estimated Grazing (Stock Nights Available) in the Grazing Alternatives

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2-Modified	Alternative 3	Alternative 4
Ansel Adams East							
Grazing Zones with included meadows							
Rush Creek	Alger Lakes Grazing Zone	rus13, rus14, rus15, rus16, rus17, rus26	The existing use levels and patterns would continue. Reported use: 332/184/202	Allow grazing, 332 stock nights available.	Allow grazing, 332 stock nights available.	Same as Alternative 2	Same as Alternative 2
Rush Creek	Lower Alger Creek Meadow	rus13	The existing use levels and patterns would continue. Reported use:332/184/202	Allow grazing; 300 stock nights available annually (critical areas - YT, FC, RR). In a normal year the range readiness on-date will be July 15.	Allow grazing; 332 stock nights available annually (critical areas - YT, FC, RR). In a normal year the range readiness on-date will be July 15.	Same as Alternative 2	Same as Alternative 2
Rush Creek	Middle Alger Creek Meadow	rus16	Existing rotation with Lower Alger Meadow would continue.	Include with rus13 above.	Include with rus13 above.	Same as Alternative 2	Same as Alternative 2
Rush Creek	Spooky Grazing Zone	rus2, rus3, rus4, rus5	The existing use levels and patterns would continue. Reported use:196/78/119	Allow grazing, 78 stock nights available.	Allow grazing, 78 stock nights available.	Same as Alternative 2	Same as Alternative 2
Rush Creek	Upper Spooky Meadow	rus2	Existing use levels would continue. Reported use:103/40/44 (includes Clark Lk reported use in 2001).	Allow grazing 41 stock nights available (critical areas - RR, HY, FC).	Allow grazing 41 stock nights available (critical areas - RR, HY, FC).	Same as Alternative 2	31 stock nights
Rush Creek	Lower Spooky Meadow	rus3	The existing use levels and patterns would continue. Reported use:91/38/75	Allow grazing; 25 stock nights available (critical areas - RR, HY)	Allow grazing; 25 stock nights available (critical areas - RR, HY)	Same as Alternative 2	19 stock nights

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Upper Rush	Donahue Grazing Zone	uru7	The existing use levels and patterns would continue. Reported use:45/127/36	Allow grazing, 127 stock nights available.	Allow grazing, 127 stock nights available.	Same as Alternative 2	Same as Alternative 2
Upper Rush	East of Donahue Camp	uru7	The existing use levels and patterns would continue. See zone totals.	Allow grazing; 127 stock nights available.	Allow grazing; 127 stock nights available.	Same as Alternative 2	Same as Alternative 2
Upper Rush	Marie Lakes Grazing Zone	uru6	The existing use levels and patterns would continue. Reported use:175/108/0	Allow grazing, 175 stock nights available.	Allow grazing, 175 stock nights available.	Same as Alternative 2	Same as Alternative 2
Upper Rush	Marie Meadow	uru6	The existing use levels and patterns would continue. Reported use:175/108/0	Allow grazing; 93 stock nights available (critical areas - YT, RR).	Allow grazing; 93 stock nights available (critical areas - YT, RR).	Same as Alternative 2	70 stock nights
Upper Rush	Davis Rogers Grazing Zone	uru1, uru2, uru3, uru5	The existing use levels and patterns would continue. Reported use:126/168/104	Allow grazing with 3 year rotation among Rodgers, Davis, and East benches of Davis, 128 stock nights available.	Allow grazing with 3 year rotation among Rodgers, Davis, and East benches of Davis, 128 stock nights available.	Same as Alternative 2	Allow grazing, 128 stock nights. 2 year rotation, from Davis to East benches of Davis.
Upper Rush	Davis Lake	uru1	The existing use levels and patterns would continue. Reported use:82/116/0	128 stock nights every 3 rd year (critical areas - YT, FC, RR)	128 stock nights every 3 rd year (critical areas - YT, FC, RR)	Same as Alternative 2	128 stock nights every other year
Upper Rush	Benches East of Davis	uru2	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing 128 stock nights every 3 rd year.	Allow grazing 128 stock nights every 3 rd year.	Same as Alternative 2	128 stock nights every other year
Upper Rush	Rogers Lake	uru5	The existing use levels and patterns would continue. Reported use:44/52/104	128 stock nights every 3 rd year (critical areas - YT, FC, RR)	128 stock nights every 3 rd year (critical areas - YT, FC, RR)	Same as Alternative 2	Prohibit grazing

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Thousand Island	Thousand Island Grazing Zone	thi1, thi9, thi12	The existing use levels and patterns would continue. Reported use:390/204/127	Allow grazing, 127 stock nights available.	Allow grazing, 127 stock nights available (uplands).	Same as Alternative 2	Same as Alternative 2
Thousand Island	Northwest Delta Thousand Island Lake	thi12	The existing use levels and patterns would continue. Reported use:227/40/92	Allow grazing 106 stock nights available.(critical areas - RR, HY, YT)	Rest for resource recovery (critical areas - RR, HY, YT).	Prohibit grazing	Prohibit grazing
River High	Badger Lake Grazing Zone	rih2	The existing use levels and patterns would continue. Reported use:0/0/10	Allow grazing, 84 stock nights available (River High GZ)	Allow grazing, 19 stock nights available.	Same as Alternative 2	Same as Alternative 2
River High	Badger Lake	rih2	The existing use levels and patterns would continue. Reported use:0/0/10	Allow grazing, 19 stock nights available (critical areas - HY, FC).	Allow grazing, 19 stock nights available (critical areas - HY, FC).	Same as Alternative 2	14 stock nights
River corridor	San Joaquin Grazing Zone	riv2	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing, 65 stock nights available.	Allow grazing, 65 stock nights available.	Same as Alternative 2	Same as Alternative 2
River corridor	PCT trail junction River Trail South	riv2	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing, 65 stock nights available.	Allow grazing, 65 stock nights available.	Same as Alternative 2	Same as Alternative 2
Shadow-Ediza	Laura Lake Grazing Zone	she14	The existing use levels and patterns would continue. Reported use:0/0/40	Allow grazing; 10 stock nights available.	Allow grazing; 10 stock nights available.	Same as Alternative 2	Prohibit grazing
Shadow-Ediza	Laura Lake	she14	The existing use levels and patterns would continue. Reported use:0/0/40	Allow grazing; 10 stock nights available.	Allow grazing; 10 stock nights available.	Same as Alternative 2	Prohibit grazing
Shadow-Ediza	Shadow-Ediza Grazing Zone	she10	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing, 148 stock nights	Allow grazing, 60 stock nights stock nights	Same as Alternative 2	Allow grazing, 109 stock nights

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Shadow-Ediza	JMT/Shadow Crk Junction Camp	she10	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing 60 stock nights available (critical areas - RR, HY).	Allow grazing 60 stock nights available (critical areas - RR, HY).	Same as Alternative 2	30 stock nights
Minaret	Trinity/Gladys Grazing Zone	min12, min15, she2, she4	Existing use levels would continue. Reported use: 0/0/27	Allow grazing, 124 stock nights available	Allow grazing, 124 stock nights available		
Minaret	Trinity Meadows Complex	min15	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing; 86 stock nights, late season trips only.	Allow grazing; 86 stock nights, late season trips only.	Same as Alternative 2	Same as Alternative 2
Shadow-Ediza	West of Gladys Lake (Rosalie)	she4	The existing use levels and patterns would continue. Reported use:0/0/27	Allow grazing; 38 stock nights available (critical areas - RR, FC).	Allow grazing; 38 stock nights available (critical areas - RR, FC).	Same as Alternative 2	29 stock nights
Minaret	Minaret Creek Grazing Zone:	min 0.5, min 4, min 7, min10, min11	Existing use levels and patterns would continue. Reported use: 8/166/42	Allow grazing; 314 stock nights available.	Allow grazing; 121 stock nights available.	Allow grazing, 207 stock nights	Allow grazing, 207 stock nights
Minaret	Lower Minaret Mine Meadow	min 0.5	The existing use levels and patterns would continue. Reported use:0/0/0	Unsuitable; do not allow grazing.	Unsuitable; do not allow grazing.	Same as Alternative 2	Same as Alternative 2
Minaret	Middle Minaret Creek Meaow	min10	The existing use levels and patterns would continue. Reported use:8/146/30	Allow grazing; 92 stock nights available.	Allow grazing; 92 stock nights available.	Same as Alternative 2	Same as Alternative 2
Minaret	Johnston Meadow	min11	The existing use levels and patterns would continue. Reported use:0/20/12	Allow 193 stock nights (critical areas - stream banks).No pasture permit, grazing incidental to packing use only.	Rest until adequate resource recovery.	Prohibit grazing	Prohibit grazing
King Creek	King Creek Grazing Zone:	kng2-9, kng11-14, kng21, kng30-31	Existing use levels and patterns would continue. Reported use:130/94/42	Allow grazing, 112 stock nights	Allow grazing, 112 stock nights.	Allow grazing, 204 stock nights	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
King Creek	Superior Lake Meadow	kng2	The existing use levels and patterns would continue. Reported use:0/12/42	Allow grazing; 87 stock nights available (critical areas - RR)	Allow grazing; 87 stock nights available (critical areas - RR)	Same as Alternative 2	Same as Alternative 2
King Creek	Holcomb Meadow	kng7	The existing use levels and patterns would continue. Reported use:0/0/0	Prohibit grazing until use trail is realigned (critical areas - RR)	Prohibit grazing until use trail is realigned (critical areas - RR)	92 stock nights	Prohibit grazing
King Creek	Ashley Lake Meadow	kng8, kng9	The existing use levels and patterns would continue. Reported use:86/82/0	Do not authorize grazing; trail issue around lake.	Do not authorize grazing; trail issue at lake.	Same as Alternative 2	Same as Alternative 2
King Creek	Anona Lake	kng14	Existing use levels and patterns would continue. Reported use: 44/0/0	Allow grazing; 25 stock nights available.	Allow grazing; 25 stock nights available.	Same as Alternative 2	Anona Inlet: Prohibit grazing. Outlet Meadow: Allow grazing, 25 stock nights
Crater Creek	Crater/Deer Grazing Zone	ccd12, ccd14-17, ccd18a-b, ccd19a-b	Existing use levels would continue. Reported grazing in 2001/2002/2003 is:60/42/95 stock nights.	Allow 572 stock nights of grazing.	Allow 572 stock nights of grazing.	Same as Alternative 2	Allow 470 stock nights of grazing.
Crater Creek	Deer Creek Meadows	ccd12	Existing use levels would continue. Reported use:0/0/20	Unsuitable; do not allow grazing (critical area, FC).	Unsuitable; do not allow grazing (critical area, FC).	Same as Alternative 2	Same as Alternative 2
Crater Creek	Deer Creek Meadows	ccd15	The existing use levels and patterns would continue. Reported use:0/0/0	Unsuitable; do not allow grazing (critical area, YT, FC).	Unsuitable; do not allow grazing (critical area, YT, FC).	Same as Alternative 2	Same as Alternative 2
Crater Creek	Unnamed Meadow	ccd16	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing; 23 Stock nights available (critical area, YT).	Rest for resource recovery (critical area, YT).	Rest for resource recovery.	Rest for resource recovery.

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2-Modified	Alternative 3	Alternative 4
Crater Creek	Middle Deer Creek	ccd17	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing; 230 stock nights available (critical area, YT).	Allow grazing; 230 stock nights available (critical area, YT).	Same as Alternative 2	Same as Alternative 2
Crater Creek	Upper Deer Creek	ccd18a	The existing use levels and patterns would continue. Reported use:0/0/0	Unsuitable; do not allow grazing (critical area, YT, FC)	Unsuitable; do not allow grazing (critical area, YT, FC)	Same as Alternative 2	Same as Alternative 2
Crater Creek	Unnamed Meadow	ccd18b	Continued existing use levels. Reported use: 60/42/95	Allow grazing; 125 stock nights available (critical area, YT)	Allow grazing; 125 stock nights available (critical area, YT)	Same as Alternative 2	Same as Alternative 2
Crater Creek	Unnamed Meadow	ccd19a	The existing use levels and patterns would continue. Reported use:0/0/0	Unsuitable; do not allow grazing (critical area, FC)	Unsuitable; do not allow grazing (critical area, FC)	Same as Alternative 2	Same as Alternative 2
Crater Creek	Unnamed Meadow	ccd19b	Continue existing use levels. Reported use:0/0/0	Allow grazing; 64 stock nights available	Allow grazing; 64 stock nights available	Same as Alternative 2	Same as Alternative 2
Crater Creek, Cargyle	Lion Point Grazing Zone	ccd20	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing, 25 stock nights available until assessed.	Allow grazing, 25 stock nights available until assessed.	Same as Alternative 2	Same as Alternative 2
Crater Creek, Cargyle, Bridge Crossing	Cargyle Stairway Grazing Zone:	ccd11, brc2-4, brc6-10, car1, car3-10, car12-17, car19, car21, car23-36	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing, 267 stock nights available. Included in Cargyle and Crater Creek AUs in the Ansel Adams West GU	Allow grazing, 267 stock nights available. Included in Cargyle and Crater Creek AUs in the Ansel Adams West GU	Allow grazing, 79 stock nights	Allow grazing, 79 stock nights
Crater Creek	Summit Meadow	ccd11	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing; 61 stock nights available. (critical area, YT)	Allow grazing; 61 stock nights available. (critical area, YT)	Same as Alternative 2	Same as Alternative 2
AA East - Closed Meadows Outside of Grazing Zones							
Rush Creek	Upper Alger Creek Meadow	rus 15	Existing rotation with Lower Alger Meadow would continue.	Prohibit grazing, critical area (critical area YT).	Prohibit grazing, critical area (critical area YT).	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Upper Rush	Donahue camp at stream	uru8	The existing use levels and patterns would continue. See zone totals.	Prohibit grazing, critical area (critical area YT, MYLF).	Prohibit grazing, critical area (critical area YT, MYLF).	Same as Alternative 2	Same as Alternative 2
Thousand Island	Northwest Thousand Island Lake W of moraine	thi11	The existing use levels and patterns would continue. Reported use:0/0/0	Unsuitable; do not allow grazing (critical area YT).	Unsuitable; do not allow grazing (critical area YT).	Same as Alternative 2	Same as Alternative 2
Thousand Island	Garnet/ Emerald Meadow complex	thi14	The existing use levels and patterns would continue. Reported use:0/0/0	Unsuitable; do not allow grazing.	Unsuitable; do not allow grazing.	Same as Alternative 2	Same as Alternative 2
Thousand Island	Garnet Lake Meadow	thi15	The existing use levels and patterns would continue. Reported use:163/164/35	Unsuitable; do not allow grazing (critical area - FC).	Unsuitable; do not allow grazing (critical area - FC).	Same as Alternative 2	Same as Alternative 2
Thousand Island	West of Thousand Island Lake	thi16	The existing use levels and patterns would continue. Reported use:0/0/0	Prohibit grazing (critical area YT)	Rest for resource recovery (critical area YT).	Prohibit grazing	Prohibit grazing
Shadow-Ediza	Cabin Lake Meadow	she5	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing; 40 stock nights available (critical areas - RR).	Prohibit grazing; trail is Not suitable for commercial stock.	Same as Alternative 2	Prohibit grazing
Shadow-Ediza	Upper Ediza Lake	she6	The existing use levels and patterns would continue. Reported use:0/0/0	Unsuitable; do not allow grazing.	Unsuitable; do not allow grazing.	Same as Alternative 2	Same as Alternative 2
Shadow-Ediza	Shadow Creek above Nydiver	she8	The existing use levels and patterns would continue. Reported use:0/0/0	Unsuitable; do not allow grazing.	Unsuitable; do not allow grazing.	Same as Alternative 2	Same as Alternative 2
Shadow-Ediza	Ediza Lake	she11	The existing use levels and patterns would continue. Reported use:27/0/100	Unsuitable; do not allow grazing.	Unsuitable; do not allow grazing.	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2-Modified	Alternative 3	Alternative 4
Minaret	Upper Minaret Mine Meadow	min1	The existing use levels and patterns would continue. Reported use:0/0/0	Unsuitable; do not allow grazing.	Unsuitable; do not allow grazing.	Same as Alternative 2	Same as Alternative 2
Minaret	South Fork Minaret Creek	min6	The existing use levels and patterns would continue. Reported use:0/0/0	Unsuitable; do not allow grazing.	Unsuitable; do not allow grazing.	Same as Alternative 2	Same as Alternative 2
Crater Creek	Crater Meadow	ccd1	The existing use levels and patterns would continue. Reported use:0/0/0	Unsuitable; do not allow grazing. (critical Area, YT, FC)	Unsuitable; do not allow grazing. (critical Area, YT, FC)	Same as Alternative 2	Same as Alternative 2
Crater Creek	Upper Crater Meadow	ccd2	Continue existing use levels. Reported use:0/0/0	Prohibit grazing	Prohibit grazing	Prohibit grazing	Prohibit grazing
Crater Creek	Unnamed Meadow	ccd4	Existing use levels would continue. Reported use:0/0/0	Allow grazing; 28 stock nights available (critical area, YT, FC)	Closed to reduce impact on YT habitat.	Same as Alternative 2	Same as Alternative 2
Crater Creek	Unnamed Meadow	ccd5a	Existing use levels would continue. Reported use:0/0/0	Unsuitable	Unsuitable		
Crater Creek	Unnamed Meadow	ccd5b	Existing use levels would continue. Reported use:0/0/0	Unsuitable	Unsuitable		
Ansel Adams West							
Grazing Zones with included meadows							
Crater Creek, Cargyle, Bridge Crossing	Cargyle Stairway Grazing Zone	ccd11, brc2-4, brc6-10, car1, car3-10, car12-17, car19, car21, car23-36	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing, 267 stock nights available. Included in Cargyle and Crater Creek AUs in the Ansel Adams West GU	Allow grazing, 267 stock nights available. Included in Cargyle and Crater Creek AUs in the Ansel Adams West GU	Allow grazing, 79 stock nights	Allow grazing, 79 stock nights

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Bridge Crossing	Earthquake Meadow	brc3	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing, 25 stock nights available until assessed.	Allow grazing, 25 stock nights available until assessed.	Same as Alternative 2	Same as Alternative 2
Bridge Crossing	Naked Lady Meadow	brc6	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing, 25 stock nights available until assessed.	Allow grazing, 25 stock nights available until assessed.	Same as Alternative 2	Same as Alternative 2
Cargyle	Stairway Meadow	car1	The existing use levels and patterns would continue. Reported use:0/0/20	Allow grazing 76 stock nights available (critical area YT).	Allow grazing 76 stock nights available (critical area YT).	Same as Alternative 2	57 Stock nights
Cargyle	Between Cargyle and Stairway Meadow	car7	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing; 33 stock nights available (critical area YT, FC).	Allow grazing; 33 stock nights available (critical area YT, FC).	Allow grazing; 33 stock nights available.	Allow grazing; 25 stock nights available.
Cargyle	Cargyle Meadow	car8	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing, 107 stock nights available	Allow grazing, 107 stock nights available	Same as Alternative 2	Same as Alternative 2
Cargyle	Cargyle North	car9	The existing use levels and patterns would continue. Reported use:0/0/0	Unsuitable, do not allow grazing (critical area FC).	Unsuitable, do not allow grazing (critical area FC).	Same as Alternative 2	Same as Alternative 2
Cargyle	77 Corral	car12	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing; 22 stock nights available until assessed.	Allow grazing; 22 stock nights available until assessed.	Same as Alternative 2	Same as Alternative 2
Cargyle	Lower East Fork Meadow	car17	The existing use levels and patterns would continue. Reported use:0/0/0	Prohibit grazing due to trail/archaeological concerns.	Prohibit grazing due to trail/archaeological concerns.	Same as Alternative 2	Same as Alternative 2
Cargyle	Middle East Fork Meadow	car23	The existing use levels and patterns would continue. Reported use:0/0/0	Unsuitable, do not allow grazing.	Unsuitable, do not allow grazing.	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Cargyle	Headquarters Meadow	car32	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing, 25 stock nights available until assessed.	Allow grazing, 25 stock nights available until assessed.	Same as Alternative 2	Same as Alternative 2
Cargyle	Snake Meadow Grazing Zone		The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing, 25 stock nights available until assessed.	Allow grazing, 25 stock nights available until assessed.	Same as Alternative 2	Same as Alternative 2
Cora	Cora-Chetwood Grazing Zone	cor4, cor5, cor6, cor7, cor8, cor14, cor15	The existing use levels and patterns would continue. Reported use:24/0/0	Allow grazing, 256 stock nights available.	Allow grazing, 243 stock nights available.	Same as Alternative 2	Allow grazing, 24 stock nights available
Cora	Chetwood Meadow	cor4	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing; 83 stock nights available (critical areas - HY).	Allow grazing; 83 stock nights available (critical areas - HY).	Same as Alternative 2	Prohibit grazing
Cora	Detachment Meadow	cor6	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing; 64 stock nights available (critical areas - HY).	Allow grazing; 64 stock nights available (critical areas - HY).	Same as Alternative 2	Prohibit grazing
Cora	Knoblock Meadow	cor15	The existing use levels and patterns would continue. Reported use:24/0/0	Allow grazing; 96 stock nights available (critical areas - HY).	Allow grazing; 96 stock nights available (critical areas - HY).	Same as Alternative 2	Prohibit grazing
Junction	Rattlesnake Grazing Zone	jun12, jun13	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing, 25 stock nights available until assessed.	Allow grazing, 25 stock nights available until assessed.	Same as Alternative 2	Same as Alternative 2
Junction	Rattlesnake Lake Meadow	jun12	The existing use levels and patterns would continue. Reported use:0/0/0	Allow grazing; 25 stock nights available until assessed.	Allow grazing; 25 stock nights available until assessed.	Same as Alternative 2	Same as Alternative 2
Lake Catherine	Stevenson Hemlock Grazing Zone	lac1, lac2, lac3, lac9, lac10	The existing use levels and patterns would continue. Reported use:42/89/83	Allow grazing, 83 stock nights available.	Allow grazing: 488 stock nights available.	Allow grazing: 488 stock nights available.	Allow grazing: 488 stock nights available.

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Lake Catherine	Stevenson Meadow	lac1	The existing use levels and patterns would continue. Reported use:0/47/83	Prohibit grazing (critical area - FC)	Allow grazing, 175 stock nights (Stevenson), 28 stock nights (Upper Stevenson) available (critical area FC).	Allow grazing, 175 stock nights available.	175 stock nights
Lake Catherine	Falls Grazing Area	lac2	The existing use levels and patterns would continue. Reported use:0/0/0	Prohibit grazing	Allow Grazing; 126 stock nights available.	Allow Grazing; 126 stock nights available.	126 stock nights
Lake Catherine	Hemlock Crossing	lac3	The existing use levels and patterns would continue. Reported use:42/26/0	42 stock nights	Allow grazing; 31 stock nights available.	Allow grazing; 31 stock nights available.	31 stock nights
Lake Catherine	Upper Falls Meadow	lac9	The existing use levels and patterns would continue. Reported use:0/0/0	Not addressed	Allow Grazing; 70 stock nights available.	Allow Grazing; 70 stock nights available.	70 stock nights
Lake Catherine	Pond Meadow	lac10	The existing use levels and patterns would continue. Reported use:0/0/0	Not addressed	Allow grazing; 58 stock nights available.	Allow grazing; 58 stock nights available.	58 stock nights
Lillian	Fernandez Junction Grazing Zone	lii3, lii5	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 24 stock nights available.	Allow grazing, 24 stock nights available.	Same as Alternative 2	Eliminate grazing zone
Lillian	Fernandez Meadow	lii5	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 24 stock nights available (critical areas - HY).	Allow grazing; 24 stock nights available (critical areas - HY).	Same as Alternative 2	Fernandez Meadow: Prohibit grazing
Lillian	NW of Fernandez Lake	lii3	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing.	Rest for resource recovery.	Same as Alternative 2	Same as Alternative 2
Sadler	Isberg Lake Grazing Zone		The existing use levels and patterns would continue. Reported use 0/6/0.	Allow grazing; 14 stock nights available.	Allow grazing; 14 stock nights available.	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Sadler	North Isberg Lake Meadow	sad10	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 14 stock nights available (critical areas - HY).	Allow grazing; 14 stock nights available (critical areas - HY).	Same as Alternative 2	Same as Alternative 2
Sadler	Joe Crane Junction Grazing Zone	sad1, sad2, sad4	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 178 stock nights available.	Allow grazing, 178 stock nights available.	Same as Alternative 2	Allow grazing, 60 stock nights
Sadler	Joe Crane Lake Meadows	sad1	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 9 stock nights available (critical areas - HY).	Allow grazing; 9 stock nights available (critical areas - HY).	Same as Alternative 2	7 stock nights
Sadler	West of Joe Crane Lake	sad2	The existing use levels and patterns would continue.	98 stock nights available (critical areas - HY).	Allow grazing; 98 stock nights available (critical areas - HY).	Same as Alternative 2	Prohibit grazing
Sadler	Joe Crane Junction	sad4	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 71 stock nights available (critical areas - HY).	Allow grazing; 71 stock nights available (critical areas - HY).	Same as Alternative 2	53 stock nights
Sadler	Sadler McClure Grazing Zone	sad12, sad13, sad14, sad22	The existing use levels and patterns would continue. Reported use 36/59/127.	Allow grazing, 98 stock nights available.	Allow grazing, 110 stock nights available.	Same as Alternative 2	85 stock nights
Sadler	Sadler Lakeshore	sad12	The existing use levels and patterns would continue. Reported use 36/59/0.	Allow grazing; 53 stock nights available north of lake (critical areas - HY).	Allow grazing; 53 stock nights available north of lake (critical areas - HY).	Same as Alternative 2	40 stock nights
Sadler	McClure to Sadler	sad13	The existing use levels and patterns would continue. Reported use 0/0/127	Unsuitable; do not allow grazing (critical area FC).	Allow grazing, 12 stock nights (one average size trip), with protection of riparian/spring area and monitoring (critical area FC).	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Sadler	Sadler Pond	sad22	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 45 stock nights available (critical areas - RR, YT).	Allow grazing; 45 stock nights available (critical areas - RR, YT).	Same as Alternative 2	45 stock nights
Triple Divide	Isberg Meadow Grazing Zone	trd8	The existing use levels and patterns would continue. Reported use 0/6/0.	Allow grazing, 76 stock nights available.	Allow grazing, 76 stock nights available.	Same as Alternative 2	Allow grazing, 57 stock nights
Triple Divide	Isberg Meadow	trd8	The existing use levels and patterns would continue. Reported use 0/6/0.	Allow grazing; 76 stock nights available (critical areas - HY).	Allow grazing; 76 stock nights available (critical areas - HY).	Same as Alternative 2	57 stock nights
Triple Divide	Rutherford Grazing Zone	trd1, trd3	The existing use levels and patterns would continue. Reported use 54/0/48	Allow grazing, 54 stock nights available.	Allow grazing, 46 stock nights available.	Same as Alternative 2	Same as Alternative 2
Triple Divide	North of Anne Lake	trd1	The existing use levels and patterns would continue. Reported use 54/0/48	Allow grazing; 46 stock nights available.	Allow grazing; 46 stock nights available.	Same as Alternative 2	Same as Alternative 2
Cold Creek, Devils	Devils Bathtub Grazing Zone	dev1, coc7	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 25 stock nights available.	Allow grazing, 25 stock nights available.	Same as Alternative 2	Same as Alternative 2
AA West - Closed Meadows Outside of Grazing Zones							
Cora	Cora Lake Meadow	cor2	The existing use levels and patterns would continue. Reported use:0/15/0	Allow grazing; 13 stock nights available (critical areas - RR).	Prohibit grazing due to access.	Same as Alternative 2	Same as Alternative 2
Lillian	Fernandez Creek Meadow	lil4	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing.	Unsuitable; do not allow grazing.	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Lillian	Flat Lake Meadow	lil1	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 13 stock nights available (critical areas - RR).	Grazing prohibited.	Same as Alternative 2	Same as Alternative 2
Triple Divide	South of Slab Lake	trd6	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing.	Unsuitable; do not allow grazing.	Same as Alternative 2	Same as Alternative 2
Fish Creek/Convict/McGee							
Grazing Zones with included meadows							
Cascade Valley	Cascade Valley Grazing Zone	cas2, cas3, cas4	The existing use levels and patterns would continue. Reported use 97/210/202.	Allow grazing, 214 stock nights. One night grazing per trip in Cascade Valley, and Silver Divide analysis units.	Allow grazing, 214 stock nights. One night grazing per trip in Cascade Valley, and Silver Divide analysis units.	Allow grazing, 214 stock nights. No one night grazing limit.	Same as Alternative 2
Cascade Valley	Cascade Valley (Fish/ Minnow Confluence)	cas2	The existing use levels and patterns would continue. Reported use 0/0/0.	Continue closure of meadows	Allow grazing, 20 stock nights every other year.	Same as Alternative 2	Same as Alternative 2
Cascade Valley	Third Crossing	cas4	The existing use levels and patterns would continue. Reported use 30/51/103.	Allow grazing; 52 stock nights available (critical area - FC).	Allow grazing; 52 stock nights available (critical area - FC).	Same as Alternative 2	39 stock nights
Cascade Valley	Lower Fish Creek Grazing Zone	cas6	The existing use levels and patterns would continue. Reported use 40/159/99.	Allow grazing; 12 stock nights available (critical areas - RR, HY, FC).	Allow grazing; 12 stock nights available (critical areas - RR, HY, FC).	Same as Alternative 2	Same as Alternative 2
Cascade Valley	Island Crossing/ Fox Meadow	cas6	The existing use levels and patterns would continue. Reported use 40/159/99.	Allow grazing; 12 stock nights available (critical areas - RR, HY, FC).	Allow grazing; 12 stock nights available (critical areas - RR, HY, FC).	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Purple Bench	Purple Grazing Zone	ppb5, ppb7, ppb10, ppb12, ppb13	The existing use levels and patterns would continue. Reported use 392/458/59.	Allow grazing 132 stock nights available.	Allow grazing 132 stock nights available.	Same as Alternative 2	Allow grazing, 27 stock nights
Purple Bench	High Camp Meadow	ppb5	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 15 stock nights available (RR, HY, FC).	Allow grazing; 15 stock nights available (RR, HY, FC).	Same as Alternative 2	Same as Alternative 2
Purple Bench	Ram Meadow	ppb10	The existing use levels and patterns would continue. Reported use 164/0/0.	Allow grazing; 15 stock nights (RR, HY, FC).	Unsuitable; do not allow grazing (critical area - FC).	Prohibit Grazing	Prohibit Grazing
Purple Bench	Purple Meadow	ppb12	The existing use levels and patterns would continue. Reported use 218/438/47.	Allow grazing; 90 stock nights available (RR, HY).	Allow grazing; 90 stock nights available (RR, HY).	Prohibit Grazing	Prohibit Grazing
Purple Bench	Purple Bench	ppb13	The existing use levels and patterns would continue. Reported use 10/20/12.	Allow grazing; 12 stock nights available (RR, FC).	Allow grazing; 12 stock nights available (RR, FC).	Same as Alternative 2	Same as Alternative 2
Purple Bench	Virginia Lk Grazing Zone	ppb1, ppb11	The existing use levels and patterns would continue. Reported use 24/60/0.	Allow grazing; 20 stock nights available.	Allow grazing; 20 stock nights available.	Same as Alternative 2	Same as Alternative 2
Purple Bench	Virginia Lake	ppb1	The existing use levels and patterns would continue. Reported use 24/60/0.	Allow grazing; 20 stock nights available.	Allow grazing; 20 stock nights available.	Same as Alternative 2	Same as Alternative 2
Purple Bench	North of Duck Lake Grazing Zone	ppb15	The existing use levels and patterns would continue. Reported use 12/16/0	Allow grazing; 20 stock nights available.	Allow grazing; 20 stock nights available.	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Purple Bench	Duck Lake Benches	ppb15	The existing use levels and patterns would continue. Reported use included with Duck Lake Meadow.	Allow grazing; 20 stock nights available	Allow grazing; 20 stock nights available	Same as Alternative 2	Same as Alternative 2
Margaret	Margaret Lakes Grazing Zone	mar1-4, mar6, mar7, mar9-11, mar17-19	The existing use levels and patterns would continue. Reported use 0/84/3.	Allow grazing; 353 stock nights available.	Allow grazing; 246 stock nights available.	Same as Alternative 2	Same as Alternative 2
Margaret	Coyote Grazing Area (Silver Creek Junction)	mar1	The existing use levels and patterns would continue. Reported use 0/84/3.	Allow grazing; 62 stock nights available (critical area - FC).	Allow grazing; 62 stock nights available (critical area - FC).	Same as Alternative 2	Same as Alternative 2
Margaret	Rainbow to Margaret	mar4	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 127 stock nights available.	Do not allow grazing until trail is repaired.	Same as Alternative 2	95 stock nights
Margaret	Coyote Lake	mar7	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing (critical area - YT).	Unsuitable; do not allow grazing (critical area - YT).	Same as Alternative 2	Same as Alternative 2
Margaret	Fern Lake	mar9	The existing use levels and patterns would continue. Reported use 0/0/0.	Fern Lake: Allow grazing; 63 stock nights available (critical area - YT).	Fern Lake: Allow grazing; 63 stock nights available (critical area - YT).	Same as Alternative 2	Fern Lake: Prohibit grazing.
Margaret	Big Margaret Lake West	mar11	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 41 stock nights available.	Allow grazing; 41 stock nights available.	Same as Alternative 2	4 stock nights
Margaret	Frog Lake North	mar17	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 60 stock nights available (critical area - YT).	Allow grazing, 60 stock nights available (critical area - YT).	Same as Alternative 2	Same as Alternative 2
Margaret	Frog Lake SE	mar18	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing.	Rest for resource recovery, large headcut on old trail.	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Margaret	North of Frog Lake	mar19	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 20 stock nights available (critical area - YT).	Allow grazing, 20 stock nights available (critical area - YT).	Same as Alternative 2	Same as Alternative 2
McGee	McGee Creek Grazing Zone	mcg1, mcg3-5, mcg7-9, mcg12	The existing use levels and patterns would continue. Reported use 27/0/0.	Allow grazing, 147 stock nights available.	Allow grazing 50 stock nights available	Allow grazing 50 stock nights available	Allow grazing 50 stock nights available
McGee	Cable Meadow	mcg1	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing.	Unsuitable; do not allow grazing.	Same as Alternative 2	Same as Alternative 2
McGee	Martins Meadow	mcg4	The existing use levels and patterns would continue. Reported use 5/0/0.	Allow grazing; 25 stock nights (critical areas – YT, RR, HY).	Rest for resource recovery (critical area - YT, RR, HY).	Prohibit grazing	Prohibit grazing
McGee	Chute Camp Meadow	mcg5	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing 90 stock nights available (critical areas - YT).	Allow grazing . 30 stock nights available in wet years, 90 stock nights available in normal years (critical areas - YT)	Allow grazing; 30 stock nights	30 stock nights
McGee	NW of Big McGee Lake	mcg7	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable: do not allow grazing.	Unsuitable: do not allow grazing.	Same as Alternative 2	Same as Alternative 2
McGee	Round Lake Meadow	mcg8	The existing use levels and patterns would continue. Reported use 15/0/0.	Unsuitable; do not allow grazing (critical area - YT).	Unsuitable; do not allow grazing (critical area - YT).	Same as Alternative 2	Same as Alternative 2
McGee	Second Meadow (above Martin's)	mcg9	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing (critical area - YT).	Unsuitable; do not allow grazing (critical area - YT).	Same as Alternative 2	Same as Alternative 2
McGee	Big McGee	mcg12	The existing use levels and patterns would continue. Reported use 7/0/0.	Allow grazing; 20 stock nights available (critical areas - HY, YT).	Allow grazing; 20 stock nights available (critical areas - HY, YT).	Allow grazing; 20 stock nights (critical areas - HY, YT)	20 stock nights (critical areas - HY, YT)

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Silver Divide	Silver Divide Grazing Zone	sil2, sil8, sil10, sil12-13, sil15-16, sil18-19, sil21-23, sil25	The existing use levels and patterns would continue. Reported use 750/629/588.	Allow grazing, 490 stock nights available. One night of grazing per trip in the Silver Divide and Cascade Valley analysis Units	Allow grazing, 490 stock nights available. One night of grazing per trip in the Silver Divide and Cascade Valley analysis Units	Allow grazing, 490 stock nights. No one night grazing limit.	Prohibit grazing.
Silver Divide	Box Canyon above Grassy	sil2	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow Grazing: 67 stock nights	Do not allow grazing until trail is repaired.	Same as Alternative 2	Prohibit grazing
Silver Divide	Jackson Meadow	sil8	The existing use levels and patterns would continue. Reported use 318/168/363.	Allow grazing; 300 stock nights available (critical areas – HY, RR)	Allow grazing over about 1/3 of the meadow; 300 stock nights available (critical areas: HY,RR)	Same as Alternative 2	Prohibit grazing
Silver Divide	Squaw Lake	sil10	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable: do not allow grazing (critical area - YT).	Unsuitable: do not allow grazing (critical area - YT).	Same as Alternative 2	Same as Alternative 2
Silver Divide	Papoose Lake	sil12	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing (critical area - YT).	Unsuitable; do not allow grazing (critical area - YT).	Same as Alternative 2	Same as Alternative 2
Silver Divide	Between Lone Indian and Grassy	sil13	The existing use levels and patterns would continue. Reported use 0/0/0.	Not addressed	Rest for resource recovery (critical area - FC).	Same as Alternative 2	Same as Alternative 2
Silver Divide	Olive Lake West	sil15	The existing use levels and patterns would continue. Reported use 25/0/0.	Allow grazing; 114 stock nights available.	Allow grazing; 114 stock nights available.	Same as Alternative 2	Prohibit grazing
Silver Divide	Olive Lake Inlet and Outlet	sil16	The existing use levels and patterns would continue. Reported grazing included with Olive West.	Unsuitable; do not allow grazing.	Unsuitable; do not allow grazing.	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Silver Divide	Chief Lake	sil19	The existing use levels and patterns would continue. Reported use 9/0/0.	Allow grazing 9 stock nights available (critical area YT).	Allow grazing 9 stock nights available (critical area YT)..	Same as Alternative 2	Prohibit grazing
Silver Divide	Grassy Meadow	sil22	The existing use levels and patterns would continue. Reported use 306/447/199.	Unsuitable (critical area - YT)	Rest for resource recovery. High priority for monitoring (critical area - YT)	Same as Alternative 2	Same as Alternative 2
Silver Divide	Long Canyon Grazing Zone	sil1, sil4, sil6	The existing use levels and patterns would continue. Reported use 130/0/0.	Allow grazing, 130 stock nights available.	Allow grazing, 130 stock nights available.	Same as Alternative 2	Same as Alternative 2
Silver Divide	Long Canyon	sil1, sil4	The existing use levels and patterns would continue. Reported use 130/0/0.	Allow grazing; 130 stock nights available (critical areas – RR).	Allow grazing; 130 stock nights available (critical areas – RR).	Same as Alternative 2	Same as Alternative 2
Upper Fish Creek	Upper Fish Creek Grazing Zone	ufc1, ufc3-4, ufc6-11	The existing use levels and patterns would continue. Reported use 166/56/36.	Allow grazing, 197 stock nights available.	Allow grazing, 197 stock nights available.	Same as Alternative 2	Same as Alternative 2
Upper Fish Creek	Along Lee Lake Trail below Lee Lake at Tarn Pond	ufc1	The existing use levels and patterns would continue. Reported use Included with Lee/Cecile Lake.	Unsuitable; do not allow grazing.	Unsuitable; do not allow grazing.	Same as Alternative 2	Same as Alternative 2
Upper Fish Creek	Red Slate Meadow	ufc3	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable: do not allow grazing (critical area - YT, FC).	Unsuitable: do not allow grazing (critical area - YT, FC).	Same as Alternative 2	Same as Alternative 2
Upper Fish Creek	Tully Lake	ufc4	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 60 stock nights available (critical areas - YT, FC).	Allow grazing; 60 stock nights available (critical areas - FC).	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Upper Fish Creek	Lee/McGee Trail Junction	ufc6	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable: do not allow grazing.	Rest for resource recovery.	Same as Alternative 2	Same as Alternative 2
Upper Fish Creek	Lee/Cecil Lakes Meadows	ufc7	The existing use levels and patterns would continue. Reported use 10/0/0.	Unsuitable: do not allow grazing.	Unsuitable: do not allow grazing.	Same as Alternative 2	Same as Alternative 2
Upper Fish Creek	Horse Heaven	ufc8	The existing use levels and patterns would continue. Reported use 156/56/36.	Allow grazing; 65 stock nights available (critical areas – RR, HY).	Allow grazing; 65 stock nights in wet years, 150 stock nights available in normal or dry years. (critical areas – RR, HY).	Same as Alternative 2	Same as Alternative 2
Upper Fish Creek	Tully Hole	ufc9	The existing use levels and patterns would continue.	Allow grazing; 72 stock nights available (critical areas - FC).	Allow grazing; 72 stock nights available (critical areas - YT, FC).	Same as Alternative 2	54 stock nights
Upper Fish Creek	West of Lee/Cecil Lakes	ufc11	The existing use levels and patterns would continue. Reported use 0/0/0.	Not addressed	Closed due to lack of access.	Same as Alternative 2	Same as Alternative 2
Fish Creek/Convict/McGee - Closed Meadows Outside of Grazing Zones							
Cascade Valley	Second Crossing	cas1	The existing use levels and patterns would continue. Reported use 207/0/0. Closed in 2002.	Unsuitable: do not allow grazing (critical area - FC).	Unsuitable: do not allow grazing (critical area - FC).	Same as Alternative 2	Same as Alternative 2
Purple Bench	Duck Lake Meadow (lakeside)	ppb6	The existing use levels and patterns would continue. Reported use 12/16/0. (reported as Duck/Pika Lake. Unsure which meadow they used)	Unsuitable; do not allow grazing (critical area - YT).	Unsuitable; do not allow grazing (critical area - YT).	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Purple Bench	Pika Lake Meadow	ppb4	The existing use levels and patterns would continue. Reported use included with Duck Lake Meadow.	Unsuitable; do not allow grazing.	Unsuitable; do not allow grazing.	Same as Alternative 2	Same as Alternative 2
McGee	Baldwin Meadow	mcg10	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 12 stock nights (critical areas - YT, RR). Meadow closed until trail fixed, flood damage.	Baldwin Meadow: no grazing. System trail to meadow closed to commercial stock (critical area - RR, YT).	Prohibit grazing	Prohibit grazing
McGee	Grass Lake Meadow	mcg2	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing (critical area - YT).	Unsuitable; do not allow grazing (critical area - YT).	Same as Alternative 2	Same as Alternative 2
Silver Divide	Peter Pande Lake	sil24	The existing use levels and patterns would continue. Reported use 92/14/26.	Unsuitable; do not allow grazing (critical area - YT).	Unsuitable; do not allow grazing (critical area - YT).	Same as Alternative 2	Same as Alternative 2
Silver Divide	Peter Pande Tarn	sil7	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing (critical area - YT, FC).	Unsuitable; do not allow grazing (critical area - YT, FC).	Same as Alternative 2	Same as Alternative 2
Fish Creek/Convict/McGee - Analysis Units Closed to Grazing							
Coldwater	Woods Lake, Emerald Lake, Sky Meadow, etc.	cod1-13	The existing use levels and patterns would continue. Reported use 0/0/0.	Prohibit Grazing.	Prohibit Grazing.	Same as Alternative 2	Same as Alternative 2
Convict	Genevieve, Cloverleaf, Mildred, etc.	con1-10	The existing use levels and patterns would continue. Reported use 0/14/0.	Prohibit commercial pack stock grazing in Convict analysis unit	Prohibit commercial pack stock grazing in Convict analysis unit.	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Mono Creek/Rock Creek							
Grazing Zones with included meadows							
Fourth Recess, Pioneer, Second Recess, Graveyard	Mono Creek Grazing Zone	for1, for8, pio5a, pio8, sec1, sec3, sec15, gra8	Mono Creek Zone: The existing use levels and patterns would continue. Reported use 21/653/295.	Allow grazing, 323 stock nights.	Allow grazing, 323 stock nights.	Same as Alternative 2	Same as Alternative 2
Fourth Recess	North of Mono Rock	for1	The existing use levels and patterns would continue. Reported use 0/5/7.	Unsuitable; do not allow grazing (critical area - FC).	Unsuitable; do not allow grazing (critical area - FC).	Same as Alternative 2	Same as Alternative 2
Fourth Recess	Hopkins/Mono confluence Meadow	for8	The existing use levels and patterns would continue. Reported use 0/69/272.	Allow grazing; 19 stock nights available. (critical areas - HY)	Allow grazing; 19 stock nights available. (critical areas - HY)	Same as Alternative 2	14 stock nights
Graveyard	Quail Meadow (near campsite)	gra8	The existing use levels and patterns would continue. Reported use 0/48/45.	Allow grazing; 48 stock nights, (critical area - HY). Determine potential impacts to heritage sites	Allow grazing; 48 stock nights, (critical area - HY). Determine potential impacts to heritage sites	Same as Alternative 2	Same as Alternative 2
Laurel	Mono Creek Zone near Laurel Creek Confluence		The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing as part of the Mono Creek Zone.	Allow grazing as part of the Mono Creek Zone.	Same as Alternative 2	Same as Alternative 2
Second Recess	Mono Creek near Second Recess Creek	sec15	The existing use levels and patterns would continue.	Allow grazing as part of the Mono Creek Zone.	Allow grazing as part of the Mono Creek Zone.	Same as Alternative 2	Same as Alternative 2
Pioneer	Pioneer Lodgepole understory	pio0	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 25 stock nights available.	Allow grazing, 25 stock nights available.	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Fourth Recess	Third Recess Grazing Zone	for4, for6	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 13 stock nights (see also Mono Creek Zone).	Allow grazing, 13 stock nights (see also Mono Creek Zone).	Same as Alternative 2	Prohibit grazing due to access issues - Third Recess Trail not suitable for commercial packstock.
Fourth Recess	Third Recess along Creek	for4	The existing use levels and patterns would continue. Reported use 0/14/0.	Allow grazing; 13 stock nights available (critical areas - RR, HY, FC).	Allow grazing; 13 stock nights available (critical areas - RR, HY, FC).	Same as Alternative 2	N/A
Hopkins	Hopkins Creek Grazing Zone	hop3, hop5	The existing use levels and patterns would continue.	Allow grazing, 159 stock nights available.	Allow grazing, 159 stock nights available.	Same as Alternative 2	Same as Alternative 2
Hopkins	Hopkins Creek Meadow	hop3	The existing use levels and patterns would continue. Reported use 0/37/12.	Allow grazing; 159 stock nights (critical areas - RR, HY)	Allow grazing; 159 stock nights (critical areas - RR, HY)	Same as Alternative 2	Same as Alternative 2
Hopkins	Lower Hopkins Lake	hop5	The existing use levels and patterns would continue. Reported use 0/0/0.	Prohibit grazing	Rest for resource recovery	Same as Alternative 2	Same as Alternative 2
Second Recess	Second Recess Grazing Zone	sec9, sec14	The existing use levels and patterns would continue. Reported use 0/23/0.	Allow grazing; 278 stock nights (critical area - FC).	Allow grazing; 278 stock nights (critical area - FC).	Same as Alternative 2	Same as Alternative 2
Second Recess	Second Recess Meadows	sec14	The existing use levels and patterns would continue. Reported use 0/23/0.	Allow grazing; 278 stock nights (critical area - FC).	Allow grazing; 278 stock nights (critical area - FC).	Same as Alternative 2	Same as Alternative 2
Laurel	Laurel Creek Grazing Zone	lau1, lau9	The existing use levels and patterns would continue. Reported use 0/26/0.	Allow grazing, 92 stock nights available.	Allow grazing, 92 stock nights available.	Same as Alternative 2	Same as Alternative 2
Laurel	Lower Laurel Creek	lau1	The existing use levels and patterns would continue. Reported use 0/26/0.	Allow grazing; 92 stock nights available (critical areas - RR)	Allow grazing; 92 stock nights available (critical areas - RR)	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Volcanic	Volcanic Knob Grazing Zone	vol1-4	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 250 stock nights available. (critical areas: FC, YT, RR).	Allow grazing, 250 stock nights available. (critical areas: FC, YT, RR).	Same as Alternative 2	Same as Alternative 2
Volcanic	Volcanic Knob Meadow	vol3	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 250 stock nights available. (critical areas: FC, YT, RR).	Allow grazing, 250 stock nights available. (critical areas: FC, YT, RR).	Same as Alternative 2	Same as Alternative 2
Bear	Bear Ridge Grazing Zone	ber2, ber6-8, ber 12, ber14	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 25 stock nights available.	Allow grazing, 25 stock nights available.	Same as Alternative 2	Same as Alternative 2
Bear	Bear Ridge	ber2	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 25 stock nights available.	Allow grazing; 25 stock nights available.	Same as Alternative 2	Same as Alternative 2
Silver Peak	Silver Pass Grazing Zone	sip6, sip7, sip11	The existing use levels and patterns would continue. Reported use 0/67/127	Allow grazing, 104 stock nights	Allow grazing, 208 stock nights.	Allow grazing, 208 stock nights.	Allow grazing, 196 stock nights
Silver Peak	Silver Pass meadow	sip6	The existing use levels and patterns would continue. Reported use 0/67/127.	Not addressed	Rest for resource recovery.	Prohibit grazing, unsuitable	Prohibit grazing
Silver Peak	Silver Pass Lake Meadow	sip7	The existing use levels and patterns would continue. Reported use 0/0/0.	Prohibit grazing (critical area - YT)	Allow grazing; 124 stock nights (critical area - YT).	Allow grazing; 124 stock nights.	124 stock nights
Silver Peak	Silver Pass Creek Complex	sip11	The existing use levels and patterns would continue. Reported use 0/0/0.	Not addressed	Allow grazing; 23 Stock nights available.	Allow grazing; 23 Stock nights available.	Allow grazing; 23 Stock nights available.

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Silver Peak	Mott/Pocket Grazing Zone	sip4, sip5	The existing use levels and patterns would continue. Reported use 13/37/0.	Allow grazing, 50 stock nights available.	Allow grazing, 61 stock nights available.	Allow grazing, 61 stock nights available.	Allow grazing, 49 stock nights available.
Silver Peak	Pocket Meadow	sip4	The existing use levels and patterns would continue. Reported use 0/37/0.	Allow grazing: 37 stock nights	Allow grazing; 48 stock nights.	Allow grazing; 48 stock nights.	Allow grazing; 36 stock nights.
Silver Peak	Mott Lake Grazing Area	sip5	The existing use levels and patterns would continue. Reported use 13/0/0.	Allow grazing; 13 stock nights available.	Allow grazing; 13 stock nights available.	Same as Alternative 2	Same as Alternative 2
Graveyard	Graveyard Grazing Zone	gra2, gra9, gra11, gra14-16, gra18, gra20	The existing use levels and patterns would continue. Reported use 0/32/0.	Allow grazing, 400 stock nights available.	Allow grazing, 233 stock nights	Allow grazing, 233 stock nights	Allow grazing, 193 stock nights
Graveyard	Middle Graveyard Meadow	gra2	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 41 stock nights available (critical area - FC).	Rest for resource recovery (critical area - FC).	Prohibit grazing	Prohibit grazing
Graveyard	Graveyard Meadow	gra9	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing.	Rest for resource recovery.	Same as Alternative 2	Same as Alternative 2
Graveyard	Upper Graveyard Meadow	gra11	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 127 stock nights available (critical area - YT).	Rest for resource recovery (critical area - YT).	Prohibit Grazing	Prohibit grazing
Graveyard	Upper Cold Creek Meadow Complex (Goodale Pass Meadow)	gra14, gra18	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 200 stock nights available (critical area - FC).	Allow grazing; 200 stock nights available (critical area - FC).	Same as Alternative 2	150 stock nights
Graveyard	Lower Graveyard Lake Shore	gra20	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 32 stock nights available.	Allow grazing; 32 stock nights available.	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Devils, Cold Creek	Devils Bathtub Grazing Zone	dev1, coc7	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 25 stock nights available.	Allow grazing, 25 stock nights available.	Same as Alternative 2	Same as Alternative 2
Devils	Devils Bathtub Meadow	dev1	The existing use levels and patterns would continue.	Allow grazing; 25 stock nights available (critical area - YT).	Allow grazing; 25 stock nights available (critical area - YT).	Same as Alternative 2	Same as Alternative 2
Hilton Creek	Davis Lake Grazing Zone	hil1-2, hil5, hil7-8, hil16	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 419 stock nights available.	Allow grazing, 419 stock nights available.	Same as Alternative 2	Prohibit grazing due to proximity to trailhead, no need
Hilton Creek	Davis Lake Outlet	hil5	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 20 stock nights available. (critical areas – RR, FC)	Allow grazing; 20 stock nights available. (critical areas – RR, FC)	Same as Alternative 2	N/A
Hilton Creek	Davis Pond Meadow (old pasture)	hil7	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 116 stock nights available.	Allow grazing; 116 stock nights available.	Same as Alternative 2	N/A
Hilton Creek	Turk Meadow	hil8	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 243 stock nights (critical areas: FC, RR, HY). Grazing associated with trips only	Allow grazing; 243 stock nights (critical areas - FC, RR, HY). Grazing associated with trips only	Same as Alternative 2	N/A
Hilton Creek	Davis Lakeshore Meadows	hil14	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 20 stock nights available.	Allow grazing; 20 stock nights available	Same as Alternative 2	N/A
Rock Creek/Mono Creek - Closed Meadows Outside of Grazing Zones							
Pioneer	Mudd Lake Meadow	pio5a	The existing use levels and patterns would continue. Currently closed. Reported use 0/0/0.	Allow grazing; 30 stock nights available (critical areas - YT, FC, RR); must keep stock out of basin above Mudd lake.	Prohibit grazing (because FAR upward and use in the past has been 0 - it has been closed)	Same as Alternative 2	Prohibit grazing (because FAR upward and use in the past has been 0 - it has been closed)

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Hilton Creek	Hilton Lakes 5 and 6	hil12	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable: do not allow grazing.	Unsuitable: do not allow grazing.	Same as Alternative 2	N/A
Bear	Kip Camp Meadow	ber3	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing (critical areas – FC, HY, RR).	Unsuitable; do not allow grazing (critical areas – FC, HY, RR).	Same as Alternative 2	Same as Alternative 2
Rock Creek/Mono Creek - Areas or Analysis Units Closed to Grazing							
Little Lakes Valley	Chickenfoot, Above Long Lake, Gem, etc.	llv1-17	The existing use levels and patterns would continue. Reported use 0/0/0.	Prohibit grazing in entire analysis unit	Prohibit grazing in entire analysis unit	Same as Alternative 2	Same as Alternative 2
Morgan Lakes	Entire Analysis Unit		The existing use levels and patterns would continue. Reported use 0/0/0.	Prohibit grazing in entire analysis unit	Prohibit grazing in entire analysis unit	Same as Alternative 2	Same as Alternative 2
Pioneer	North Pioneer Basin	pio1-5, pio6	The existing use levels and patterns would continue. Reported use 0/0/0.	Continue grazing closure	Continue grazing closure	Same as Alternative 2	Same as Alternative 2
Tamarack	Dorothy Lake, Kenneth, etc.	tam1-13	The existing use levels and patterns would continue. Reported use 0/0/0.	Not visited or assessed.	Do not authorize grazing, not needed this close to the pack station	Prohibit grazing	Prohibit grazing
Bishop/Humphreys							
Grazing Zones with included meadows							
French	French Canyon Grazing Zone	fre2-3, fre5, fre5-8, fre12, fre14, fre17	The existing use levels and patterns would continue. Reported use 0/13/62.	Allow grazing, 735 stock nights available.	Allow grazing, 735 stock nights available.	Same as Alternative 2	Same as Alternative 2
French	West Elba Lake Meadows	fre2	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing.	Rest until resource recovery.	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
French	East Elba Lake Meadows	fre2.5	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 25 stock nights (critical area YT).	Allow grazing; 25 stock nights, identified critical areas (HY, RR, YT).	Same as Alternative 2	Same as Alternative 2
French	Adjacent to Waterfall Camp	fre3	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable in wet area below camp; do not allow grazing (critical areas - FC).	Unsuitable in wet area below camp; do not allow grazing (critical areas - FC).	Same as Alternative 2	Same as Alternative 2
French	Waterfall Camp to Merriam Creek	fre7	The existing use levels and patterns would continue. Reported use 0/13/39.	Allow grazing; 72 stock nights available (critical areas - RR, FC).	Allow grazing; 72 stock nights available (critical areas - RR, FC).	Same as Alternative 2	Same as Alternative 2
French	French Cyn - Merriam Crk to Chevaux Creek	fre8	The existing use levels and patterns would continue. Reported use 0/0/23.	Allow grazing; 379 stock nights available (critical areas - YT, FC).	Allow grazing; 379 stock nights available (critical areas - YT, FC).	Same as Alternative 2	Same as Alternative 2
French	French Cyn - Chevaux confluence	fre8b	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing (critical areas -FC).	Unsuitable; do not allow grazing (critical areas -FC).	Same as Alternative 2	Same as Alternative 2
French	French Cyn /Merriam confluence	fre14	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing (critical areas -FC).	Unsuitable; do not allow grazing (critical areas - FC).	Same as Alternative 2	Same as Alternative 2
French	Waterfall Camp to 10,760 ft elevation	fre17	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 284 stock nights available (critical areas - YT, FC)	Allow grazing; 284 stock nights available (critical areas - YT, FC)	Same as Alternative 2	Same as Alternative 2
French	Merriam Lake Grazing Zone	fre6	The existing use levels and patterns would continue. Reported use 0/0/5.	Allow grazing, 35 stock nights available.	Allow grazing, 35 stock nights available.	Same as Alternative 2	Same as Alternative 2
French	Merriam Lake Meadows	fre6	The existing use levels and patterns would continue. Reported use 0/0/5.	allow grazing; 15 stock nights available (critical areas YT, FC).	Allow grazing; 15 stock nights available (critical areas YT, FC).	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
French	Merriam Benches	fre0	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 20 stock nights available.	Allow grazing; 20 stock nights available.	Same as Alternative 2	Same as Alternative 2
Glacier Divide	Piute Creek Grazing Zone	fre18, gla2, gla12-13	The existing use levels and patterns would continue. Reported use 121/163/290.	Allow grazing, 133 stock nights available.	Allow grazing, 133 stock nights available.	Same as Alternative 2	Same as Alternative 2
French, Glacier Divide	Chevaux Crk to Below Hutchinson	fre18, gla13	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 20 stock nights available.	Allow grazing; 20 stock nights available	Same as Alternative 2	Same as Alternative 2
Glacier Divide	Hutchinson Meadow	gla12	The existing use levels and patterns would continue. Reported use 121/163/290.	Allow grazing; 73 stock nights available(critical areas - HY).	Allow grazing; 73 stock nights available(critical areas - HY).	Same as Alternative 2	55 stock nights
Glacier Divide	Humphreys Basin Grazing Zone		The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 60 stock nights available in upland areas north of Golden Trout lakes.	Allow grazing, 60 stock nights available in upland areas north of Golden Trout lakes.	Same as Alternative 2	Same as Alternative 2
Humphreys	Golden Trout to Desolation (below 11,000)	gla0	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 60 stock nights available (critical areas - RR).	Allow grazing; 60 stock nights available (critical areas - RR).	Same as Alternative 2	Same as Alternative 2
Bishop/Humphreys - Closed Meadows Outside of Grazing Zones							
Glacier Divide	Lower Honeymoon Lake	gla9	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing.	Unsuitable; do not allow grazing.	Same as Alternative 2	Same as Alternative 2
Glacier Divide	Golden Trout Lake (West and North)	gla11	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing (critical areas - YT).	Unsuitable; do not allow grazing (critical areas - YT).	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Glacier Divide	Golden Trout to Summit Lakes	gla1	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing (critical area - YT).	Unsuitable; do not allow grazing (critical area - YT).	Same as Alternative 2	Same as Alternative 2
Glacier Divide	Packsaddle Lake Meadows	gla8, gla8.5	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing (critical area - FC).	Unsuitable; do not allow grazing (critical area - FC).	Same as Alternative 2	Same as Alternative 2
Glacier Divide	Packsaddle tributary along Piute Creek	gla7	The existing use levels and patterns would continue. Reported use 0/0/0.	“Sierra Club” camp to Packsaddle tributary along Piute Creek (Golden Trout Lakes): Unsuitable; do not allow grazing (critical area - YT).	“Sierra Club” camp to Packsaddle tributary along Piute Creek (Golden Trout Lakes): Unsuitable; do not allow grazing (critical area - YT).	Same as Alternative 2	Same as Alternative 2
Glacier Divide	Muriel Lake/Goethe Lakes	gla3, gla5	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing.	Unsuitable; do not allow grazing.	Same as Alternative 2	Same as Alternative 2
Glacier Divide	North of Summit Lake	gla4	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing (critical area - YT).	Unsuitable; do not allow grazing (critical area - YT).	Same as Alternative 2	Same as Alternative 2
Bishop/Humphreys - Areas or Analysis Units Closed to Grazing							
Bishop Creek	Hurd, Margaret, Chocolate, Marie-Louise, etc.	bis1-24	The existing use levels and patterns would continue. Reported use 0/0/0.	Prohibit commercial pack stock grazing in entire analysis unit.	Prohibit commercial pack stock grazing in entire analysis unit.	Same as Alternative 2	Same as Alternative 2
French	Upper French Canyon - meadows above 10,600 feet elevation	fre4, fre11, fre13	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 25 stock nights	No grazing zone in upper French Canyon. All grazing is below 10,760 feet in the French Canyon Grazing Zone	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Pine	Upper Pine Lake, Honeymoon Lake, etc.	pin1-11	The existing use levels and patterns would continue. Reported use 0/0/0.	Prohibit grazing	Prohibit grazing	Same as Alternative 2	Same as Alternative 2
Sabrina	Blue Lake, Emerald Lakes, Dingleberry, etc.	sab1-9	The existing use levels and patterns would continue. Reported use 0/0/0.	Prohibit grazing.	Prohibit grazing.	Same as Alternative 2	Same as Alternative 2
Treasure	Entire Analysis Unit	trs1-5	The existing use levels and patterns would continue. Reported use 0/0/0.	Prohibit grazing.	Prohibit grazing.	Same as Alternative 2	Same as Alternative 2
Lamarck	Grass Lake, Lamarck Creek	lam1,2	The existing use levels and patterns would continue. Reported use 0/0/0.	Prohibit grazing.	Prohibit grazing.	Same as Alternative 2	Same as Alternative 2
Humphrey's	Desolation to Humphreys	hum2	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable above 11,000; do not allow grazing.	Unsuitable above 11,000; do not allow grazing.	Same as Alternative 2	Same as Alternative 2
Granite	Honeymoon Lake to Italy Pass	grp1-4	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing.	Unsuitable; do not allow grazing	Same as Alternative 2	Same as Alternative 2
Florence/Bear							
Grazing Zones with included meadows							
Apollo	Marcella Lake Grazing Zone.	apo1-2, apo5-9, apo18	The existing use levels and patterns would continue. Reported use 29/0/0.	Allow grazing, 29 stock nights available.	Allow grazing, 29 stock nights available.	Same as Alternative 2	Same as Alternative 2
Apollo	Marcella Lake	apo2	The existing use levels and patterns would continue. Reported use 15/0/0.	Allow grazing; 15 stock nights available (critical area - YT).	Allow grazing; 15 stock nights available (critical area - YT).	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Apollo	Cirque Lake	apo5	The existing use levels and patterns would continue. Reported use 14/0/0.	Allow grazing; 14 stock nights available.	Allow grazing; 14 stock nights available.	Same as Alternative 2	Same as Alternative 2
Bear Lakes, Seldon	Rosemarie/ Lou Beverly Grazing Zone	bel1, bel7, sel1-5	The existing use levels and patterns would continue. Reported use 0/34/32.	Allow grazing, 165 stock nights. Also in Seldon analysis unit.	Allow grazing, 165 stock nights. Also in Seldon analysis unit.	Same as Alternative 2	Same as Alternative 2
Bear Lakes	East Fork Bear Creek (Upper)	bel7	The existing use levels and patterns would continue. Reported use 0/34/32.	Allow grazing; 34 stock nights available.	Allow grazing; 34 stock nights available.	Same as Alternative 2	Same as Alternative 2
Seldon	Rosemarie Meadow	sel1	The existing use levels and patterns would continue. Reported use 38/0/15.	93 stock nights. Trend monitoring of Rosemarie: if no change evaluate grazing	Allow grazing; 93 stock nights available. Two-year rotation with Hilgard Meadow	Same as Alternative 2	38 stock nights
Seldon	Rose Lake Meadow	sel2	The existing use levels and patterns would continue. Reported use 33/0/0.	Allow grazing; 33 stock nights available. Must define access route for both campsite and grazing (critical area - YT)	Allow grazing; 33 stock nights available. Must define access route for both campsite and grazing (critical area - YT)	Same as Alternative 2	Same as Alternative 2
Seldon	Lou Beverly Meadows (above inlet)	sel3	The existing use levels and patterns would continue. Reported use 20/20/4.	Allow grazing, 39 stock nights (critical area - YT)	Allow grazing, 39 stock nights (critical area - YT)	Same as Alternative 2	Same as Alternative 2
Ershim	Lakecamp/ Mallard Grazing Zone	ers1, ers2	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 25 stock nights available.	Allow grazing, 25 stock nights available.	Same as Alternative 2	Same as Alternative 2
Dutch	Dutch Lake Grazing Zone	dut45	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 25 stock nights available.	Allow grazing, 25 stock nights available.	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Hooper	Jackass Meadow Grazing Zone	hoo3	The existing use levels and patterns would continue. Reported use 318/168/230.	Allow grazing; 400 stock nights available, including Pasture Permit.	Allow grazing; 2025 stock nights available, including Pasture Permit, including inside and outside wilderness.	Allow grazing; 2025 inside and outside wilderness	400 stock nights
Hooper	Poison/Hell Hole Grazing Zone	hoo1, hoo2	The existing use levels and patterns would continue. Reported use unknown. 400 stock nights permitted under pasture permits.	Allow grazing; 400 stock nights available including Pasture Permits.	Allow grazing; 762 stock nights available including Pasture Permits.	Allow grazing; 762 stock nights available.	Allow grazing; 520 stock nights available.
Hooper	Poison Meadow	hoo1	The existing use levels and patterns would continue. Reported use unknown. 200 stock nights permitted under a pasture permit.	Allow grazing; 200 stock nights available including Pasture Permit.	Allow grazing; 320 stock nights available including Pasture Permit.	Allow grazing; 320 stock nights available including Pasture Permit.	Allow grazing; 320 stock nights available including Pasture Permit.
Hooper	Hell Hole Meadow	hoo2	The existing use levels and patterns would continue. Reported use unknown. 200 stock nights permitted under a pasture permit.	Allow grazing; 200 stock nights available including Pasture Permit (critical area - YT).	Allow grazing; 442 stock nights available including Pasture Permit (critical area - YT).	Allow grazing; 442 stock nights available including Pasture Permit (critical area - YT).	Allow grazing; 442 stock nights available including Pasture Permit (critical area - YT).
Italy	Hilgard Creek Grazing Zone	ita2	The existing use levels and patterns would continue. Reported use 4/0/66.	Allow grazing, 57 stock nights available.	Allow grazing, 57 stock nights available.	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Italy	Hilgard Meadow	ita2	The existing use levels and patterns would continue. Reported use 0/0/66.	57 nights available. Monitor trend and re-evaluate grazing every three years. Designate stock watering area	Hilgard Meadow: 57 nights available. Monitor trend and re-evaluate grazing every three years. 2 year rotation with Rosemarie Meadow.	Same as Alternative 2	43 stock nights
Sallie Keyes	Sallie Keyes Grazing Zone	sak1, sak4-8, sak11-14, sak16	The existing use levels and patterns would continue. Reported use 28/18/0.	Allow grazing, 420 stock nights available.	Allow grazing, 420 stock nights available.	Same as Alternative 2	Same as Alternative 2
Sallie Keyes	Boot Lake Meadow and Old Trail Meadow	sak5, sak6	The existing use levels and patterns would continue. Reported use 28/18/0.	196 stock nights. The steep springs in Boot Meadow and areas that never reach range readiness in Old Trail Meadow are "critical areas".	196 stock nights. The steep springs in Boot Meadow and areas that never reach range readiness in Old Trail Meadow are "critical areas".	Same as Alternative 2	Same as Alternative 2
Sallie Keyes	Big Fen Meadow	sak7	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable: do not allow grazing (critical area - FC).	Unsuitable: do not allow grazing (critical area - FC).	Same as Alternative 2	Same as Alternative 2
Sallie Keyes	Water Trail Meadow	sak1	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 224 stock nights available. (critical areas – HY, RR).	Allow grazing; 224 stock nights available. (critical areas – HY, RR).	Same as Alternative 2	Same as Alternative 2
Sallie Keyes, East Florence	Shooting Star Blayney Grazing Zone	eaf2, sak15, sak17, sak18	The existing use levels and patterns would continue. Reported use 60/0/38.	Allow grazing, 95 stock nights	Allow grazing, 1,830 stock nights available.	Allow grazing, 1,830 stock nights available.	Same as Alternative 2
Sallie Keyes	Shooting Star Meadow	sak15	The existing use levels and patterns would continue. Reported use 0/0/38.	Allow grazing; 35 stock nights available.	Allow grazing; 35 stock nights available.	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Sallie Keyes	Lower Blayney Meadow	sak17, sak18	The existing use levels and patterns would continue. Reported use 60/0/0.	Allow grazing: 60 stock nights	Allow Grazing: 544 stock nights, including pasture permit	544 stock nights	60 stock nights
East Florence	Double Meadow	eaf2	The existing use levels and patterns would continue. Reported use 0/0/0.	Not addressed	Allow grazing; 1251 stock nights available.	1251 stock nights	525 to 1050 stock nights annually
Ward Mtn	Heather Lake Grazing Zone	wam13-15, wam 18	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 25 stock nights available.	Allow grazing, 25 stock nights available.	Same as Alternative 2	Same as Alternative 2
Ward Mtn	Ward Mountain Grazing Zone	wam2	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 25 stock nights available.	Allow grazing, 25 stock nights available.	Same as Alternative 2	Same as Alternative 2
Dutch, Hobler	Thompson Lake Burnt Corral Grazing Zone	dut3, hob2-3, hob12, hob17, hob19-20, hob30	The existing use levels and patterns would continue. Reported use 0/0/8.	Allow grazing, 8 stock nights available (critical area - YT).	Allow grazing, 8 stock nights available (critical area - YT).	Same as Alternative 2	Same as Alternative 2
Dutch	Rodeo Meadow Grazing Zone	dut25-31, dut33, dut53-54	The existing use levels and patterns would continue. Reported use 0/0/8.	Allow grazing, 25 stock nights available.	Allow grazing, 25 stock nights available.	Same as Alternative 2	Same as Alternative 2
Florence/Bear - Closed Meadows Outside of Grazing Zones							
Seldon	Marie Lake Meadow	sel6	The existing use levels and patterns would continue. Reported use 2/0/0.	Unsuitable: do not allow grazing (critical area - YT).	Unsuitable: do not allow grazing (critical area - YT).	Same as Alternative 2	Same as Alternative 2
Italy	Upper Hilgard Meadow	ita1	The existing use levels and patterns would continue. Reported use 4/0/0.	Unsuitable: do not allow grazing (critical area - FC).	Unsuitable: do not allow grazing (critical area - FC).	Same as Alternative 2	Same as Alternative 2
Italy	Very Upper Hilgard Meadow	ita5	The existing use levels and patterns would continue. Reported use 0/0/0.	Unsuitable; do not allow grazing.	Unsuitable; do not allow grazing.	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
John Muir Southwest							
Grazing Zones with included meadows							
Basin	Blackcap Basin Grazing Zone	bas3	The existing use levels and patterns would continue. Reported use 27/24/0.	Allow grazing, 43 stock nights available.	Allow grazing, 43 stock nights available.	Same as Alternative 2	Same as Alternative 2
Basin	Lighting Corral	bas3	The existing use levels and patterns would continue. Reported use 27/24/0.	Allow grazing; 27 stock nights available.	Allow grazing; 27 stock nights available.	Same as Alternative 2	Same as Alternative 2
Basin	Maxson Lake Grazing Zone	bas10	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 25 stock nights available.	Allow grazing, 25 stock nights available.	Same as Alternative 2	Same as Alternative 2
Basin	Kings River Grazing Zone	bas4, bas6, bas9	The existing use levels and patterns would continue. Reported use 62/0/0. (reported as Pearl Lk)	Allow grazing, 62 stock nights available.	Allow grazing, 62 stock nights available.	Same as Alternative 2	Same as Alternative 2
Bench	Falls/McGuire Grazing Zone	ben8, bim17-18, bim21	The existing use levels and patterns would continue. Reported use 0/0/26 (includes Upper and lower Falls Creek).	Allow grazing, 193 stock nights available.	Allow grazing, 193 stock nights available.	Same as Alternative 2	Same as Alternative 2
Bench	Upper Falls Creek	ben8	The existing use levels and patterns would continue. Reported use 0/0/14.	Allow grazing; 11 stock nights available.	Allow grazing; 11 stock nights available.	Same as Alternative 2	8 stock nights
Big Maxson	McGuire Lake Meadow	bim17	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing: 160 stock nights (critical area - YT).	Allow grazing : 160 stock nights (critical area - YT).	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Big Maxson	Fall Creek / Bench Valley	bim21	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 22 stock nights available.	Allow grazing; 22 stock nights available.	Same as Alternative 2	Same as Alternative 2
Big Maxson	Lower Meadowbrook Grazing Zone	bim5	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 145 stock nights available.	Allow grazing, 145 stock nights available.	Same as Alternative 2	Same as Alternative 2
Big Maxson	Meadow-brook Meadow	bim5	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 145 stock nights (critical area - FC).	Allow grazing; 145 stock nights (critical area - FC).	Same as Alternative 2	Same as Alternative 2
Big Maxson	Kings River Fleming Junction Grazing Zone	bim20, bim22	The existing use levels and patterns would continue. Reported use 0/0/23.	Allow grazing, 400 stock nights available.	Allow grazing, 400 stock nights available.	Same as Alternative 2	Same as Alternative 2
Big Maxson	North Fork Kings River/ Fleming Outlet Meadow	bim20	The existing use levels and patterns would continue. Reported use 0/0/23.	Allow grazing; 400 stock nights available.	Allow grazing; 400 stock nights available.	Same as Alternative 2	Same as Alternative 2
Crown Basin	Crown Creek North Grazing Zone		The existing use levels and patterns would continue. Reported use 0/22/27.	Allow grazing, 27 stock nights available.	Allow grazing, 27 stock nights available	Same as Alternative 2	Same as Alternative 2
Crown Lake	Scepter Lake Grazing Zone	cr11, cr13, cr135	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 25 stock nights available (critical area - YT).	Allow grazing, 25 stock nights available (critical area - YT).	Same as Alternative 2	Same as Alternative 2
Finger	Duck Lake Grazing Zone	fin1, fin3-5, fin8, fin20, fin22	The existing use levels and patterns would continue. Reported use 0/0/0.	Duck Lake Grazing Zone: Allow grazing, 25 stock nights available.	Duck Lake Grazing Zone: Allow grazing, 25 stock nights available.	Same as Alternative 2	Same as Alternative 2
Finger	Chain Lake Grazing Zone	fin12	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 25 stock nights available.	Allow grazing, 25 stock nights available.	Same as Alternative 2	Same as Alternative 2

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
Fleming Mountain	Fleming/Dale/Lower Indian Grazing Zone	fle4-7, fle9, fle10-13, fle19-23, fle25, poc13, rmb8-10, rmb17	The existing use levels and patterns would continue. Reported use 4/0/0.	Allow grazing, 621 stock nights available. Included in Red Mountain AU.	Allow grazing, 621 stock nights available. Included in Red Mountain AU.	Same as Alternative 2	Same as Alternative 2
Fleming Mountain	Dale Lake Meadow	fle6	The existing use levels and patterns would continue. Reported use 4/0/0.	Allow grazing; 280 stock nights available.	Allow grazing; 280 stock nights available.	Same as Alternative 2	Same as Alternative 2
Fleming Mountain	Lower Indian Lake Meadow	fle12	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 237 stock nights available (critical areas - HY).	Allow grazing; 237 stock nights available (critical areas - HY).	Same as Alternative 2	Same as Alternative 2
Fleming Mountain	Above Fleming Meadow	fle21	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 77 stock nights available (critical areas - RR, FC).	Allow grazing; 77 stock nights available (critical areas - RR, FC).	Same as Alternative 2	Same as Alternative 2
Red Mountain	North of Devils Punchbowl	rmb10	The existing use levels and patterns would continue. Reported use 18/0/8.	Allow grazing; 27 stock nights available.	Allow grazing; 27 stock nights available.	Same as Alternative 2	Same as Alternative 2
Red Mountain	Disappointment Lake	rmb16	The existing use levels and patterns would continue.	Disappointment Lake: Allow grazing; 22 stock nights available.	No grazing approved.	Same as Alternative 2	Same as Alternative 2
Hobler, Dutch	Thompson Lake Burnt Corral Grazing Zone	dut3, hob2-3, hob12, hob17, hob19-20, hob30	The existing use levels and patterns would continue. Reported use 0/0/8.	Allow grazing, 8 stock nights available (critical area - YT).	Allow grazing, 8 stock nights available (critical area - YT).	Same as Alternative 2	Same as Alternative 2
Post Corral	Reddys Hole	poc1-3, poc7-9	The existing use levels and patterns would continue. Reported use 0/0/0.	Not addressed	Allow grazing, 25 stock nights available.	Not addressed.	Not addressed.
South Woodchuck	South of Chimney Lake Grazing Zone	sow12, sow15	The existing use levels and patterns would continue. Reported use 0/0/0.	Not addressed	Allow grazing, 25 stock nights available.	Not addressed.	Not addressed.

Analysis Unit	Grazing Zone/Key Meadow Area	Key Area ID #	Alternative 1	Alternative 2	Alternative -2- Modified	Alternative 3	Alternative 4
John Muir Southwest - Areas or Analysis Units Closed to Grazing							
Hobler	Red Rock Basin Grazing Zone	hob7, hob9, hob31-38	The existing use levels and patterns would continue. Reported use 40/0/18.	Allow grazing, 40 stock nights available.	No grazing approved	Same as Alternative 2	Same as Alternative 2
John Muir Southeast							
Sawmill	Sawmill Grazing Zone		The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing, 45 stock nights available.	Allow grazing, 45 stock nights available.	Same as Alternative 2	Prohibit grazing
Sawmill	Sawmill Meadow	saw2	The existing use levels and patterns would continue. Reported use 0/0/0.	Allow grazing; 45 stock nights.	Allow grazing; 45 stock nights.	Same as Alternative 2	N/A
John Muir SE - Closed Meadows Outside of Grazing Zones							
Cottonwood	Windy Gap	cot11, cot21	The existing use levels and patterns would continue. Reported use 0/0/0.	Windy Gap: Unsuitable: do not allow grazing.	Windy Gap: Unsuitable: do not allow grazing.	Same as Alternative 2	Same as Alternative 2
John Muir SE - Areas or Analysis Units Closed to Grazing							
Shepherd	Entire Analysis Unit		The existing use levels and patterns would continue. Reported use 0/0/0.	Prohibit grazing in entire analysis unit.	Prohibit grazing in entire analysis unit.	Same as Alternative 2	Same as Alternative 2

Table 2.31 Destination Quota by Alternative

Geographic Unit	Analysis Unit	Pack Station Location	Alternative 2		Alternative 2 - Modified		Destination/Zone
			Destination/Zone		Quota		
Ansel Adams East							
	Crater Creek Drainage	Lakes Basin	Deer Creek	14	Deer Creek	12	Combined destinations
	Crater Creek Drainage	Lakes Basin	Deer Lake	10			
	Crater Creek Drainage	Reds Meadow	Duck Creek/Deer Creek	4	Deer Creek	2	
	King Creek	Reds Meadow	Superior Lake	8	Superior Lake	8	Up to 14 when trail is improved
	King Creek	Reds Meadow	Holcomb Lake	6	Holcomb Lake	6	
	King Creek	Reds Meadow	Anona Lake	6	Anona Lake	6	
	King Creek	Reds Meadow	Ashley Lake	14	Ashley Lake	7	
	King Creek	Reds Meadow	Fern Lake	10	Fern Lake	10	
	King Creek	Reds Meadow	Lion Point	2	Lion Point	2	
	King Creek	Reds Meadow	King Creek	8	King Creek	8	
	King Creek	Reds Meadow	Summit Lake	2	Summit Lake		
	Minarets	Reds Meadow	Vivian Lake	2	Trinity Lakes	2	
	Minarets	Reds Meadow	Emily Lake	0	Emily Lake	0	Up to 8 when trail is improved
	Minarets	Reds Meadow	Minaret Creek	12	Minaret Creek	20	Combined destinations
	Minarets	Reds Meadow	Johnston Lake	8			
	Parker	Silver Lake	Parker Lake	n/a	Parker Lake	4	
	River High	Reds Meadow	Agnew Pass	4	Agnew Pass	4	
	River High	Reds Meadow	High Trail	4	High Trail	0	
	River	Reds Meadow	River Trail	4	River Trail	10	
	River	Reds Meadow	Upper San Joaquin	2	Upper San Joaquin		
	Rush Creek	Silver Lake	Alger Lakes	10	Alger Lakes	10	
	Rush Creek	Silver Lake	Crest Creek	2	Crest Creek	2	
	Rush Creek	Silver Lake	Clark Lake	15	Clark Zone	15	
	Rush Creek	Silver Lake	Summit Lake	2	Summit Lake	2	
	Rush Creek	Silver Lake	Gem Lake	15			Combined destinations

Geographic Unit	Analysis Unit	Pack Station Location	Alternative 2		Alternative 2 - Modified		Destination/Zone
			Destination/Zone		Quota		
	Rush Creek	Silver Lake	Rush Creek	15	Gem/Waugh Lakes	30	
	Rush Creek	Silver Lake	Waugh Lake	10			
	Rush Creek	Silver Lake	Weber Lake	12	Weber Lake	12	
	Shadow-Ediza	Reds Meadow	Clarice Lake	2	Clarice Lake	2	
	Shadow-Ediza	Reds Meadow	Laura Lake	2	Laura Lake	3	Up to 5 when trail is improved
	Shadow-Ediza	Reds Meadow	Nydiver Creek	2	Nydiver Lake	2	
	Shadow-Ediza	Reds Meadow	Ediza Lake	24	Ediza Lake	24	
	Shadow-Ediza	Reds Meadow	Shadow Creek	16	Shadow Creek	16	
	Shadow-Ediza	Reds Meadow	Rosalie Lake	6	Rosalie/Gladys Lakes	6	
	Thousand Island	Reds Meadow	Island Pass	6	Island Pass	0	
	Thousand Island	Reds Meadow	Thousand Island	56	Thousand/Upper San Joaquin	45	Combined destinations
	Thousand Island	Reds Meadow	Emerald Lake	2			
	River High	Reds Meadow	Badger Lake	14			
	Thousand Island	Silver Lake	Thousand Island	4	Thousand/Upper San Joaquin	0	Combined destinations
	Thousand Island	Reds Meadow	Garnet Lake	30	Garnet Lake	20	
	Upper Rush	Silver Lake	Davis Lake	6	Davis Lake	6	
	Upper Rush	Silver Lake	Lost Lake	2	Lost Lake	2	
	Upper Rush	Silver Lake	Donohue	2	Donohue	2	
Ansel Adams West							
	Bench Canyon	Clover Meadow	Long Creek	0	Long Creek	4	
	Bridge Crossing	Clover Meadow	Junction Buttes	8	Junction Buttes	6	
	Bridge Crossing	Clover Meadow	Sheep's Crossing	3	Sheep's Crossing	0	
	Cargyle	Reds Meadow	77 Corral Zone	6	77 Corral Zone	4	
	Cargyle	Clover Meadow	77 Corral Zone		77 Corral Zone	2	
	Cargyle	Clover Meadow	Spano/Straube Lakes	12	Spano/Staube Lakes	4	
	Cassidy/Junction	Clover Meadow	Cassidy/Millers Crossing	25	Miller/Cassidy/Rattlesnake	25	
	Cora	Clover Meadow	Chetwood zone	12	Chetwood zone	12	
	Cora	Clover Meadow			Cora Creek	2	
	Cora	Clover Meadow	Cora Lakes	18	Cora Lakes	18	
	Cora	Clover Meadow			Lost Lake	2	
	Iron Creek	Clover Meadow	Iron Creek	4	Iron Creek	4	
	Jackass	Clover Meadow	Jackass Lakes	6	Jackass Lakes	6	
	Lake Catherine	Clover Meadow	Stevenson Meadow/Creek	10	Hemlock/Stevenson	10	Combined destinations

Geographic Unit	Analysis Unit	Pack Station Location	Alternative 2		Alternative 2 - Modified		Destination/Zone
			Destination/Zone		Quota		
	Lake Catherine	Clover Meadow	Hemlock Crossing	10			
	Lillian Lake	Clover Meadow	Fernandez Lakes	4	Fernandez Lakes	2	
	Lillian Lake	Clover Meadow	Fernandez Meadow	6	Fernandez Meadow	6	
	Lillian Lake	Clover Meadow	Flat/Monument Lakes	6	Flat/Monument Lakes	6	
	Lillian Lake	Clover Meadow	Lillian Lake	25	Lillian Lake	25	
	Sadler	Clover Meadow	Isberg Lake	7	Isberg Lake	6	
	Sadler	Clover Meadow	Joe Crane Lake	8	Joe Crane Lake	8	
	Sadler	Clover Meadow	Sadler Lake	10	Sadler/McClure Lakes	19	
	Staniford Lakes	Clover Meadow	Chittendon Trail	4		0	Combine destinations
	Staniford Lakes	Clover Meadow	Staniford Lakes	20	Staniford Lakes	18	Up to 24 to Staniford Lakes when trail is fixed.
	Staniford Lakes	Clover Meadow	Vandeburg Lake	12	Vandeburg /Lady Lakes	32	Combined destinations
	Staniford Lakes	Clover Meadow	Lady Lake	20			
	Triple Divide	Clover Meadow			Post Creek	2	
	Triple Divide	Clover Meadow	Anne Lake	4	Anne Lake	4	
	Triple Divide	Clover Meadow	Rutherford Lake	4	Rutherford Lake	4	
	Triple Divide	Clover Meadow			Isberg Meadow	2	
	Triple Divide	Clover Meadow			South of Slab Lakes	2	
	YOSE	Fish Camp	Chiquito to Yosemite	6	Chiquito Pass	11	Trips shown are an estimate of use. Actual use into YOSE will be governed by NPS.
	YOSE	Clover Meadow	Yosemite National Park	13	Chiquito Pass	20	Trips shown are an estimate of use. Actual use into YOSE will be governed by NPS.
Fish Creek/McGee/Convict							
	Cascade Valley	Reds Meadow	Cascade Valley	2	Cascade Valley	2	
	Cascade Valley	Lakes Basin	Cascade Valley	8	Cascade Valley	8	
	Cascade Valley	Reds Meadow	Lower Fish Creek	20	Lower Fish Creek	20	Includes Pond Lily
	Cold Duck	Lakes Basin	Woods Lake	4	Coldwater Corridor	8	
	Cold Duck	McGee Creek	Woods Lake	0	Coldwater Corridor	4	
	Convict	McGee Creek	Cloverleaf Lake	4	Cloverleaf Lake	2	
	Convict	Lakes Basin	Cloverleaf Lake	2	Cloverleaf Lake	2	

Geographic Unit	Analysis Unit	Pack Station Location	Alternative 2		Alternative 2 - Modified		Destination/Zone
			Destination/Zone		Quota		
	Convict	McGee	Dorothy Lake	4	Dorothy Lake	4	
	Convict	McGee	Edith Lake	6	Genevieve/Edith Lakes	14	Combined destinations
	Convict	Lakes Basin	Genevieve Lake	6	Genevieve/Edith Lakes	6	
	Convict	McGee	Genevieve Lake	8			
	Margaret	Edison Lake	Margaret Lakes	20	Margaret Lakes	20	
	McGee	McGee	Baldwin Canyon	4	Baldwin Canyon	2	
	McGee	McGee	Big McGee Lake	20	Big McGee Lake	20	
	McGee	McGee	Grass Lake	10	Grass Lake	10	
	McGee	McGee	McGee Canyon	20	McGee Canyon	20	
	McGee	McGee	Round Lake	20	Round Lake	12	Up to 20 spot and dunnage trips when access to Round Lake is improved.
	McGee	McGee	Meadow Lake (Golden)	2	Meadow Lake (Golden)	2	
	McGee	McGee	Steelhead Lake	16	Steelhead Lake	16	
	Purple Bench	Lakes Basin	Duck Lake	20	Duck Lake/Pika Lake/ Duck Creek	26	Combined destinations
	Purple Bench	Lakes Basin	Pika Lake	10			10 stock limit
	Purple Bench	Lakes Basin	Purple Lake	24	Purple Lake	24	
	Purple Bench	Lakes Basin	Ram Lake	4	Ram Bench	4	
	Purple Bench	Lakes Basin	Lake Virginia	10	Lake Virginia	10	
	Silver Divide	Edison Lake	Chief/Papoose	4	Chief/Papoose/Lone Indian/Squaw	6	Silver Divide destinations managed as a zone for west side operators
	Silver Divide	Lakes Basin	Chief/Papoose	2	Chief/Papoose/Lone Indian/Squaw	2	
	Silver Divide	Lakes Basin	Grassy Lake	6	Grassy Lake	4	
	Silver Divide	Edison Lake			Grassy Lake	2	Silver Divide destinations managed as a zone for west side operators
	Silver Divide	Huntington Lake	Grassy Lake	2	Grassy Lake	2	Silver Divide destinations managed as a zone for west side operators
	Silver Divide	Lakes Basin	Jackson Meadow	4	Jackson Meadow	5	

Geographic Unit	Analysis Unit	Pack Station Location	Alternative 2		Alternative 2 - Modified		Destination/Zone
			Destination/Zone		Quota		
	Silver Divide	Lakes Basin	Lost Keys Lake	2	Lost Keys Lakes	2	
	Silver Divide	Edison Lake	Peter Pande Lake	4	Peter Pande Lake	1	
	Silver Divide	Lakes Basin	Peter Pande Lake	2	Peter Pande Lake	1	Up to 3 trips when trail repaired or rerouted.
	Silver Divide	Lakes Basin	Wilber May Lake	0	Wilber May Lake	2	
	Silver Divide	Edison Lake	Wilber May Lake	0	Wilber May Lake	2	Silver Divide destinations managed as a zone for west side operators
	Silver Divide	Lakes Basin	Long Canyon	0	Long Canyon	4	
	Silver Divide	Lakes Basin	Olive Lake	0	Olive Lake	6	
	Upper Fish	Lakes Basin	Tully Hole	6	Tully Hole	6	
	Upper Fish	Lakes Basin	Horse Heaven	8	Horse Heaven	3	
	Upper Fish	McGee Creek	Horse Heaven	6	Horse Heaven	6	
	Upper Fish	McGee Creek	Tully Lake	4	Tully Lake	4	
	Upper Fish	McGee Creek	Upper Fish	18	Upper Fish	18	
Mono Creek/Rock Creek							
	Devils	Edison Lake	Devils Bathtub	8	Devils Bathtub	8	
	Fourth Recess	Rock Creek	Fourth Recess Lake	28	Fourth Recess Lake	28	
	Fourth Recess	Rock Creek	Trail Lake	6			Combined destinations
	Fourth Recess	Edison Lake	Upper Mono Creek	5	Upper Mono Creek	5	
	Fourth Recess	Rock Creek	Upper Mono Creek	30	Upper Mono Creek	30	
	Graveyard	Edison Lake	Arrowhead/Feather Lakes	5	Arrowhead/Feather Lakes	5	
	Graveyard	Edison Lake	Goodale Pass	6	Goodale Pass	6	
	Graveyard	Edison Lake	Graveyard Lakes	34	Graveyard Lakes	26	
	Graveyard	Huntington	Graveyard Lakes	6	Graveyard Lakes	4	
	Hilton Creek	McGee	Hilton (Davis/Second Lakes)	12	Hilton (Davis/Second Lakes)	12	
	Hilton Creek	Pine Creek	Hilton (Davis/Second Lakes)	4	Hilton (Davis/Second Lakes)	4	
	Hilton Creek	Rock Creek	Hilton (Davis/Second Lakes)	44	Hilton (Davis/Second Lakes)	44	
	Hilton Creek	Rock Creek	Upper Hilton Lakes	6	Upper Hilton Lakes	6	
	Hopkins	Edison Lake	Lower Hopkins		Lower Hopkins Basin	2	
	Hopkins	Rock Creek	Lower Hopkins	8	Lower Hopkins Basin	8	
	Little Lakes Valley	Rock Creek	Chickenfoot Lake	8	Chickenfoot/Long Lakes	12	Combined destinations

Geographic Unit	Analysis Unit	Pack Station Location	Alternative 2		Alternative 2 - Modified		Destination/Zone
			Destination/Zone		Quota		
	Little Lakes Valley	Rock Creek	Long Lake	6			
	Little Lakes Valley	Rock Creek	Gem Lake	3	Gem Lake	0	
	Little Lakes Valley	Rock Creek	Ruby Lake	6	Ruby Lake	6	
	Lower Mono Creek	Edison Lake	Lower Mono Creek	8	Lower Mono Creek	18	
	Morgan Lakes	Rock Creek	Lower Morgan Lake	4	Morgan Lakes	4	
	Morgan Lakes	Pine Creek	Morgan Lake	4	Morgan Lakes	4	
	Pioneer	Edison Lake	Pioneer Basin	2	Pioneer Basin	2	
	Pioneer	Rock Creek	Pioneer Basin	20	Pioneer Basin	20	
	Second Recess	Edison Lake	Second Recess Canyon	10	Second Recess Canyon	10	
	Silver Peak	Edison Lake	Mott Lake	10	Mott Lake	10	
	Tamarack	Rock Creek	Dorothy Lake	16	Tamarack Basin	16	
	Volcanic	Edison Lake	Volcanic Knob	4	Volcanic	4	
Bishop/Humphreys							
	Bishop Creek	South Lake	Bull Lake	10	Bull Lake	10	
	Bishop Creek	South Lake	Hurd Lake	10	Hurd Lake	10	
	Bishop Creek	South Lake	Long Lake	10	Long Lake	10	
	Bishop Creek	South Lake	Marie Louise Lake	2	Marie Louise Lake	2	
	Bishop Creek	South Lake	Upper Bishop Creek	25	Upper Bishop Creek	25	
	Bishop Creek	South Lake	Bishop Pass - SEKI	83	Bishop Pass - SEKI	58	
	French Canyon	Pine Creek	Elba/Moon/L Lakes	2	Elba/Moon/L Lakes	2	
	French Canyon	Edison Lake	French Canyon	2	French Canyon	2	
	French Canyon	Pine Creek	French Canyon	10	French Canyon	10	
	French Canyon	Pine Creek	French Lake	2	French Lake	2	
	French Canyon	Pine Creek	Merriam Meadow	4	Merriam Meadow	4	
	French Canyon	Pine Creek	Royce Lake	4	Royce Lakes	2	
	Glacier Divide	North Lake	Golden Trout Lakes	50	Golden Trout Lakes	40	Combined destinations
	Glacier Divide	North Lake	Wahoo Creek	4			
	Glacier Divide	North Lake	Honeymoon Creek/Lake	2	Honeymoon Creek/Lake	4	
	Glacier Divide	Edison Lake	Hutchinson	6	Hutchinson Meadow	6	
	Glacier Divide	North Lake	Hutchinson Meadow	12	Hutchinson Meadow	12	
	Glacier Divide	Pine Creek	Hutchinson Meadow	4	Hutchinson Meadow	4	
	Glacier Divide	North Lake	Muriel Lake	4	Muriel Lake	4	Up to 14 trips when trail is repaired.

Geographic Unit	Analysis Unit	Pack Station Location	Alternative 2		Alternative 2 - Modified		Destination/Zone
			Destination/Zone		Quota		
	Glacier Divide	North Lake	Packsaddle Lake	2	Packsaddle Lake	2	
	Horton	Pine Creek	Horton Lake	2	Horton Lake	2	
	Horton	North Lake	Horton Lake	4	Horton Lake	4	
	Humphreys Basin	North Lake	Desolation Creek/Lake	14	Desolation Creek/Lake	14	
	Humphreys Basin	North Lake	Humphreys Lakes	10	Humphreys Lakes	10	
	Humphreys Basin	North Lake	Mesa Lake	4	Tomahawk/Mesa Lakes	8	Combined destinations
	Humphreys Basin	North Lake	Tomahawk Lake	4			
	Lamarck	North Lake	Lamarck Lakes	5	Lamarck Lakes	5	
	Pine Creek	Pine Creek	Honeymoon Lake	28	Honeymoon Lake	28	
	Pine Creek	Pine Creek	Pine Creek	16	Pine Creek Zone	30	Combined destinations
	Pine Creek	Pine Creek	Upper Pine Lake	10			
	Piute	North Lake	Piute Lake	8	Piute Corridor	20	
	Sabrina	North Lake	Baboon Lake	3	Baboon Lake	3	
	Sabrina	North Lake	Blue Lake	6	Blue Lake	6	
	Sabrina	North Lake	Dingleberry Lake	16	Dingleberry Lake	16	
	Sabrina	North Lake	Donkey Lake	6	Donkey Lake	6	
	Sabrina	North Lake	Emerald Lakes	28	Emerald Lakes	25	
	Sabrina	North Lake	Upper Sabrina	40	Upper Sabrina Basin	40	
	Treasure	South Lake	Treasure Lakes	8	Treasure Lake	8	
	Tyee	South Lake	Tyee Lakes	2	Tyee Lakes	2	
Florence/Bear							
	Apollo	Edison Lake	Cirque Zone	8	Cirque Zone	8	
	Bear Ridge/Seldon	Huntington Lake	Seldon/JMT corridor	4	Bear Creek/PCT Corridor	14	Combined destinations
	Bear Ridge/Seldon	Edison Lake	Seldon/JMT corridor	8	Bear Creek/PCT Corridor	24	
	Bear Ridge/Seldon	Edison Lake	Bear Ridge	16			
	Bear Ridge/Seldon	Huntington Lake	Twin Falls	2			
	Bear Ridge/Seldon	Huntington Lake	Lower Bear Creek	4			
	Bolsillo	Edison Lake	Corbett Lake	0	Corbett Lake	4	
	Dutch	Edison Lake	Crater Lake	4			Combined destinations
	Dutch	Huntington Lake	Dutch Lake	2	Dutch/Hidden/Crater	6	
	Dutch	Edison Lake	Dutch/Hidden/Crater	6	Dutch/Hidden/Crater	6	
	Dutch	Tule Meadow	Rodeo Meadow	4	Rodeo Meadow	4	
	Dutch	Tule Meadow	Thompson Lake	4	Thompson Lake	2	

Geographic Unit	Analysis Unit	Pack Station Location	Alternative 2		Alternative 2 - Modified		Destination/Zone
			Destination/Zone		Quota		
	Dutch	Edison Lake	Thompson Lake		Thompson Lake	2	
	East Florence/Sallie Keys	Huntington Lake	Blayne Hot Springs	4	Shooting Star Meadow	4	Combined destinations
	East Florence/Sallie Keys	Edison Lake	Blayne	4	Shooting Star Meadow	10	
	East Florence/Sallie Keys	Edison Lake	Blayne Meadow/Shooting Star	6			
	East Florence/Sallie Keys	Double Mdw	Shooting Star Meadow	4	Shooting Star Meadow	4	
	Hooper	Edison Lake	Gorden/Hooper	8	Gorden/Hooper Lakes	8	
	Italy	Huntington Lake	Hilgard	6	Hilgard Meadow	6	
	Italy	Edison Lake	Hilgard	8	Hilgard Meadow	8	
	Sallie Keys	Edison Lake	Sallie Keys	4	Sallie Keys Lake	4	
	Sallie Keys	Blayne Meadow	Sallie Keys	4	Sallie Keys Lake	4	
	Sallie Keys	Double Meadow	Sallie Keys	3	Sallie Keys Lake	3	
	Sallie Keys	Edison Lake	Senger Creek	10	Senger Creek	10	
	SEKI	Edison Lake	Piute Creek to SEKI Boundary	25	Piute Creek to SEKI Boundary	25	Combined into one destination zone
	SEKI	Double Meadow	Piute Creek to SEKI Boundary	4	Piute Creek to SEKI Boundary	5	
	SEKI	Blayne Meadow	Piute Creek to SEKI Boundary	5	Piute Creek to SEKI Boundary	5	
	North Piute	Huntington Lake	Piute	4			
	North Piute	Edison Lake	Piute Canyon	2			
	North Piute	Edison Lake	Piute Creek	14			
	Seldon	Edison Lake	Rosemarie Meadow		Rosemarie Meadow	4	
	Seldon	Huntington Lake	Rosemarie Meadow	4	Rosemarie Meadow	4	
	Seldon	Huntington Lake	Rose Lake	0	Rose Lake	2	
	Seldon	Edison Lake	Lou Beverly	0	Lou Beverly Lake/Sandpiper Lake	4	
	Ward Mountain	Edison Lake	Ward Mountain lake	0	Ward Mountain Lake	2	
John Muir Southwest							
	Basin	Tule Meadow	Blackcap Basin	5	Blackcap Basin	5	
	Basin	Tule Meadow	Maxson Lake	0	Maxson Lake	2	
	Basin	Tule Meadow	Pearl/Portal Zone	8	Pearl/Portal Zone	8	
	Bench	Tule Meadow	Crabtree Lake	2	Crabtree Lake	2	

Geographic Unit	Analysis Unit	Pack Station Location	Alternative 2		Alternative 2 - Modified		Destination/Zone
			Destination/Zone		Quota		
	Bench	Tule Meadow	Bench Valley	4	Bench Valley	6	Up to 10 trips when trail is improved to standard, Combined destinations
	Big Maxson	Tule Meadow	McGuire/Guest/Horsehead	2			
	Big Maxson	Tule Meadow	Halfmoon Lake	3	Halfmoon Lake	3	
	Big Maxson	Tule Meadow	Big Maxson Meadow	4	Maxson Meadow	4	
	Crown Lake	Tule Meadow	Crown/Sceptor Lakes	0	Crown/Sceptor Lakes	6	
	Finger	Tule Meadow	Chain/Duck lakes	0	Chain/Duck lakes	4	
	Fleming Mountain	Tule Meadow	Dale Lake	3	Dale Lake	3	
	Fleming Mountain	Tule Meadow	Rae Lake	4	Rae Lake	4	
	Hobler	Tule Meadow	Burnt Corral zone	6	Burnt Corral Zone	6	
	Hobler	Tule Meadow	Red Rock Basin	4	Red Rock Basin	4	
	Post Corral	Tule Meadow	Niche	6	Niche	6	
	Post Corral	Tule Meadow	North Fork Kings	6	North Fork Kings River	6	
	Post Corral	Tule Meadow			Fleming Creek	2	
	Red Mountain	Tule Meadow	Fleming	6	Fleming Lake	6	
	Red Mountain	Tule Meadow	Disappointment Lake	6	Disappointment Lake	6	
	Red Mountain	Tule Meadow	Little Shot Lake	4	Devils Punchbowl/Little Shot Lake	4	
	Red Mountain	Tule Meadow	Red Mountain Basin	2	Red Mtn Basin		
	Rodgers	Tule Meadow	Crown Valley	4	Crown Valley	10	Combined destinations
	Rodgers	Tule Meadow	Crown Valley - SEKI	6			
	Rodgers	Tule Meadow	Geraldine Lake	4	Geraldine Lake	4	
	South Woodchuck	Tule Meadow	Chimney/Woodchuck	15	Chimney/Woodchuck Lakes	15	
	South Woodchuck	Tule Meadow	Moore Boy Meadow	4	Moore Boy Meadow	4	
	Spanish	Tule Meadow	Crown Ridge	4	Crown Ridge		
	Spanish	Tule Meadow	Statum Meadow	4	Statum Meadow		
	Spanish	Tule Meadow			Spanish Lakes	4	
John Muir Southeast							
	Birch	North Fork Big Pine	Birch Creek	5	Birch Creek	5	
	Cottonwood	Cottonwood Creek	New Army Pass	0	New Army Pass	4	
	Cottonwood	Cottonwood Creek	Cottonwood Basin	50	Cottonwood Basin	50	
	Cottonwood	Cottonwood Creek			Cirque and South Fork Lakes	6	

Geographic Unit	Analysis Unit	Pack Station Location	Alternative 2		Alternative 2 - Modified		Destination/Zone
			Destination/Zone		Quota		
	Coyote	North Fork Big Pine	Baker Lakes	6	Baker Lakes	3	
	Coyote	South Lake	Coyote/Baker	0	Baker Lakes	3	
	Kearsarge	Onion Valley	Matlock Lake	8	Gilbert/Matlock/Bench/Flower Lakes	16	Combined destinations
	Kearsarge	Onion Valley	Pothole Lake	2			
	Kearsarge	Onion Valley	Gilbert Lake	6			
	Kearsarge	Onion Valley	Kearsarge TH – SEKI	36	Kearsarge to SEKI	36	
	North Fork Big Pine	North Fork Big Pine	Black Lake	20	Black Lake/Summit Lake	30	
	North Fork Big Pine	North Fork Big Pine	North Fork Big Pine Creek	160	North Fork Big Pine Creek	125	Combined destinations
	North Fork Big Pine	North Fork Big Pine	Trail Camp	2			
	Sawmill	Onion Valley	Sawmill TH – SEKI	2	Sawmill to SEKI	2	
	Sawmill	Whitney	Sawmill TH – SEKI	0	Sawmill to SEKI	1	
	South Fork Big Pine	North Fork Big Pine	Willow Lake	0	Willow Lake	2	
	Shepherd	Onion Valley	Shepherd TH – SEKI	18	Shepherd to SEKI	12	
	Shepherd	Whitney	Shepherd TH – SEKI	0	Shepherd to SEKI	6	
	Taboose	Onion Valley	Taboose TH- SEKI	8	Taboose to SEKI	8	
	Taboose	Whitney	Taboose TH- SEKI	0	Taboose to SEKI	5	
	Whitney	Cottonwood Creek	Trail Crest	0	Trail Crest	10	
	Whitney	Onion Valley	Trail Crest	0	Trail Crest	4	

Table 2.32 Designated Sites by Alternative

			Alternative 2	Alternative 2 - Modified	Alternative 3	Alternative 4
Geographic Unit	Analysis Unit	Location	Type of Site	Type of Site	Type of Site	Type of Site
Ansel Adams East						
	Crater Creek Deer	Junction of Deer Creek/PCT	Stock camp	2 stock camps	Stock camp	
	King Creek	Anona Lake	Stock camp	Stock camp	Stock camp	Stock camp
	King Creek	Ashley Lake	Stock camp	Stock camp	Stock camp	Stock camp
	King Creek	Fern Lake		Stock camp		Stock camp
	King Creek	Holcomb Lake	Stock camp	Stock camp	Stock camp	Stock camp
	King Creek	King Creek		Stock camp		Stock camp
	King Creek	Superior Lake	Stock camp	Stock camp	Stock camp	Stock camp
	Minarets	Emily Lake	Stock camp	Stock camp	Stock camp	Stock camp
	Minarets	Minaret Creek	Spot and dunnage site	Stock camp	Spot and dunnage site	Stock camp
	Minarets	Vivian Lake		Stock camp		Spot and dunnage site
	Parker	Parker Lake		Stock camp	Stock camp	
	River High	Badger Lake	Stock camp	Stock camp	Stock camp	Stock camp
	River	Upper San Joaquin				Spot and dunnage site
	River	River Trail				Spot and dunnage site
	Rush Creek	Agnew Pass				Spot and dunnage site
	Rush Creek	Alger Lake	Stock camp	Stock camp	Stock camp	Stock camp
	Rush Creek	Clark Lakes	Stock camp	Stock camp	Stock camp	Stock camp
	Rush Creek	Gem Lake		Maintain 2 high-lines sites for day rides		Stock camp
	Rush Creek	Summit Lake				Stock camp
	Rush Creek	Rush Creek	2 stock camps	2 stock camps	Stock camp	Stock camp

			Alternative 2	Alternative 2 - Modified	Alternative 3	Alternative 4
Geographic Unit	Analysis Unit	Location	Type of Site	Type of Site	Type of Site	Type of Site
	Rush Creek	Waugh Lake	Stock camp	Stock camp	Stock camp	Stock camp
	Rush Creek	Weber Lake	Stock camp		Stock camp	Spot and dunnage site
	Shadow-Ediza	Ediza Lake		Spot and dunnage site		Spot and dunnage site
	Shadow-Ediza	Rosalie Lake		1 stock camp at Rosalie Lake and 1 stock camp at Gladys Lake.		Stock camp
	Shadow-Ediza	Shadow Creek	Designate a stock camp and relocate stock holding area	1 primary stock camp and 1 secondary stock camp for low capacity camp site	Designate a stock camp and relocate stock holding area	Spot and dunnage site
	Shadow-Ediza	Laura Lake		Stock camp		
	Shadow-Ediza	John Muir Trail/ Shadow Creek Corridor	Spot and dunnage site	Spot and dunnage site	Spot and dunnage site	Stock camp
	Thousand Island	Emerald Lake				Spot and dunnage site
	Thousand Island	Island Pass				Spot and dunnage site
	Thousand Island	Thousand Island Lake		Stock camp		Stock camp
	Thousand Island	Garnet Lake		Stock camp		Stock camp
	Upper Rush	Davis Lake	Stock camp	Stock camp		Stock camp
	Upper Rush	Donahue	Stock camp	Stock camp		Stock camp
	Upper Rush	Marie Meadow	Stock camp	Stock camp		
	Upper Rush	Junction of John Muir and Davis Lakes Trails	Stock camp		Stock camp	
Ansel Adams West						
	Arch	Heitz Meadow	Stock camp		Stock camp	
	Bench Canyon	Long Creek		Stock camp	Stock camp	
	Bridge Crossing	Junction Buttes				Spot and dunnage site
	Bridge Crossing	Sheep's Crossing				Spot and dunnage site
	Cargyle	77 Corral		3 stock camps	Stock camp	Spot and dunnage site
	Cargyle	Spano/Straube Lakes		Stock camp	Stock camp	Spot and dunnage site
	Cargyle	Stairway Meadow			Stock camp	

			Alternative 2	Alternative 2 - Modified	Alternative 3	Alternative 4
Geographic Unit	Analysis Unit	Location	Type of Site	Type of Site	Type of Site	Type of Site
	Cassidy	Miller/Cassidy/Rattlesnake		2 stock camps		Spot and dunnage site
	Cora	Chetwood zone		2 stock camps		Spot and dunnage site
	Cora	Cora Lake	Spot and dunnage site		Stock camp	Spot and dunnage site
	Cora	Cora Creek		Stock camp		
	Iron Creek	Iron Creek				Spot and dunnage site
	Jackass	Jackass Lakes				Spot and dunnage site
	Junction	Rattlesnake Lake		Stock camp	Stock camp	
	Lake Catherine	Hemlock Crossing	Stock camp at a site upstream			Spot and dunnage site
	Lake Catherine	Stevenson Meadow	Stock camp	2 stock camps	3 stock camps	Stock camp
	Lillian Lake	Fernandez Meadow	2 stock camps	Stock camp	2 stock camps	Stock camp
	Lillian Lake	Flat Lake	Stock camp	Stock camp	Stock camp	Stock camp
	Lillian Lake	Lillian Lake	Spot and dunnage site	Stock camp	Spot and dunnage site	Spot and dunnage site
	Sadler	Isberg Lake			Stock camp	Spot and dunnage site
	Sadler	Joe Crane		Stock camp		
	Sadler	Sadler/McClure Lakes		2 stock camps	2 stock camps	Stock camp
	Staniford Lakes	Lady Lake				Spot and dunnage site
	Staniford Lakes	Staniford Lakes				Spot and dunnage site
	Staniford Lakes	Vandenburg Lake				Spot and dunnage site
	Triple Divide	Anne Lake	Stock camp	Stock camp	Stock camp	Stock camp
	Triple Divide	Isberg Meadow		Stock camp	Stock camp	
	Triple Divide	Rutherford Lake	Spot and dunnage site	Spot and dunnage site	Spot and dunnage site	Spot and dunnage site
	Triple Divide	South of Slab Lakes		Stock camp		
Fish Creek/McGee/Convict						
	Cascade Valley	Cascade Valley	Stock camps	3 stock camps	Stock camps	
	Cascade Valley	Second Crossing	Stock camp	Stock camp	Stock camp	Stock camp
	Cascade Valley	Island Crossing	Stock camp	2 stock camps	Stock camp	Stock camp

			Alternative 2	Alternative 2 - Modified	Alternative 3	Alternative 4
Geographic Unit	Analysis Unit	Location	Type of Site	Type of Site	Type of Site	Type of Site
	Cascade Valley	Sharktooth Creek	Stock camp	Stock camp	Stock camp	
	Convict	Cloverleaf Lake	Spot and dunnage site		Spot and dunnage site	
	Convict	Dorothy Lake				Spot and dunnage site
	Convict	Edith Lake	Stock camp	Stock camp	Stock camp	Spot and dunnage site
	Convict	Genevieve Lake		Stock camp		Spot and dunnage site
	Margaret	Coyote Lake	Stock camp	Stock camp	Stock camp	Stock camp
	Margaret	Frog Lake				Spot and dunnage site
	Margaret	Big Margaret Lake		Stock camp	Stock camp	Spot and dunnage site
	McGee	Grass Lake				Spot and dunnage site
	McGee	Martin's Meadow				Spot and dunnage site
	McGee	McGee Canyon	Stock camp	Stock camp	Stock camp	1 spot and dunnage site at Big McGee Lake and 1 in lower McGee Canyon.
	McGee	Round Lake		Stock camp	Stock camp	Relocate stock camp
	McGee	Steelhead Lake				Spot and dunnage site
	Purple Bench	Deer Lakes		Stock camp	Stock camp	Stock camp
	Purple Bench	Duck Creek (below Duck Lake on PCT)		Stock camp	Stock camp	Stock camp
	Purple Bench	Pika Lake				Spot and dunnage site
	Purple Bench	Purple Lake	3 stock camps	3 stock camps	3 stock camps	Stock camp
	Purple Bench	Purple Bench	Stock camp	Stock camp	Stock camp	
	Purple Bench	Lake Virginia	2 stock camps	2 stock camps	2 Stock camps	Stock camp
	Silver Divide	Chief Lake	Stock camp	Stock camp	Stock camp	Spot and dunnage site
	Silver Divide	Grassy Lake		2 stock camps	2 stock camps	Stock camp
	Silver Divide	Jackson Meadow	3 stock camps	3 stock camps	3 stock camps	Stock camp
	Silver Divide	Long Canyon	Stock camp	2 stock camps	Stock camp	Stock camp
	Silver Divide	Lost Keys Lake				Spot and dunnage site

			Alternative 2	Alternative 2 - Modified	Alternative 3	Alternative 4
Geographic Unit	Analysis Unit	Location	Type of Site	Type of Site	Type of Site	Type of Site
	Silver Divide	Olive Lake	Stock camp	Stock camp	Stock camp	
	Silver Divide	Peter Pande Lake	Stock camp	3 stock camps	Stock camp	
	Upper Fish	Upper Fish Meadow	Stock camp	Stock camp ("Hilton Camp")	Stock camp	
	Upper Fish	Horse Heaven	2 stock camps	2 stock camps; Secondary site at southeast end of meadow	Stock camp	Stock camp
	Upper Fish	Upper Fish - Junction of Fish Creek and Lee Creek	Stock camp	Stock camp	Stock camp	Stock camp
	Upper Fish	Upper Fish - (Lee Lake Trail)	Stock camp	Stock camp ("Sheep Camp")	Stock camp	
	Upper Fish	Tully Hole	Stock camp	Stock camp	Stock camp	Stock camp
	Upper Fish	Tully Lake	Stock camp		Stock camp	
Mono Creek/Rock Creek						
	Devils	Devils Bathtub Lake	Stock camp at north end of lake		Stock camp at north end of lake	
	Fourth Recess	Trail Lake				
	Fourth Recess	Upper Mono Creek	2 stock camps in the vicinity of Fourth Recess and 2 sites at junction of Third Recess and Mono Creek	5 stock camps total. 2 in vicinity of Fourth Recess, 1 at Third Recess junction, 2 below Hopkins junction.	Stock camp in vicinity of Fourth Recess and one site on north side of trail at Third Recess	Stock camp
	Fourth Recess	Fourth Recess Lake		Spot and dunnage site		
	Graveyard	Quail Meadow	Stock camp	Stock camp	Stock camp	
	Graveyard	Arrowhead Lake		Stock camp		
	Graveyard	Upper Graveyard Meadow	Stock camp ("Sierra Club Camp")	Stock camp	Stock camp ("Sierra Club Camp")	
	Hilton Creek	Davis Lake	Stock holding area for day rides to tie up in the vicinity of Davis Lake peninsula/waterfall	Stock holding area for day rides to tie up in the vicinity of Davis Lake peninsula/waterfall	Stock holding area for day rides to tie up in vicinity of Davis Lake peninsula/waterfall	

			Alternative 2	Alternative 2 - Modified	Alternative 3	Alternative 4
Geographic Unit	Analysis Unit	Location	Type of Site	Type of Site	Type of Site	Type of Site
	Hilton Creek	Davis Lake and Second Lake	6 stock camps at Davis Lake and 4 sites at Second Lake	6 stock camps at Davis Lake and 4 sites at Second Lake, 1 stock camp at Turk Meadow	6 stock camps at Davis Lake and 4 sites at Second Lake	Stock camp
	Hopkins	Lower Hopkins	Stock camp	2 stock camps	Stock camp	Stock camp
	Laurel	Laurel Creek Meadow	Stock camp	Stock camp	Stock camp	
	Little Lakes Valley	Gem Lake	Spot and dunnage site		Spot and dunnage site	
	Little Lakes Valley	Ruby/Chickenfoot/Long Lakes	Spot and dunnage site		Spot and dunnage site	
	Morgan Lakes	Morgan Lakes	Stock camp		Stock camp	
	Pioneer	Mudd Lake	2 stock camps	2 stock camps	2 stock camps	Stock camp
	Pioneer	Upper Pioneer Basin	Stock camp	Stock camp (above Mudd Lake)	Stock camp	
	Second Recess	Frog Creek		(See Upper Mono Creek)	Stock camp	
	Second Recess	Lower Mono Creek		Stock camp		Stock camp
	Second Recess	Second Recess/Mono Creek Junction	2 stock camps	Stock camp		
	Second Recess	Second Recess		Stock camp		
	Silver Peak	Mott Lake	Stock camp			
	Silver Peak	Pocket Meadow	Stock camp	Stock camp	Stock camp	
	Silver Peak	Silver Pass Meadow/Lake	Stock camp	2 stock camps	Stock camp	
	Silver Peak	Mott lake		Stock camp		
	Volcanic	Volcanic Knob		Stock camp		
Bishop/Humphreys						
	Bishop Creek	Bull Lake				Spot and dunnage site
	Bishop Creek	Hurd Lake		Spot and dunnage or All Expense site, no stock holding.		Spot and dunnage site
	Bishop Creek	Long Lake	Day use tie up site on north side of Long Lake	Day use tie up site on north side of Long Lake	Day use tie up site on north side of Long Lake	Spot and dunnage site

			Alternative 2	Alternative 2 - Modified	Alternative 3	Alternative 4
Geographic Unit	Analysis Unit	Location	Type of Site	Type of Site	Type of Site	Type of Site
	Bishop Creek	Upper Bishop Creek, Saddlerock/Bishop Lakes				Spot and dunnage site
	Bishop Creek	Ruwau Lake	Spot and dunnage site			
	French Canyon	French Canyon	Stock camp	Stock camp ("Waterfall Camp")	Stock camp	Spot and dunnage site
	French Canyon	Elba/Moon/ L Lakes	Stock camp	Stock camp	Stock camp	
	French Canyon	Merriam Creek Junction	Stock camp	Stock camp	Stock camp	
	French Canyon	Merriam Meadow	Stock camp	Stock camp	Stock camp	
	Glacier Divide	Golden Trout Lakes	1 stock camp and 4 spot/dunnage camps	4 spot/dunnage camps, no stock holding camps.	1 stock camp and 3 spot/dunnage camps	Spot and dunnage sites
	Glacier Divide	Hutchinson Meadow	3 stock camps	3 stock camps	Relocate 2 stock camps	Spot and dunnage site
	Glacier Divide	Muriel Lake				Spot and dunnage site
	Glacier Divide	Honeymoon Creek/Lake		Spot and dunnage site		
	Horton	Lower Horton Lake				Spot and dunnage site
	Humphreys Basin	Desolation Creek/Lake				Spot and dunnage site
	Humphreys Basin	Humphreys Lakes				Spot and dunnage site
	Lamarck	Upper Lamarck Lake	Spot and dunnage site	Spot and dunnage site	Spot and dunnage sites	
	Morgan Lakes	Morgan Lake				Spot and dunnage site
	Pine Creek	Honeymoon Lake	2 spot and dunnage sites	2 spot and dunnage sites	2 spot and dunnage sites	Spot and dunnage site
	Pine Creek	Pine Creek Corridor				Spot and dunnage site
	Pine Creek	Upper Pine Lake	Stock camp	Stock camp	Stock camp	Stock camp
	Piute	Loch Leven	Stock holding area for day ride tie up	Spot and dunnage site	Stock holding area for day ride tie up	
	Piute	Piute Lake	Spot and dunnage site	Spot and dunnage site	Spot and dunnage sites	Spot and dunnage site
	Sabrina	Blue Lake		Spot and dunnage site		Spot and dunnage site
	Sabrina	Dingleberry Lake		Spot and dunnage site		Spot and dunnage site
	Sabrina	Donkey Lake	Spot and dunnage site		Spot and dunnage sites	Spot and dunnage site
	Sabrina	Emerald Lake	Spot and dunnage sites		Spot and dunnage sites	Spot and dunnage site

			Alternative 2	Alternative 2 - Modified	Alternative 3	Alternative 4
Geographic Unit	Analysis Unit	Location	Type of Site	Type of Site	Type of Site	Type of Site
	Sabrina	Upper Sabrina Basin				Spot and dunnage site
	Treasure	Treasure Lake - lower				Spot and dunnage site
Florence/Bear						
	Apollo	Apollo Lake	Stock camp		Stock camp	
	Apollo	Cirque Lake	Stock camp	Stock camp	Stock camp	
	Apollo	Marcella Lake	2 stock camps	Stock camp	2 stock camps	
	Apollo	Orchid Lake	Stock camp	Stock camp		
	Bear	Bear Ridge				Spot and dunnage site
	Bear Lakes	Bear Creek Meadows		2 stock camps	Stock camp	
	Bear Ridge	Lower Bear Creek				Spot and dunnage site
	Bear Ridge	Twin Falls				Spot and dunnage site
	Bolsillo	Lakecamp Lake	Stock camp		Stock camp	
	Dutch	Crater Lake			Stock camp	Stock camp
	Dutch	Thompson Lake				Spot and dunnage site
	Dutch	Dutch Lake	Stock camp	Stock camp	Stock camp	Spot and dunnage site
	Dutch	Rodeo Meadow		Stock camp		
	East Florence	Shooting Star Meadow		2 stock camps	2 stock camps	Stock camp
	Hooper	Gorden/Hooper Lakes				Spot and dunnage site
	Italy	Hilgard Meadow		2 stock camps	2 stock camps	Stock camp
	North Piute	Piute Creek Corridor		Stock camp		Spot and dunnage site
	Sallie Keyes	Senger Creek		Stock camp	2 stock camps	
	Sallie Keyes	Sallie Keyes Lakes	2 stock camps	2 stock camps	2 stock camps	Stock camp
	Seldon	Lou Beverly Lake		Stock camp	Stock camp	
	Seldon	Rose Marie Lake			Stock camp	
	Seldon	Rose Marie Meadow		Stock camp		Stock camp
	Seldon	Seldon/JMT Corridor				Spot and dunnage site
	Seldon	Rose Lake	Stock camp	Spot and dunnage site	Stock camp	

			Alternative 2	Alternative 2 - Modified	Alternative 3	Alternative 4
Geographic Unit	Analysis Unit	Location	Type of Site	Type of Site	Type of Site	Type of Site
John Muir Southwest						
	Basin	Blackcap Basin			Stock camp	Stock camp
	Basin	Pearl/Portal Zone		2 stock camps	Stock camp	Stock camp
	Basin	Maxson Lake	Stock camp	Stock camp	Stock camp	
	Basin	Upper Lightning Corral Meadow	Stock camp	Stock camp		
	Basin	Upper North Fork Kings River	Stock camp	Stock camp	Stock camp	
	Bench	Bench Valley		Stock camp	Stock camp	Spot and dunnage site and stock camp
	Big Maxson	North Fork Kings River/Potholes	Stock camp	Stock camp	Stock camp	
	Big Maxson	Halfmoon Lake				Spot and dunnage site
	Big Maxson	Maxson Meadow				Spot and dunnage site
	Crown Basin	Crown Creek	Stock camp		Stock camp	
	Crown Lake	Scepter Lake	Stock camp	Stock camp	Stock camp	
	Finger	Chain/Duck Lakes		1 stock camp at Duck Lake and 1 stock camp at Chain Lake		
	Fleming Mountain	Fleming Lake		Stock camp	Stock camp	Stock camp
	Fleming Mountain	Rae Lake				Spot and dunnage site
	Fleming Mountain	Dale Lake		Spot and dunnage site		4 trips a year
	Hobler	Burnt Corral Zone	Stock camp	Stock camp	Stock camp	Spot and dunnage site
	Hobler	Red Rock Basin			Stock camp	Stock camp
	Post Corral	Reddys Hole		Stock camp		
	Post Corral	Niche				Spot and dunnage site
	Red Mountain	Disappointment Lake		Stock camp		Spot and dunnage site
	Red Mountain	Red Mountain Basin			Stock camp	Stock camp

			Alternative 2	Alternative 2 - Modified	Alternative 3	Alternative 4
Geographic Unit	Analysis Unit	Location	Type of Site	Type of Site	Type of Site	Type of Site
	Red Mountain	Fleming Creek	Stock camp		Stock camp	
	Red Mountain	Indian Lake	Stock camp		Stock camp	
	Rodgers	Crown Valley		Stock camp	Stock camp	Stock camp
	Rodgers	Geraldine Lake				Spot and dunnage site
	South Woodchuck	Chimney/Woodchuck Lakes		Stock camp		Spot and dunnage site
	South Woodchuck	Moore Boy Meadow				Spot and dunnage site
	Spanish	Crown Ridge			Stock camp	Stock camp
	Spanish	Statum Meadow				Spot and dunnage site
John Muir Southeast						
	Cottonwood	Cottonwood Basin				Spot and dunnage site
	Keararge	Gilbert Lake				Spot and dunnage site
	Keararge	Matlock Lake				Spot and dunnage site
	North Fork Big Pine	Black Lake				Spot and dunnage site
	North Fork Big Pine	Fifth Lake	Spot and dunnage site above lake		Spot and dunnage site above lake	Spot and dunnage site
	Sawmill	Sawmill Lake	Stock camp	Stock camp	Stock camp	
	Shepherd	Anvil Camp		Stock camp		

Table 2.33 Day Rides by Alternative

	Pack Station Location	Alternative							
		1	2 - Modified			2	3	4	
		Service Days	Destination	Type	Stock at One Time at One Time in the Wilderness (Overnight and Day)	Number of Day Rides	Location	Number of Day Rides	Service Days
1	North Lake	259			60	600	Piute/Sabrina	600	259
			Grass Lake	2 Hr					
			Loch Leven	1/2 Day					
			Loch Leven	Day					
			Piute Lake	Day					
			Piute Pass	Day					
			Desolation Lake	Day					
			Muriel Lake	Day					
2	Tule Meadow	0	None		35	0			
3	Cottonwood Creek	23			35	300	Cottonwood Lakes		41
			Cottonwood Lakes	1/2 day				300	
			Cottonwood Lakes	Day					
			South Fork Lakes	1/2 day					
			Upper South Fork Lake	1/2 day					
			Lower South Fork	1/2 Day					
			New Army Pass	Day					
4	Huntington Lake	0	None		35	0		0	0
5	Silver Lake				75	300	Rush Creek	300	743
			Gem Lake	Day					
			Gem Lake	1/2 day					
6	North Fork Big Pine	90	4th Lake Loop	Day	35	250	North Fork Big Pine	250	111
7	Edison Lake	100			60	150		150	100
			Arrowhead Lake	Day			Devils		
			China Camp	1/2 Day			Graveyard		
			Devils Bath tub	1/2 Day			Bear Ridge		

	Pack Station Location	Alternative							
		1	2 - Modified		2	3	4		
			Dutch	Day			Hooper		
			Graveyard Lakes	Day			East Florence		
			Graveyard Meadow	1/2 Day			Dutch/Boulder		
			Graveyard Meadow	Day			Bolsillo		
			Mono Creek	Day			Lower Mono		
			Twin Meadow	2 Hour			Hot Springs		
8	Double Meadow	0			25	0		0	0
			Double Meadow	1/2 Day			Sallie Keyes		
			Piute Bridge	1/2 Day			East Florence		
			Sallie Keyes	Day			Dutch /Boulder		
			Senger	Day					
			Third Bridge/SEKI	Day					
9	Lakes Basin	630			75	600	Coldwater	600	600
			Barney Lake	Day					
			Heart/Emerald	2 hr					
			Skelton/Rim	1/2 day					
10	McGee Creek	641			60	600	McGee Creek	600	641
			Beaver Meadow	1/2 day					
			Davis Lake	Day					
			Horsetail Falls	2 hour					
			Round Lake	Day					
11	Clover Meadow				60	150		150	150
			Cassidy	Day			Cassidy		
			Cora	Day			Bridge Crossing		
			Hemlock Bridge	Day			Cora		
			Jackass Lake	Day			Sadler		
			Madera Creek	Day			Lillian Lake		
			Staniford Lake	Day			Staniford		
			Surprise Saddle	Day			Jackass		
			Vandenburg Lake	Day			Chiquito		
			YOSE	Day			East Florence		
			77 Corral	Day					
12	Mt. Whitney Pack Trains	0	No Day Ride services			0		0	0

	Pack Station Location	Alternative							
		1	2 - Modified		2	3	4		
13	Blayney Meadow	319			35	0		0	319
			Double Meadow	1/2 Day			Sallie Keyes		
			Piute Bridge	1/2 Day					
			Sallie Keyes	Day					
			Senger	Day					
			Third Bridge/SEKI	Day					
14	Pine Creek	113			50	200	Pine Creek	200	113
			Hilton Creek	1/2 Day					
			Honeymoon Lake	Day					
			Morgan Lake	Day					
			Pine Lakes	Day					
			Pine Lakes	5 Hr.					
			Pine Lakes	1/2 Day					
			Pine Creek	2 hr					
			Pine Creek	Day					
			Pine Creek	1 Hr					
			Pine Creek	1/2 Day					
			Upper Pine	Day					
15	South Lake	114			35	200	Bishop Creek	200	114
			Bishop Basin	1/2 day			Tyee Lakes		
			Bishop Basin	Day					
			Bishop Lake	Day					
			Chocolate Lake	1/2 day					
			Chocolate Lake	Day					
			Long Lake	Day					
			Long Lake	1/2 day					
			Saddlerock Lake	Day					
			Saddlerock Lake	1/2 day					
			Timberline Tarns	1/2 Day					
			Treasure Lakes	Day					
			Treasure Lakes	1/2 day					
16	Reds Meadow	1500			90	1500	River Corridor	1500	1500
			Clark Lakes	Day			High Trail		
			Ediza Lake	Day					
			Rainbow Falls	2 hr					

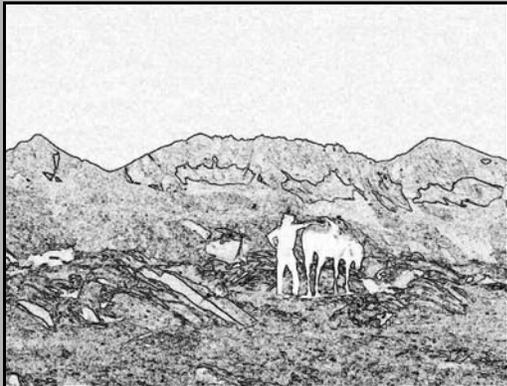
		Alternative							
Pack Station Location	1	2 - Modified			2	3	4		
			Rainbow Falls	1/2 Day					
			Rainbow Falls	hour					
			Red Cones	1/2 day					
			Rosalie Lake	Day					
17	Rock Creek	398			90	400	Hilton Lakes	400	398
			Box Lake	1/2 Day			Tamarack		
			Chickenfoot Lake	3/4 Day					
			Chickenfoot Lake	Day					
			Davis Lake	Day					
			Dorothy Lake	2hr					
			Dorothy Lake	1/2 day					
			Dorothy Lake	3/4 Day					
			Dorothy Lake	Day					
			East Fork Rock Creek	1/2 Day					
			East Fork Rock Creek	Day					
			Francis Lake	Day					
			Heart Lake	1/2 day					
			Hilton Lake #4	Day					
			Hilton Lakes	3/4 Day					
			Hilton Lakes	Day					
			Hilton Lake #2	3/4 Day					
			Hilton Lake #2	Day					
			Hilton Lake #3	Day					
			Hilton Lake #3	3/4 Day					
			Kenneth Lake	2 Hr.					
			Little Lakes Valley	Day					
			Little Lakes Valley	2hr					
			Little Lakes Valley	1/2 day					
			Long Lake	1/2 day					
			Morgan Pass	Day					
			Ruby Junction	1/2 Day					
			Ruby Lake	1/2 Day					
			Ruby Lake	Day					
			Ruby Lake - Mono Pass	3/4 Day					
			Sand Canyon	Day					
			Summit Lake	3/4 Day					
			Tamarack Basin	2hr					

	Pack Station Location	Alternative							
		1	2 - Modified		2	3	4		
			Tamarack Basin	1/2 day					
			Tamarack Basin	Day					
			Tamarack Lake	Day					
			Upper Trail	1 hr					
			Upper Trail	2hr					
			Upper Trail	1/2 day					
18	Onion Valley	27			35	100	Kearsarge	100	27
			Kearsarge Trail	1/2 day					
			Matlock Lake	Day					
			Kearsarge Lakes	Day					
19	Three Corner Round Pack Outfit	0	No wilderness day use			0		0	
20	Fish Camp	0	No wilderness day use		25	0	Chiquito	150	150

Table 2.34 Drift Fences by Alternative

Location	ALTERNATIVE						Reasoning for Alternative 2 - Modified
	1	2	2 Modified	3	4	5	
Shadow Lake/Ediza Trail	no	no	no	no	no	no	Fence no longer exists.
Trinity Lakes Trail	no	no	no	no	no	no	Fence no longer exists.
John Muir Trail	no	no	no	no	no	no	Fence no longer exists.
Hemlock Crossing	yes	yes	yes	yes	no	no	Fence provides resource protection.
Horse Heaven	yes	yes	yes	yes	no	no	Fence prevents stock from entering areas closed to grazing. Without the fence stock could return to the pack station via PCT which travels through the area closed to grazing at Purple Lake and Duck Lake outlet.
Purple Lake	no	no	no	yes	no	no	Fence could be relocated for resource protection if Purple Lake Meadow is opened to grazing after the required rest period.
Fish Valley	yes	yes	yes	yes	yes	no	Fence will prevent stock from entering an area closed to grazing at Second Crossing and Fish Creek Hot Springs.
Cascade Valley	yes	yes	yes	yes	yes	no	Fence will prevent stock from entering the two meadows located at the junction of the Purple Lake and Fish Creek trails which are closed to grazing.
String Meadow/Coyote	yes	yes	yes	yes	yes	no	Fence is located at the top of several switchbacks and should be relocated at the section entering the meadow. Trail is being short cut by stock moving up and down the hill to the fence causing severe resource damage to the trail.
Island Crossing	yes	yes	yes	yes	yes	no	Fence provides safety to visitors and resource protection. Fence prevents stock from traveling back to the pack station via the Fish Creek Hill Trail. Trail does not provide turnouts, safety zones or passing areas should pack stock or private stock users meet on the trail. Loose stock on the trail would create safety issues with hikers as well. (There are very few areas to get off trail and out of the way in certain situations.) Loose stock would cut trails on route to pack station causing resource damage to trail system.
Fish Creek Springs	no	no	no	no	no	no	Fence no longer exists.
Lee Lake	no	no	no	no	no	no	Fence no longer exists.
Quail Meadow	no	no	no	no	no	no	Fence no longer exists.
Second Recess	no	no	no	no	no	no	Fence no longer exists.

Location	ALTERNATIVE						Reasoning for Alternative 2 - Modified
	1	2	2 Modified	3	4	5	
Lower Pine Lake	no	no	no	no	no	no	Fence will be removed
Hilgard Creek	yes	yes	yes	yes	yes	no	Fence provides safety to visitor and resource protection by stopping stock travel down canyon to the junction of the PCT and traveling north or south. Interaction with loose stock can create a safety issue for hikers and other stock users.
Pinnacle Creek	no	no	yes	yes	no	no	Fence prevents stock from traveling down trail, cutting switchbacks and traveling outside of trail corridor. Fence also prevents stock from traveling upstream and gathering with other stock users at Hutchinson Meadow.
Blayney Meadow	yes	yes	yes	yes	yes	no	Fence prevents stock from entering private land.
Minaret/Johnston Meadow	yes	yes	yes	yes	yes	no	Fence prevents loose stock from traveling on and off trails and entering National Park lands (Devil Postpile) in route back to the pack station at Reds Meadow.
French Canyon	yes	yes	yes	yes	yes	no	Approval for a temporary fence to prevent resource damage to areas around Waterfall Camp.
Glacier Divide	yes	yes	yes	yes	yes	no	Fence will prevent stock from entering an area closed to grazing above the camp and in the general area around Golden Lake. Prevent loose stock from traveling back to pack station and cutting trails causing additional trail damage.
Upper Fish Creek	no	no	no	no	no	no	Remove fence at Tully Hole. Fence serves no purpose since grazing does not occur by pack stock at Tully Hole.
Hilton Creek	yes	yes	yes	yes	no	no	Fence provides safety to visitors and resource protection (fence at Turk Meadow) prevents stock from traveling back to trailhead and onto highway.
Morgan Lake	no	no	no	no	no	no	Remove drift fence.
Spooky Meadow Upper/Lower	yes/ yes	yes/ yes	yes/no	yes	yes/ no	no	Remove fence between the two meadows to prevent additional resource damage/stock gazing in a confined area.



Chapter 3 Affected Environment

Chapter 3 – Affected Environment

Introduction

This chapter describes the relevant wilderness resources that would be affected by the alternatives if they were implemented. Under the National Environmental Policy Act (NEPA), the analysis of environmental conditions is directly related to the expected environmental consequences of the proposed alternatives. NEPA requires that the analysis address those areas and the components of the environment with the potential to be affected by the proposed action; locations and resources with no potential to be affected need not be analyzed. The environment includes all areas and lands that might be affected, as well as the natural, cultural, and socioeconomic resources they contain or support.

In conjunction with the description of the activities of Alternative 1: Current Direction (No-Action) in Chapter 2 and with the predicted effects of the alternatives in Chapter 4, this chapter helps establish the scientific baselines against which the decision-maker and the public can compare the effects of all action alternatives.

Data Collection and Analysis Process

In the environmental analysis process, analysts first identify the resources to be analyzed and the level of analysis, both in spatial extent and in intensity. For this proposal, an interdisciplinary team conducted an extensive assessment of the primary areas where commercial pack stock operations occur. The assessment was structured to respond to the elements identified by the 9th District Court's January 10, 2002, decision (*High Sierra Hikers Association et al. v. Jack Blackwell*) and assess compliance with wilderness management standards and guidelines as specified by the Ansel Adams/John Muir and Dinkey Lakes Wilderness Management Direction (2001). Throughout the data collection process, consideration was given to the effectiveness of standards and guidelines to protect wilderness character.

A study plan was developed and refined over the course of the data collection process and is available in the project record.

Focusing on the features of pack stock operations, and the data needed to answer key questions for decision making, survey tools were identified, designed, and modified and refined over the course of the study. To begin, pack stock operators were asked to map their areas of operation, including campsites, trails and grazing areas. These maps were combined into a geographical information system (GIS) coverage to assist in prioritizing and planning field visits. Data on the intensity or frequency of pack stock use was gathered from commercial use reports known as tally sheets. Areas of overlap and high commercial use were a high priority for site visits. In addition to the high priority areas, some areas not recently used by stock were visited to help establish a baseline for comparison of alternatives.

The interdisciplinary team conducted an extensive, broad condition assessment in approximately 75% of the areas identified by pack stock operators. Areas where field assessments were not

conducted were due to costs or time constraints, and these areas were typically areas of low use, or low concerns. Information was gathered from other sources including past reports, rangers, and district resource managers for these areas.

It is important to highlight that it was neither an objective nor a goal of this assessment process to determine cause of impact. These wildernesses have many users and have been popular recreation areas for many years. It is very difficult to distinguish a specific cause of the impact. The goal of the process was to assess and disclose wilderness resource conditions consistently across the landscape to determine the consequences of continued commercial pack stock use. The following information is the baseline from which environmental consequences are analyzed in Chapter 4.

3.1 Human Environment

3.1.1 Commercial Pack Station Operations

Wilderness Scale

Commercial Packing —Historical Perspective

Mule pack trains were the primary carriers in Alta California during the Spanish and Mexican administrations until the pressure of American emigration beginning in 1846 brought an increase in settlements and construction of wagon roads. There was a resurgence of the pack stock uses in the early days of the Gold Rush in the Sierra Nevada foothills. Most of the pack trains were run by Mexicans, who brought them from Baja California and Sonora. The Mexican packers were also expert at breaking wild mules. Packing operations were slowly taken over by Euro-Americans, although Hispanics and Native Americans continued as wranglers (Jackson, 2004).

When the gold boom ended there was a hiatus in packing activity and travel in the wilderness was infrequent except for shepherds and cattlemen. According to Livermore (1947) “I have had old-timers tell me that during this period they traveled as long as sixty days in the back country and would scarcely see a soul.” Packing had a resurgence in the latter part of the nineteenth century with increasing attention given to the Sierra Nevada by the United States government, scientists, commercial enterprises, and recreationists.

Some of the largest pack trains belonged to the US Army, which used them on expeditions and in the construction and supplying of forts and outposts into the 1890s. Duties of Army units included patrolling the parks and the Sierra Nevada backcountry for poachers and illegal stock grazers and surveying, mapping, and building roads and trails. Private packers were hired for military projects, such as the 1881 scientific expedition to Mt. Whitney under Samuel Langley of the then director of the Allegheny Observatory, later Secretary of the Smithsonian Institution, and the United States Army Signal Service to install astronomical instruments on the summit for recording solar radiation (Farquhar, 1925).

Commercial packers also serviced non-military scientific expeditions. Beginning in April of 1863, pack trains were used during the geological survey of the Sierra Nevada conducted by the California State Geological Survey between 1860 and 1874 (Farquhar, 1925).

Work for government surveying teams continued from the late nineteenth into the twentieth century (Farquhar, 1925; Jackson, 2004). The United States Geological Survey carried on with their reconnaissance of the southern Sierra Nevada from 1893 until the final section of the High Sierra was completely surveyed in 1909. Geological survey teams were packed into the Sierra Nevada in 1947 by the Glacier Pack Train, U.S. Coast and Geodetic Survey teams were packed into Kings Canyon in 1950 by the Rock Creek Pack Station, and, beginning in the 1940s, several packers hauled supplies for the construction of cabins for winter snow pack measurements by the California State Snow Survey, among other projects (Jackson, 2004 and London, 2005).

During the post-World War I depression, a reliable source of income for packers came from Forest Service and Park Service contracts for supplying cow camps, backcountry resorts, backcountry rangers, insect control teams, logging and fire crews, and for hauling building materials for ranger stations, fire look-outs, trails, bridges, dams, and camps. The Great Depression of the 1930s created work for packers to haul tools, materials, and equipment to Civilian Conservation Corps camps. The Works Project Administration (WPA) and Emergency Conservation Work also created work, but both the depression and drought created hard times for packers, especially since fewer private parties made trips into the wilderness (Jackson, 2004).

The abundant snow pack and runoff of the Sierra Nevada lured water and power companies to survey watersheds and construct access roads, dams, reservoirs, power stations, and flow gauging stations for the increased demand for water and electrical power to satisfy a growing population in California. Packers assisted these enterprises from the 1880s into the 1920s.

Fishing was another enterprise engaging packers. The fish-barren streams of the Sierra Nevada started to be planted with trout in the latter part of the nineteenth century to supplement the diet of miners, sheepmen, and cattlemen. “Coffee can plantings” were soon replaced by large scale commercial fish stocking encouraged by the Fish Commission of California (later designated the State Fish and Game Commission) to encourage recreation. Stocking was done by private individuals, the Sierra Club, and by the U.S. Cavalry in the national parks during earlier years. Most of the fish stocking occurred on the west side. In the eastern Sierra Nevada, the Mt. Whitney fish hatchery was established in 1925 and the Olivas family volunteered to pack the fish from the hatchery (Jackson, 2004).

Development of Recreational Packing

Recreational packing began in Yosemite Valley in 1855. In the next decades, families and other groups from communities on both sides of the crest explored and camped in the high country with horses and mules (Farquhar, 1925, 1965). Frank Dusy, a stockman and farmer living south of Fresno who appreciated the beauty of the mountains, may be one of the first professional recreational packers since he took parties in the backcountry of the Kings and Kaweah Rivers by 1868 (Farquhar, 1925). As mountain recreation became popular other ranchers followed suit and hired out their horses and mules and acted as guides. Dan Clodfelder and Bert Smith, who ran pack trains out of Three Rivers, and Thomas Reid and F. A. Brightman, who packed tourists into Yosemite Valley from Hodgdon’s Ranch and Tamarack Flat, followed him in the 1870s (Jackson, 2004).

In 1871, Tom Agnew, who built a cabin in what is now called Agnew Meadows, guided visitors with pack stock in the San Joaquin drainage for the Yosemite Park Rangers. Allie Robinson in 1872 packed commercially from Onion Valley. E.H. Edwards Mercantile in Lone Pine

advertised “Outfitting store for camping expeditions to Mt. Whitney and Cottonwood Lakes” in 1874. The Pine City Feed and Livery Stable (later known as the Lake Mary Pack Station) transported people and supplies in 1878 across the Sierra to and from Mammoth City and Fresno Flats. Helen McKnight Doyle, in her book *A Child Went Forth*, describes pack trips into the Mammoth and June Lakes area for fishing vacations. The Pioneer Stables, located in Bishop Creek, advertised in the *Inyo Register* in 1887 (Eastern Sierra Packers Association, 2000.).

The towns of Visalia in the San Joaquin Valley and Lone Pine in the Owens Valley were the west and east trailheads for mountaineers, hunters, fishermen, explorers, and recreationists taking pack trains into the high Sierra via the Dennison, Jordan and Hockett trails and Cottonwood and Kearsarge Passes, respectively. By the 1880s, the Robinson and Olivas families included summer pack trips into the Kern Plateau of the Sierra Nevada along with their commercial mining operations from their bases in the southern Owens Valley (Farquhar, 1965; Dilsaver and Tweed, 1990; Jackson, 2004).

The founding of the Sierra Club by John Muir in 1892 focused widespread public interest on visiting the Sierra Nevada and preserving Yosemite Valley, the giant sequoia groves, and other natural landmarks. In order to develop a constituency for the Sierra Club’s preservation agenda William Colby started a tradition of conducting trips into the Sierra Nevada in 1901. For the next 50 years the large Sierra Club High Trips kept packers busy and led the way for thousands of wilderness adventurers. They were elaborate affairs, lasting two to four and sometimes up to eight weeks involving an average of 150 people, around 50 packers and long pack trains of up to 250 mules carrying 100 pound stoves and full-time cook crews (Farquhar, 1965; Dilsaver and Tweed, 1990; Jackson, 2004). These types of outings helped to promote the wilderness concept and contributed to building the necessary support and for passage of the 1964 Wilderness Act (Eastern Sierra Packers Association, 2000).

The unrestricted use of forest reserves by packing operations ended in 1906 with the creation of the Forest Service (the Inyo and Sierra National Forests were created in 1907). Regulations were instituted to control the degradation of public lands. The included the number of animals used in each forest, the allowed period of time for grazing, a requirement for grazing permits, a grazing fee, and the approval for structures such as out-buildings, tent sites, drift fences, and corrals. Other concerns such as fire suppression, camp sanitation, trail maintenance, and adherence to Fish and Game laws were addressed. By 1920, both the Park Service and Forest Service required a concessionaire’s permit for packing operations (Jackson, 2004).

Packing continued through this period. Advertisements in the *Inyo Register* in 1912 included: The Nevada Stables, Bishop “Tourists and Campers’ Outfits”; Pioneer Livery Stable, Bishop “All kinds of outfits for tourists’ mountain trips”; Ben Ransome, the Guide of the Sierras, Big Pine “Outing in the Sierras 10 days, 15 days, and 30 day trips into the headwaters of the San Joaquin and Yosemite Valley”; Mt. Whitney Hotel and Anton’s Resort, Lone Pine “We outfit parties at Lone Pine for Sierra trips-horses and pack horses for hire” (Eastern Sierra Packers Association, 2000).

By 1920 packing was a profitable business, with 36 large pack outfits operating in the southern Sierra Nevada and, of those, 15 (42%) were on the east side (Jackson, 2004). Many of the currently operating pack stations can trace their history back to the 1920’s and 30’s (Eastern Sierra Packers Association, 2000). The earliest pack station on the Inyo National Forest that is still functioning is Rock Creek Pack Station, established around 1920 (M. Roeser, 2005).

Most of the early recreation use in the back country, almost all of which was supported by pack trains, was fishing and hunting. After the hoof and mouth epidemic in 1924, reduced visitor use for several years, pack outfits increased in the southern Sierra Nevada to 71 in 1935 with 22 (31%) in the eastern Sierra Nevada (Livermore, 1935).

Packers depended on large parties of wealthy individuals, corporations, agencies, and clubs to generate adequate income. The Sierra Club High Trips were some of the largest trips, often with over 200 people. From the 1920's to the beginning of World War II, Charles Robinson and his son Allie, who ran a pack outfit out of Independence, and later joined by Ike Livermore, became the packers for the Sierra Club (Morgan, n.d.). After about 40 years of large pack trips, from the turn of the century to the 1940s, the wilderness began to be degraded by the overgrazing of meadows, over fishing of the lakes and streams, construction of a dense trail network, and the deterioration of major campsites (Jackson, 2004). The poor condition of the meadows called for continued conservation management. Some meadows were closed to grazing and special allotments with limits to animal units were assigned to packers. The close relationships between packers and federal land management agencies, however, were apparently not affected by the increasing rules and regulations.

Besides the Great Depression, World War II also brought problems. Gasoline rationing restricted travel to pack stations and lack of personnel due to the military draft brought near disaster to the pack outfitters. Even the profitable Sierra Club High Trips were suspended until the end of the war (Jackson, 2004). The Inyo National Forest, which administered all FS land in the eastern Sierra Nevada, listed nine pack operations in 1942. This was 14 less from the war's beginning in 1941.

The post-World War II era brought an improved economy, longer vacations, better access to the mountains by automobiles, and light weight materials recreational packing boomed and the number of pack stations again increased to about 60 on both sides of the crest between Sonora and Walker Passes in 1947 (Livermore, 1947). Two thirds of those outfits and stock were based on the east side. The growing numbers of operations created intense competition and customers demanded better service. With it came an increase in more stringent business practices such as liability insurance, performance bonds, financial reports, schedules of personnel and stock, and logs to track the numbers of animals grazed, number of customers, service days, destinations, and day trip rentals. Along with bookkeeping was added pack station maintenance and increasing costs of doing business such as feed, salaries, stock, equipment, supplies, maintenance, and insurance. Pack outfits either lost money or barely met expenses (Jackson, 2004).

Beginning before the war and continuing into the 1950s, packing operations began to feel changes that made the business less profitable (Jackson, 2004). Government contracts became scarcer and the automobile and airplanes began to replace mules as a means of transportation. Much of the back country was closed to hunting when Kings Canyon National Park was established in 1940 (Livermore, 1947). Boats were restricted to non-motorized ones and permits were required to pack them in. Loose herding of stock was prohibited on non-hazardous trails by 1950. Overused camps and meadows for grazing were placed off-limits and even permitted meadows could no longer support the demands of pack trains. In 1946 the number of animals permitted on any single trip into the national parks was limited to 75.

Compliance with rules and regulations, however, was erratic and lax, primarily because enforcement was difficult (Jackson, 2004). During the 1930s and 1940s most packers did not apply for permits to operate inside the national parks. In the 1950s and 1960s, some packers accepted the inevitable restrictions on both the national parks and national forests but complained that they were being put out of business because of them. One regulation that may have harmed business is the 1966 restriction of the total number of pack and saddle stock allowed for pack stations operating on the Inyo National Forest to fifty head. Prior to that time, 175 to more than 200 head were kept at the larger pack stations in the 1930s to 1950s. Not accounting for fluctuations, the decline in the intensity of pack operations in the southern Sierra Nevada (from Yosemite National Park south) can be partly measured by the estimated number of stock owned, which ranged from 2764 head in 1935 to 1420 in 1986, a 51% decrease. There was also a consolidation of pack stations between 1935 and 1964 although the total number of pack stations in 1964 implies a secondary peak of 66 in a downward trend, of which only 17 (25%) were on the east side, the lowest percentage since 1920 (Jackson, 2004; Livermore, 1935; Sierra Club, 1952; High Sierra Packers Association, 2000).

The number of pack outfits decreased to less than 50 in 1990. Major pack stations from the Kern Plateau to Silver Lake numbered 71 at a historical maximum and only 13 by 2004, an 82% reduction. There has also been a recent slippage in pack trips (Tanner, 2005). In order to maintain a viable business a few of the more prosperous pack stations in the northern study area, Frontier, Agnew Meadows and Reds Meadows have been supplementing their income by offering saddle day trips to tourists and for many years Bob Tanner has organized horse drives in the Long Valley and Mono Basin areas. This is in addition to the earlier variety of trips offered outside the fully outfitted traveling trips such as spot trips, trail rides, base camps, and dunnage packs and caches.

Cooperation, Conservation, and Conflict

Federal regulations and the difficulties of packing itself required packer operations to work together in order to maintain a viable business. This included cooperation between pack outfits and the Park and Forest Services. Some packers, for example, combined their stock for large parties and contributed to trail maintenance among other things. To encourage cooperation the High Sierra Packer's Association, established in 1934 at the instigation of Ike Livermore, created guidelines for better business practices (Jackson, 2005).

Before World War II, the National Park Service began to study the deleterious effect of pack stock on meadows (Jackson, 2005). Besides the deterioration of meadows, stream channels were also damaged, soil moisture decreased, exotic plants were introduced, the behavior of wildlife was disturbed, and unauthorized trails were built or pioneered. The latter was important to packers for gaining access to favorite lakes and hunting areas that could bring in extra business and so the practice continued. After the war the Sierra Club and private riding clubs added their own conservation methods, limiting the number of participants, bypassing vulnerable meadows, packing feed for stock, maintaining trails, cleaning up the back country and designing pack trip strategies to avoid over-concentration of animals and people. In the summer of 1946, packers and the Sierra Club got together to remove garbage from campgrounds in some areas (Livermore, 1947). Other large private parties, such as the Contra Costa Hills Club, the California Alpine Club and the Trail Riders of the Wilderness continued destructive practices (Jackson, 2005).

The integrity of the wilderness environment was a vital issue to both government agencies and the packers who depended on that integrity to attract customers (Jackson, 2005). To avert the trend toward harmful use of the wilderness, and the loss of interest and business thereby, the High Sierra Packer's Association adopted its own "packer's code" in 1948 that advocated ecologically sound practices. Many of the recommendations were incorporated in Forest Service regulations.

Livermore (1947) identified several concerns of packers, including possible new road construction in the wilderness, the difficulty in obtaining sufficient feed for stock in the winter and summer pastures, dirty camps and increasing numbers of backpackers. The latter concern was soon to give packers the most problems. The concern that Livermore expressed was that backpackers could access the wilderness on their own two feet without need for horses and mules and this would diminish the business of packers. Stock had been the primary means of backcountry travel for a century until the end of the war and before then only a few hardy men such as John Muir and Norman Clyde did without animals. What Joseph Le Conte wrote in 1907 held true for decades, "On account of the very considerable distance to be covered and the total absence of any kind of habitation or supply stations, a pack train is almost a necessity, though some times a most troublesome one."

During World War II, however, thousands of soldiers experienced foot travel with heavy packs, and camping out in bivouacs made of shelter halves and sleeping in mummy bags. Also, many Sierra Club members served with the U.S. Mountain Troops and experienced mountaineers designed equipment, trained troops and wrote training manuals. The infantry equipment that the United States Army and Marine Corps developed soon found its way into war surplus stores after the end of the war. Some of the former soldiers learned that they could apply their backpacking skills and available equipment for travel in the mountains and civilians found out that they could do likewise. War surplus stores became their outfitters. Rucksacks associated with the hiking tradition of Europeans living in the mountains of Germany, France, Italy, and Switzerland also found their way into American markets. The slow stream of backpackers in the Sierra Nevada after the war and throughout the 1950s became a popular sport in the 1960s when lightweight equipment such as nylon tents, down filled sleeping bags and external backpack frames made of aluminum were manufactured. Besides mountain warfare designs, much was borrowed from manufacturers of outdoor products to lumbermen, surveyors, prospectors, and Arctic and Antarctic expeditions in the early twentieth century (Sierra Club, 2005). With the availability of lightweight back packing equipment and supplies in the 1960s and 1970s, hiking and backpacking significantly outpaced the use of pack stock by nearly eight to one.

As the high country was opened to more people, concern grew over overgrazing and trampling of meadows, and with federal management of the wilderness. Of all the problems of wilderness use the condition of meadows relative to the use of stock seems to have been the primary issue, particularly the smaller, more fragile meadows (Jackson, 2005). The potential cumulative harm of the sheer numbers of hikers and backpackers over a long period of time was an issue that did not appear until much later. Ike Livermore, who was a director of the Sierra Club as well as a professional packer, proposed that the Club hold a conference of federal and state land managers, leaders of other outing clubs and packers (Sierra Club, 2005). The success of the first High Sierra Wilderness Conference in 1949, which discussed the topic, "The High Country of the

Sierra Nevada” led to the biennial Wilderness Conferences over the next 26 years.¹ It is important to highlight the dominant role of Ike Livermore who spanned both the professional packers and the wilderness protection movement and epitomized the historic tradition of cooperation and the sharing of values that were soon to change.

Relations between packers and the Forest Service were good through the 1970s and early 1980s after which a turn was taken for the worse, according to Marye and Lou Roeser (2005). The surge of backpacking in the 1970s resulted in restrictions on wilderness use, which carried over into packing and conflicts have arisen between the two user groups that continues to the present day. It is unfortunate since both groups have an intense regard for the integrity of the natural state of mountain wilderness. Packers have insisted that they have taken care of the wilderness because the natural state of the mountain environment is necessary to running a successful business besides being an intrinsic personal value. Hikers complain about environmental damage to the wilderness from stock use and are irritated by feces, urine and attracted flies along stock trails while packers and others complain of the damage to the environment by the thousands of backpackers who take to the trails every year.

Commercial Packing—Current Perspective

History and Background

Nineteen pack stations with physical facilities on Forest (outside the Wilderness) or on private inholdings within the wilderness operate transportation services in the Ansel Adams and John Muir Wildernesses (see Table 3.1). The extent of the collective operating area of these pack stations is 9% of the total wilderness acreage. This is based on operators identifying the trails, routes, meadows and campsites they have used historically as service providers.

Table 3.1 List of pack stations operating in the Ansel Adams and John Muir Wildernesses

Pack Station Name	Location	Satellite stations
Frontier Pack Train	Silver Lake	n/a
Reds Meadow Resort and Pack Station/Mt. Whitney Pack Trains	Reds Meadow	Agnew Meadow
Mammoth Lakes Pack Outfit	Lakes Basin	n/a
McGee Creek Pack Station	McGee Creek	n/a
Pine Creek Pack Station / Sequoia Kings Pack Trains	Pine Creek	Onion Valley
Rock Creek Pack Station/Mt. Whitney Pack Trains	Rock Creek	Lower Rock Creek Corral
Bishop Pack Outfitters	North Lake	Cardinal Meadow
Rainbow Pack Outfitters	South Lake	n/a
Glacier Pack Train	North Fork Big Pine	n/a
Cottonwood Pack Station	Cottonwood Creek	n/a

¹ The conferences were held mostly in San Francisco and Berkeley until the 14th and final Wilderness Conference in 1975 in New York City expanded the scope to the entire earth, as its topic indicates, “Earthcare, Global Protection of Natural Areas.”

Pack Station Name	Location	Satellite stations
Minarets Pack Station	Clover Meadow (Miller Meadow)	n/a
Yosemite Trails Pack Station	Fish Camp	n/a
High Sierra Pack Station	Edison Lake	Florence lake
Muir Trail Ranch	Blayney Meadow	n/a
Lost Valley Pack Station	Double Meadow	Florence Lake
D&F Pack Station	Huntington Lake	Edison Lake
Clyde Pack Outfit	Tule Meadow	Maxson Trailhead, Wishon, Courtright Reservoir

In addition to the pack stations, there is one proposal for a llama operation with no base facilities proposing to use up to 500 service days and one proposal for burro supported wilderness use. This operation is small, offering one burro supported trip a year. The itinerary varies from year to year with use occurring to varying degrees in Sequoia Kings Canyon NP and front country areas on the Inyo National Forest.

There are four categories of stock related service: spot, dunnage, full service trips, and day trips. (These services are described in more detail below in the Description of Operations section.) Any one of these types of trips could travel through the project area destined for either Yosemite or Sequoia/Kings Canyon National Parks.

These types of stock supported services require skilled stock handling and care. The public generally does not have access to personal stock and equipment, nor to the specialized skills necessary to travel with stock in the wilderness.

Most of the pack station use is on the primary trails and popular destinations in these two wildernesses. The most popular type of trips are dunnage and spot trips followed by full service trips and day rides.

Since the 2002 operating season², pack station operations have been under a District Court injunctive relief. The relief reduced their service day use levels by 20%, required authorizations of non system use trails, reduced the party size to 12 persons and 20 stock (from 15 persons and 25 head of stock), and required a two year phase-in of the quota system from the 2001 Wilderness Plan (the plan identified a five year phase-in). The court's relief changed pack stock operations and hindered the ability to determine what effect the wilderness plan implementation—on its own—would have made to commercial pack stock operations. When appropriate, distinctions between pre-2001 Wilderness Plan and post 2001 Wilderness Plan are made to describe the changing affected environment over the past 5 years.

There are 75 analysis units where pack station operations overlap in their identified operating areas. In 52% of these areas only two pack stations are overlapping operations, while in 45% of the areas 3-5 operators overlap. Although 75 units were identified as overlap only 17 site specific locations overlap for spot and dunnage services. Most overlap exists as the result of traveling trips going through an operator's primary area for providing spot and dunnage services.

² Two pack stations, D&F and High Sierra Pack Stations were exempt from the reduction in service days and party size because the Forest Service had already conducted environmental analyses for these pack stations.

For the past six years commercial pack stock use is consistently estimated to be around 8%³ of total overnight use on the Inyo National Forest and 10% of use on the Sierra National Forest (wilderness permit and reported pack station use data 1999-2003). On trailheads where pack stations are located the ratio is considerably higher. On these trailheads, overnight commercial pack stock use varies from 4% (Lamarck) to 45% (Hilton). Mono Pass (25%), High Trail (30%), Rush Creek (34%), and Pine Creek (36%) are all trailheads with high percentage of commercial pack stock use. Trailheads on the Sierra National Forest that receive a higher percentage of commercial pack station use include Cassidy (32%), Bear Ridge/Diversion (32%), Margaret (24%), and Isberg (21%) (2002 wilderness permit data).

Description of Operations

The following describes the typical services and daily operations of a commercial pack station operator providing service to clients.

Spot and Dunnage trips

Spot trips are trips in which clients ride stock to a destination with a guide, supported with pack stock for equipment and gear. The riding stock, pack stock and guide do not stay with the party. Dunnage trips are trips in which packers using pack stock carry equipment and supplies for clients who are hiking to a pre-arranged destination, and/or pre-arranged re-supplies for clients on long duration trips. The packer does not stay with clients.

For spot and dunnage trips, the packers will spend an average of one to two hours in the morning saddling pack and saddle stock, and packing loads. Loading 8 to 12 mules will take on average up to 2 hours. Trip planning, animal care, equipment repair, fitting clients to the saddle, and safety briefings would also be accomplished before leaving. The packer or packers will lead the strings to the agreed upon camp. The clients will be dropped off at a designated site and the packer will return home at the end of the day. Work hours for spot and dunnage trips are often from dawn to dusk with up to 12 hours in the saddle, and 2-4 hours packing and saddling stock. These trips do not involve hauling feed, grazing, highline or camp setup.

Spot trips may require the packers to return to the camp to pack the clients and their gear back out. For these trips, packers start in the morning from the base facility, arrive at the campsite and pack the gear and sometimes clients out to their vehicles. Some clients desire to return to their vehicles earlier in the day, so packers spend the previous night in the wilderness either at the campsite with the clients or close by so they can pack them out earlier on their last day. Any overnight trip would involve hauling feed, grazing, highline, or camp setup.

Destinations for spot and dunnage trips could include Yosemite or Kings Canyon National Parks.

Full service trips

Full service trips involve a guide, cook, or other paid employees of the operator that accompany the clients for the duration of the trip. The full time packer or packers that stay with the party during the duration of the trip handle stock for the riders including saddling, packing the mules,

³ The 8% figure includes Mt. Whitney use, without Mt. Whitney use included the level is between 11 and 13%. There is no stock use allowed on Mt. Whitney and this trail, by itself, accounts for 33% of total use on the Inyo NF portion of the JM/AA.

trip planning, animal care, equipment repairs, safety briefings, and possibly trail work to clear trails of debris or obstacles. Most full service trips are booked at the maximum number of clients permitted due to the high volume of work involved. The packers will spend an average of one to two hours in the morning saddling both pack stock and saddle stock for the trip. After saddling, the packers will begin loading mules for the day to travel to the selected campsite. Loading 8 to 12 mules will take on average up to 2 hours. The packer or packers (which sometime include the camp cook) will lead the strings to the next location; travel time can be as long as 6 to 8 hours with only a break for lunch for the guests.

Once in camp the packer will need to identify an existing stock holding area for the night which will accommodate the total number of stock. The area will need a highline put up (placing a rope between trees head high to tie stock on). Any rocks or debris that could injure the animal must be removed. Protective devices for the trees, such as tree savers should be used (cotton, rubber or nylon straps wrapped around the tree to protect the bark). Generally, the process take up to an hour or more and includes unloading the mules, unsaddling, setting up the highline, hauling or watering stock (leading stock down to a water source or bringing water to the stock in a bucket) before placing stock on the highline and protecting the gear from the weather (stacking or covering).

After setting up, if the packer decides to graze the stock (turning stock loose to feed in an adjacent meadow), the animals will be turned loose and monitored as to their location. If the packer is turning out for the night, the stock will be left to roam the area and gathered in the morning at first light. The stock are not always easily found and this task can take up most of the morning. Some packers will keep certain animals tied up for the night to assist in finding the other stock in the morning. Grazing requires hours of work for the packer, but is important for the health of the stock as each animal needs a certain amount of roughage each day to maintain optimum health.

One alternative to grazing is hauling feed (most often pelletized alfalfa and grain, though some packers use a compacted hay product) and feeding the stock on the highline using nosebags. Most packers will feed only pellets/grain for no more than two days in a row as this practice can jeopardize the health of their stock, unless a period of time can be set aside to graze for needed roughage. Packing feed involves additional stock to haul feed. When additional animals are needed to pack in feed, fewer animals are available to provide client service. Hauling feed requires the packers to be conservative with other needs and gear for the trip. Hauling feed allows the packer to begin working with the stock saddling, loading and preparing for the day at first light. Feeding stock on the highline adds about an hour to the daily duties but there is a satisfaction to waking up and having your stock still in camp.

Day Rides

Day rides involve clients riding stock, accompanied by a guide, for periods of a day or less. No overnight equipment is involved.

Day rides require saddling and fitting the client to the tack and the riding animal, safety briefings and guiding. Most day rides fall into the categories of 1 hour, 2 hour, ½ day and full day rides. Packer and stock preparation for these trips is similar to above without the pack stock duties.

Other Operational Duties

The packer’s day generally starts early in the morning and ends late at night. Shoeing, veterinary care, facility maintenance, transportation of stock via truck to trailheads, taking reservations and accounting are a few of the additional business activities packers accomplish on a day-to-day basis.

Rest days are critical to the health of working animals, consequently they cannot be used every day.

Recent Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses

Stock/Client Numbers

With the reduction in service days that took place in the 2002 operating season it appears that stock numbers increased. It appears from the use data that from 2001-2003 there was a trend towards using more stock per person and more trips with more stock into Sequoia Kings Canyon National Park. Records from both Inyo and Sierra National Forests show that there was a 2% increase in the number of stock per client for spot and dunnage trips, a 16% increase in number of stock per client for full service trips and a 5% increase in spot and dunnage trips accessing Sequoia/Kings Canyon National Park.

In 2003, 92% of all trips were spot or dunnage and 8% full service trips. Full service trips utilize more stock per person 4:10 as compared to 6:10 ratio of people to stock for spot and dunnage. Dunnage trips typically use the least number of stock per client.

In 1998, 923 clients were serviced with 5,567 head of stock on the Inyo National Forest. In 2003 3,606 clients were serviced with 5,664 stock On the Inyo. Fewer clients are being serviced with more stock. Figures 3.1-3.3 display commercial pack stock trends by geographic unit. Figure 3.1 displays commercial pack stock trends in people served and stock used between 1996 and 2003. Figure 3.2 shows the commercial stock numbers by geographic unit in 2003. Figure 3.3 shows the commercial pack stock clients by geographic unit. Table 3.2 provides a breakdown by analysis unit of commercial stock and client numbers from 2001 to 2004.

Figure 3.1 Commercial pack stock trends in people serviced and stock used 1996-2003

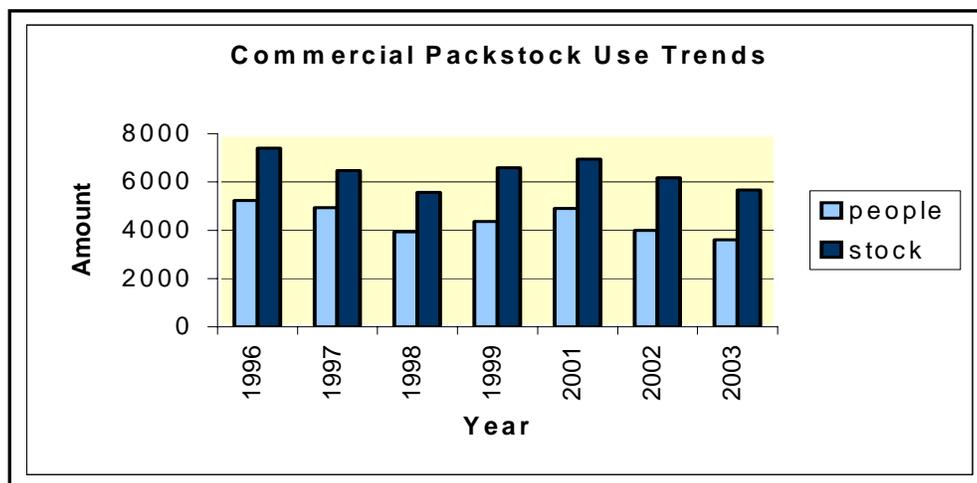


Figure 3.2 Commercial stock numbers by Geographic Unit 2003

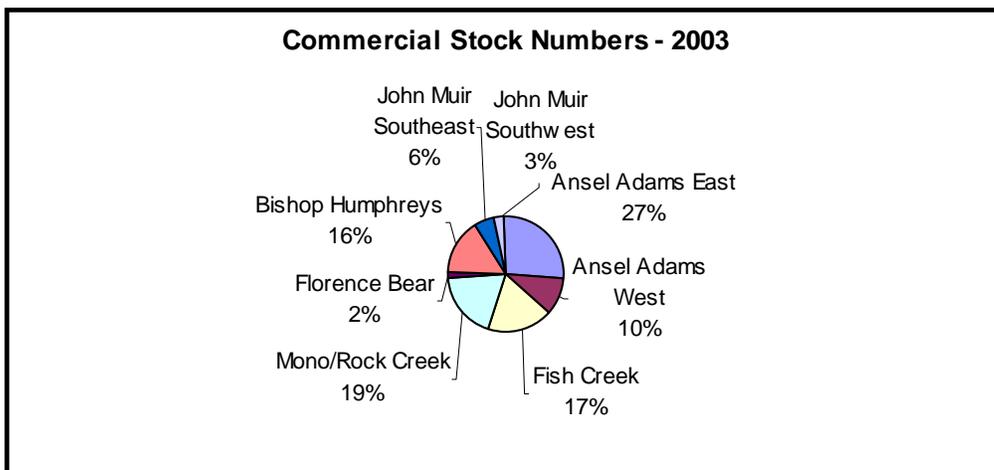
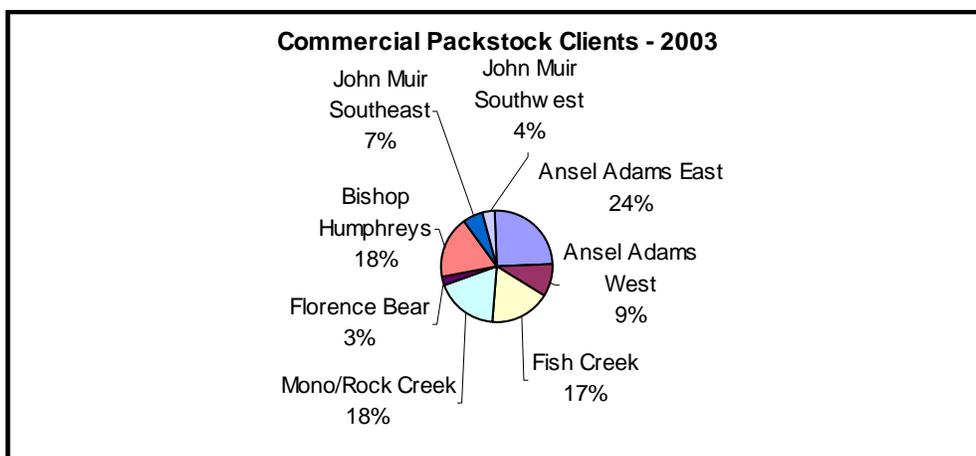


Figure 3.3 Commercial pack stock clients by Geographic Unit 2003



Grazing Operations

Historical pack stock use in support of sheep and cattle grazing, mining operations, logging operations, and for recreation purposes likely greatly exceeded the numbers and geographic extent of today’s use. Recent reported pack stock grazing use is approximately 8,500 stock nights at approximately 172 meadows in the Ansel Adams and John Muir Wilderness areas, based on the highest numbers of stock nights of grazing use reported in either 2001-2002. Commercial pack stock operators are required to fill out “Stock Use Reporting Cards” that include forage area used, numbers of stock, and estimated duration of grazing time. Using the best available information the table below summarizes the reported pack station grazing by analysis unit for 2001-2003.

Of the 125 locations where grazing was reported during 2001-2003, only 22 (17.6%) had grazing all three years. That is, if the reports of use are complete, about 82% of the meadows have at least one year rest after being grazed.

Table 3.2 Summary of reported commercial pack stock use by geographic unit

Geographic Units	# Pack-stations Reported Grazing Use	Total Reported Use 2001-2003 (in stock nights)		
		2001	2002	2003
Ansel Adams East	4	1616	1154	1040
Ansel Adams West	3	142	114	197
Fish Creek/Convict/McGee	7	2292	2047	717
Mono Creek/Rock Creek	5	42	897	480
Bishop/Humphreys	5	133	176	493
Florence/Bear	6	214	80	178
John Muir SW	1	251	155	125
John Muir SE	1	9	0	0
TOTALS		4598	4670	3147

Day Rides

Four pack stations on the Sierra National Forest have traditionally conducted day rides in these wildernesses. In the last couple of years the overall use has averaged 275 service days. In all cases use has been below the permitted number of service days allowed, and is not a significant use in these wildernesses.

Eleven pack stations on the Inyo National Forest have traditionally conducted day rides in the Ansel Adams and John Muir Wildernesses. Using the high reported number from the last couple of years, day rides have averaged 3876 service days. Similar to above, this use has been below the permitted number of service days allowed.

Party Size

The current party size is 15 persons and 25 head of stock wilderness wide. This party size was determined through a federal rulemaking process with other units in the Central Sierra to gain consistency in the contiguous wilderness in this region. In 2002, the injunctive relief imposed by the District Court lowered the party size for commercial operators affected by the relief to 12 persons and 20 head of stock. Since 2002, use reports reflect that change.

Data from reported pack station use shows very few trips use the maximum party size. In six years of data from 1995⁴, parties exceeding both the 12 persons and 20 head of stock occurred in 2% of total pack station trips. The highest year was 1995 at 2.5 % of total trips. Trips that exceeded 12 persons occurred 7% of the time. Trips that exceeded 20 stock occurred 6% of the time. Two operators, Reds Meadow and Rock Creek Pack Stations have a disproportionate percentage with both using greater than 20 stock 10-15% of their trips, prior to the District Court's injunctive relief.

⁴ The years since 2001 when the court ordered party size reduction was put into place were not used in this calculation.

Campsites

Across the wilderness, most campsites that are used for holding pack stock by commercial operators are well-established. Generally speaking, the packers are not creating new campsites, they utilize the existing sites. Some expansion of the sites occurs over time particularly as stock holding areas change.

Geographic Scale

Ansel Adams East

Two pack stations, Frontier and Reds Meadow, base their operation in this area. Four additional operators identify use in the region. Rock Creek Pack Station travels thru the area to Yosemite National Park, where they operate under an Incidental Business Permit with the Park. Rock Creek has substantial use in this area, with 33 trips reported in 2001. Mammoth Lakes Pack Outfit (MLPO) identifies some use in the Ansel Adams East. This use includes very low use into Deer Creek (Crater Creek Analysis Unit) via either Red Cones Trailhead or Duck Pass. Four operators identify use in the Crater Creek area, with MLPO, Rock Creek and McGee all identifying grazing in this area.

There is heavy commercial pack stock grazing in this area, particularly in the Rush Creek drainage and the Thousand Island AU. There were reported stock nights of 1616, 1154, and 1040 in 2001, 2002, and 2003 respectively, in 26 locations by four pack stations. Eight meadows were only used one of those years, nine in two years, and nine were used all three years. Reds Meadow has pasture permits for Johnston Meadow and Minaret Falls.

Ansel Adams West

Two pack stations base their operations in this area: Minarets and Yosemite Trails. Minaret's operation is concentrated in the Staniford, Lillian, Cora, Sadler, and Triple Divide Analysis Units (AU) with low use reported in the other AUs in the region. Yosemite Trails Pack Station operates only on the ¼ mile of trail from the Chiquito trailhead to access Yosemite National Park where they operate under an Incidental Business Permit. This use is regulated by Yosemite National Park and the Sierra National Forest's trailhead quota. With respect to service days, travel across the short distance of the Sierra National Forest at Chiquito Pass has been counted as day use for both pack stations for the past four years. This use will be described as, and allocated as, overnight use for this analysis.

Two east side pack stations, Rock Creek and Reds Meadow, identify use in this area. These operators pass through, typically from Yosemite National Park over Isberg Pass (Sadler AU) and on to Summit Pass (Cargyle AU). Here, trails, grazing areas, and campsites are identified as overlapping the operations of Minarets Pack Station.

There is light grazing use in this area, with reported stock nights of 142, 114, and 197 in 2001, 2002, and 2003 respectively, at 12 locations by three pack stations. None of the locations were used all three years, seven were used in two of the years, and five in only one year.

Fish Creek/Convict/McGee

Overall, the Fish Creek/Convict/McGee Geographic Unit receives low to moderate levels of use by six different pack stations. Of all the areas in the project, however, the Silver Divide has the

highest concentration of overlapping operators. This area is identified for use by six operators: McGee, High Sierra, D&F, Mammoth Lakes, Reds, and Rock Creek. It is the primary area of operation for Mammoth Lakes Pack Outfit with their base facilities located in the Mammoth Lakes Basin adjacent to the Duck Pass trailhead. They are the only operator that relies upon this area as their primary area.

Both High Sierra and D&F with their west side base operations access the area from the south of Silver Divide (primarily over Goodale Pass). Goodale Pass is nine miles from Lake Edison. Loops from the west side over Goodale and Silver Pass, with days spent in the Grassy Lake and Peter Pande area are typical of the few full service trips that are conducted from these west side operations.

Rock Creek Pack Station accesses Fish Creek primarily over Silver Pass on extended full service traveling trips from Rock Creek over Mono Pass and exiting at either Duck Pass, Reds Meadow or on through to Yosemite National Park. These trips, numbering up to 30 a year, intensively use the grazing resources in the area. In the late 1980s the Forest limited the number of trips by Rock Creek Pack Station over Silver Divide to 13 trips due to increasing concerns over the resource conditions in the area and the heavy use and impacts associated with these traveling trips.

Reds Meadow accesses the area primarily from Reds Meadow down into Lower Fish Creek. They can loop up through Cascade Valley and back out to Reds for the occasional full service trips but the majority of their use in this area is spot or dunnage trips to Lower Fish and Iva Belle hot springs.

McGee Creek Pack Station accesses the area primarily over McGee Pass. Their use is predominantly spot and dunnage trips into the Upper Fish Creek vicinity, including Tully Lake. With a 12 mile ride from the pack station to just the pass, spot and dunnage trips into Upper Fish generally require that the wrangler either spend the night (and graze the stock or pack in feed) or travel back over the pass often arriving back after dark. Until 2001, McGee had been utilizing the grazing resource at Lee and Cecil for layovers associated with the long spot and dunnage trips over the pass. In 2001, when conditions of the access trail were determined to be of high concern, the pack station was asked not to use the area for grazing (although the trail could be used for spot /dunnage trips).

In Convict Basin, the commercial pack station located at Convict Lake ran trips into the basin up until the mid 1980s. At this time floods washed away a bridge that was required to make the trail passable to pack stock. A decision was made to no longer authorize use into the wilderness from Convict Lake. Use began accessing the upper basin sometime after this by other pack stations (Mammoth Lakes Pack Outfit and McGee) by way of Laurel Trailhead. Up to 30 trips and 200 stock have been reported a year in this basin recently.

This area receives the heaviest commercial pack stock grazing, with 2292, 2047, and 717 stock nights reported in 2001, 2002, and 2003 respectively, mostly in Silver Divide and Cascade AUs. The grazing took place in 32 reported locations by seven pack stations, all three years in ten of the locations, in two of the three years at five locations, and once in three years at 17 locations. There were some closures in effect for Yosemite toad, particularly in McGee Canyon.

Mono Creek/Rock Creek

Although eight operators identified that they use portions of the Mono Creek region, five of these have no recorded use in the past ten years. At one time these operators may have passed through the area on extended traveling trips, but today these trips rarely occur. The primary operator is Rock Creek Pack Station, accessing the area from the east over Mono Pass. Rock Creek has a high proportion of the full service traveling trips that spend one to three days per trip in the Mono Creek corridor. There is a heavy use of the grazing resources associated with these trips. They also offer spot and dunnage trips to various locations in the Mono Creek corridor, including Pioneer Basin, Fourth Recess, and Hopkins.

High Sierra Pack Station accesses the area from the west side at Lake Edison. Their use has been limited beyond Second Recess for the past ten years, but in the past had done more trips to Pioneer Basin. Conflicts with Rock Creek, and possibly the grazing restriction in Pioneer Basin contributed to a choice to reduce their use to this area.

D&F has incidental use to the lower Mono Creek area, while Bishop Creek and Pine Creek have incidental use associated with traveling trips through Mono Creek. Lost Valley has identified use but has not been in the Mono Creek area for over ten years.

Reported grazing use in this area has been quite variable, with 42, 897, and 480 stock nights reported in 2001, 2002, and 2003 respectively. Five pack stations reported grazing in 22 general locations. Thirteen locations were used only once and eight were used two of the three years, with the very general “Mono Creek” used all three years. The Pioneer Basin has been closed to grazing since 1988 due to resource problems.

Bishop/Humphreys

In the central section of the John Muir Wilderness, three pack stations provide direct access into this area: Pine Creek Pack Station accessing from Pine Creek and primarily traveling into Pine Creek and French Canyon; Bishop Pack Outfitters accessing Piute Creek and Sabrina Basin with heavy use into the Golden Trout Lakes areas west of Piute Pass; and Rainbow Pack Station accessing Bishop Pass with high use over the pass into Sequoia Kings Canyon National Park. High Sierra Pack Station accesses the area from the west and identifies operating areas in this region, but the most recent use reports has very little use beyond Hutchinson Meadow. Rock Creek, Lost Valley, and Reds identify use in the area but these operators have reported no use in the recent past with the exception of some traveling trips by Rock Creek

This area has relatively light grazing, all reported in Glacier Divide and French AUs. Five operators reported use of 133, 176, and 493 stock nights in 2001, 2002, and 2003 respectively, in six locations. Hutchinson Meadow received use all three years, Upper French Canyon was used in two years, and grazing was only reported in one of the three years in the other four locations.

Florence/Bear

This area is bisected by the Pacific Crest trail and John Muir Trail corridor. Most of the seven operators that identified use here only pass through the area on longer traveling trips. Two operators, High Sierra and D&F, utilize this area on a regular basis. High Sierra’s Pack Stations are located at Edison and Florence Lakes, while D&F hauls their stock into Edison from their base facility near Huntington Lake.

Muir Trail Ranch conducts packing operations from their base camp located on private property at Blayney Meadow, which is an in-holding within the John Muir Wilderness. The stock related activity is a small but important part of their guest ranch resort that is located on the private property. The guest ranch has been in operation since 1940. They hold a Special Use Permit, which was originally issued in 1948 (reissued in 1956), for primitive four wheel drive access from Florence Lake to the private property.

Lost Valley operates from its base headquarters on private property located at Double Meadow adjacent to the Muir Trail Ranch. In addition they maintain facilities and a corral at Florence Lake under a Special Use Permit. In past years Lost Valley has operated a burro rental service as well as traditional horse and mule outfitter and guiding. They have primarily operated from the private land but also to some extent from the facilities at Florence. They may also use the jeep road for primitive motorized access to their private property.

Moderate pack station use occurs at the Hilgard branch of Bear Creek, Sallie Keyes, Senger Creek, with low use dispersed onto many other destinations in the area.

Six operators reported grazing at fourteen locations in this area. The reported stock nights were 214, 80, and 178 in 2001, 2002, and 2003 respectively. Lou Beverly was the only meadow where grazing was reported all three years, three meadows were used in two of the years, and ten were only used once in three years. Hilgard and Rosemarie meadows are closed to grazing in alternating years.

In addition, several meadows are used as pastures: Jackass, Poison, and Hellhole by High Sierra and Double Meadow and Blayney in the East Florence AU by Lost Valley Pack Station and Muir Trail Ranch. Jackass is only partly in the Wilderness, part of the meadow is a Forest Service administrative pasture, and there are two exclosures.

John Muir Southeast

This area is characterized by the access it provides to Sequoia-Kings Canyon National Park. Five operators identified use in this area: Cottonwood Pack Station, Glacier Pack Trains, Mt. Whitney Pack Trains, Rock Creek, and Sequoia Kings Pack Station. Cottonwood operates at Cottonwood Creek and accesses Cottonwood Lakes Basin as well as provides access to Yosemite National Park both via the John Muir Wilderness and via Golden Trout Wilderness over Cottonwood Pass. They have low use into Cottonwood Lakes by recent use reports. Glacier Pack Trains operates primarily into North Fork of Big Pine with some hunting trips into Baker. Their use into North Fork of Big Pine is moderate, primarily supporting hikers and climbers in the form of spot and dunnage trips into the drainage. Sequoia Kings Pack Trains operates from Onion Valley primarily accessing Sequoia Kings Canyon National Park. Mt. Whitney Pack Trains has use authorizations for the Golden Trout and for this region of the John Muir Wilderness to access Sequoia Kings Canyon National Park. Rock Creek is part owner of the Mt. Whitney Pack Trains and has identified this area as a part of that operation, but also could be operating as Rock Creek and exiting any one of the trails from a trip through the National Park.

Pine Creek Pack Station was the only operator to report grazing in this area. The only reported grazing use was at Sawmill Meadow, with nine stock nights in 2001. Cottonwood Pack Station has a pasture permit for Windy Gap Meadow.

John Muir Southwest

This region has four operators that identify use: Lost Valley, Clyde, D&F, and High Sierra. One operator, Clyde Pack Outfit, is the primary user of this area and disperses a light to moderate level of use over many destinations. High Sierra and D&F operate at the north end of this region.

Clyde Pack Station is the only operator to report grazing in this area, with 251, 155, and 125 stock nights reported in 2001, 2002, and 2003 respectively in 20 locations. None of the locations was used all three years, six locations were used two of the three years, and fourteen locations were only used once in three years.

3.1.2 Wilderness

Wilderness Scale

The Ansel Adams and John Muir are adjoining wildernesses. They compose the central portion of a larger wilderness landscape that extends from Walker Pass to Tioga Pass and are one of the nation's largest contiguous wilderness landscapes in the lower 48 states. To the north the Ansel Adams is contiguous with Yosemite National Park. To the south, the John Muir wraps around the northern portion of Sequoia-Kings Canyon National Park.

The Ansel Adams Wilderness, originally named the Minarets Wilderness, was established by the 1964 Wilderness Act (78 Stat. 890; 16 U.S.C. 1131-1136). An additional 119,000 acres were added and the wilderness was renamed in the 1984 California Wilderness Act. There are 78,775 acres administered by the Inyo National Forest and 151,483 acres administered by the Sierra National Forest.

The John Muir Wilderness was originally established by the 1964 Wilderness Act (Public Law 88-577). 81,000 acres were added in the 1984 California Wilderness Act (Public Law 98-425). There are 351,957 acres administered by the Sierra National Forest and 228,366 acres administered by the Inyo National Forest; this area is in the northern portion of the Fish Creek watershed. There are also 240 acres of private land within the wilderness boundary. This includes private in-holdings at Blayney Meadow that are used for commercial pack stock operations by Muir Trail Ranch and Lost Valley Pack Station.

Wilderness Character and the Wilderness Act

The Wilderness Act (Public Law 88-577) provides the definition of what a wilderness area is intended to be and what unique values these areas should be providing. The Act in Section 2(a) states the designated wilderness areas shall be administered “for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness and so as to provide for the protection of those areas, the preservation of their wilderness character.”

In this defining statement, two potentially competing objectives are put forward: use and enjoyment and the unimpaired, preservation of wilderness character. Wilderness character is a complex notion to define. There is no definition of wilderness character in the Wilderness Act and no legislative history on the meaning of the phrase (Landres et al., 2005). The Wilderness Act in Section 2 (c) refers to both environmental and social qualities of wilderness character:

an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements of human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

Policy development in the early years following passage of the Wilderness Act involved review committee reports and focused on the specific language of the Wilderness Act to define the concept of wilderness character. Section 2c in the Act been used to define and describe wilderness character (USDA Forest Service, 1972 and Landres et al., 2005).

Forest Service policy for wilderness management states that the agency is to:

Manage wilderness toward attaining the highest level of purity in wilderness within legal constraints. Each designated wilderness is affected by a variety of human influences that vary in intensity. In one area, human influence may be very limited; in another area, major disturbances occur. The number and intensity of these influences cause a gap between attainable legislative wilderness and the conditions that exist on a wilderness. The goal of wilderness management is to identify these influences, define their causes, remedy them, and close the gap between attainable level of purity and the level that exists on each wilderness. (FSM 2320.6)

In addition, the agency direction states that “Each wilderness should be at least as wild in the future as at the time of classification. Resource impacts shall be decreased or held constant. Conditions shall always be improved in situations where degradation exceeds wilderness resource criteria as defined by the designating legislation.” (FSH 2309.19 21.1)

The agency is responsible for insuring that the overall condition of the wilderness at the time of designation does not deteriorate or degrade; and that the conditions improve over time by managing the changing influences affecting wilderness character.

The Sierra and Inyo National Forests have a thirty year history of actively managing for an excessive demand for human use and enjoyment while taking actions to protect resource values. This history demonstrates successful attempts to reduce overall use levels, reduce party size, remove structures, improvements, trash, reduce campsite density, improve campsite conditions, close areas to improve conditions and reduce crowding, close areas to grazing, improve trails, and generally manage impacts. These actions have moved these wildernesses towards more purity, while at the same time allowing a sustainable level of use and enjoyment by the public.

Current interagency efforts to monitor wilderness character (Landres et al., 2005) define wilderness character as the combination of biophysical, experiential, and symbolic qualities that distinguish wilderness from all other lands. Wilderness character is protected or diminished and sometimes both, by management decisions and actions. According to Landes et al. (2004):

Because wilderness character is multidimensional, composed of both biophysical and social aspects, actions taken to protect one aspect of wilderness character may diminish another aspect. For example, a bridge built to protect a stream bank from erosion caused by people or horses crossing the stream may also diminish the opportunity for people to experience the challenge of crossing a stream, and it may diminish the feeling or experience of a natural setting. Similarly, the required use of hardened or designated campsites to protect the soil and vegetation in an area may diminish the opportunity for unconfined recreation and the sense of freedom from the constraints of society.

It is the responsibility of the agency to insure that wilderness character is protected and that the values of wilderness, including the local place-based and culturally significant components of wilderness are protected.

For purposes of analyzing the effects and existing conditions on wilderness character the following identified qualities of wilderness from the Wilderness Act are used:

Untrammeled – wilderness ecosystems are essentially unhindered and free from human control or manipulation.

Undeveloped – wilderness is essentially without permanent improvements or modern human occupation.

Natural – wilderness ecological systems are substantially free from the effects of modern civilization.

Outstanding opportunities for solitude or a primitive and unconfined type of recreation – wilderness provides outstanding opportunities for people to experience solitude or primitive and unconfined recreation, including the values of inspiration and physical and mental challenge.

These four qualities are used in discussing the conditions of the wilderness resource in both Chapter 3 and 4.

Desired Conditions for the Ansel Adams and John Muir Wildernesses

These two wildernesses are managed to achieve desired conditions that are set forth in the 2001 Wilderness Plan. Three “recreation categories” describe the physical, resource, managerial and social setting for managing visitor recreation use. Most of the wildernesses is managed for low use and very pristine conditions (Recreation Category 1). A very small portion (3%) is managed for concentrated use at popular destinations (Recreation Category 3); these destinations have been popular for decades and continue to draw a large portion of the overall wilderness use. These areas are to be managed intensively to insure a non degradation standard is met, therefore more management presence may be experienced. The third category (Recreation Category 2) is to be managed for higher levels of use in the primary trail corridors but low levels of use dispersed off the primary trail corridor. This category will generally see low to moderate amounts of use and where use does concentrate it will require more management, but not intense management as needed in the Recreation Category 3 areas.

This management strategy allows for use and enjoyment while preserving the four components of wilderness character. These recreation categories guided use level determinations made in the 2001 Wilderness Plan, specifically trailhead quota determinations. It follows research and agency direction for managing wilderness and protecting values. Though solitude or natural conditions are not found to the same degree in all parts of the wilderness, there are outstanding opportunities for solitude and the land remains substantially unaffected by civilization, offering an extraordinary contrast to civilization in the modern world. The challenge of management is to maintain wildness, provide experiences of wildness and preserve wilderness character conditions in an ever changing world.

Visitor Use

Recreational hiker, pack stock and riding stock use have been popular in these wildernesses since the early 1900s. Little more than anecdotal evidence regarding use levels exist prior to 1965. No consistent units of measures exist to draw firm conclusions about use trends over the past fifty to one hundred years. However, observations that were documented in some noteworthy historical

reports trace the type and levels of use in a very coarse way and from these it is reasonable to make some general estimation on how use has changed over time.

In a 1935 report on the High Sierra packing business, pack outfits estimated that they served 75-1500 persons a year per outfit. Cumulatively across the Sierra this was extrapolated to 32,000 people (Livermore, 1935). Today, pack outfit numbers range from 55 persons to 1100 persons serviced per outfit, for overnight use in the two wildernesses on the Inyo NF (USDA Forest Service, Inyo National Forest, 2003a).

In a USDA study of a proposal to add the north and middle forks of the San Joaquin drainage to Yosemite National Park in 1955, use levels in this area were portrayed as very low: In the North Fork of the San Joaquin (Ansel Adams West): “Recreational use in the headwaters of this drainage is limited primarily to fishermen and hunters. Several hundred people visit this limited area each year. Access is mainly from Clover Meadow or Granite Creek” (USDA Forest Service, 1955).

Observations from the Middle Fork of the San Joaquin and Rush Creek state:

Wilderness use, over the trails from the end of the roads totaled about 11,300 visitor days in 1955. These people go in by horse and on foot. Many of them are “Backpackers” and often includes the entire family. ...Use of the John Muir trail in and out of the park through Donahue Pass, is very light. It is calculated that not more than 200 people and 90 head of horses and mules use this trail each summer (USDA Forest Service, 1955).

Today roughly 1,000 people a year are recorded traveling over Donahue Pass from various starting points in the Ansel Adams and John Muir Wilderness. This includes hikers traveling the north to south route of the increasingly popular John Muir Trail.

A report of the High Sierra Wilderness District by wilderness manager Arn Snyder in 1960 indicates that recreation use had steadily increased for many decades (Snyder, 1960). Snyder estimated that 10,000 to 13,000 people visit that portion of what would become the John Muir Wilderness each year. Use figures for roughly the same area today are about 6,000 to 7,000 people per year (USDA Forest Service, Sierra National Forest, 2003).

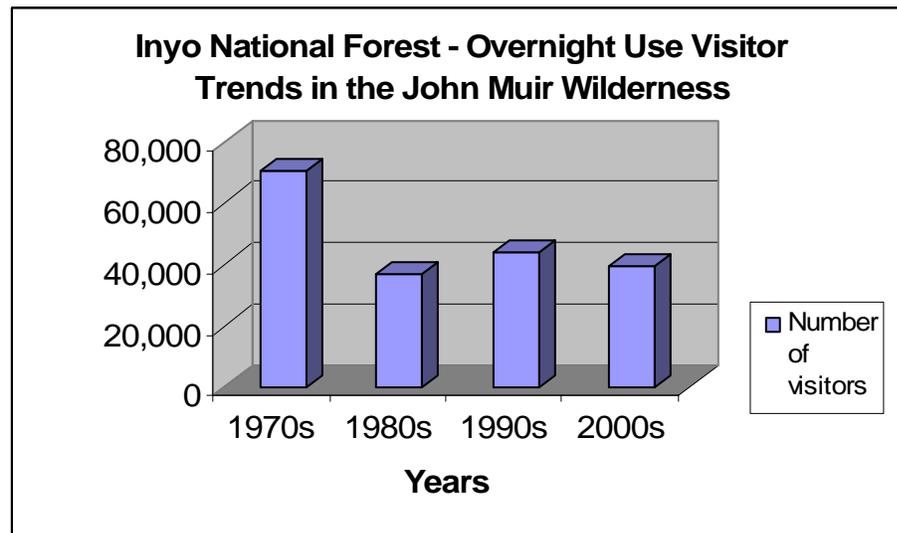
In summary, use has clearly increased on the east side of the Sierra, particularly with the increases in day use. On the Westside use appears to have decreased from the highs reported by Snyder and those of the 1970s, but appears to have leveled off in the last decade.

The number of people visiting these wildernesses is two to three times higher presently than when the Wilderness Act designated these areas. Today, there are more parties taking shorter trips into these wildernesses than in the 1960s. Visitor days may be equal to or only slightly more in 2003 than in 1964 (National Forest Recreation Visitor Days Data). This is the result of the average length of stay decreasing from an estimated 6.7 days (Snyder, 1960) to 3.4 (USDA Forest Service, Inyo National Forest, 2003a).

Although it is difficult to determine trends with great precision, data indicates that overall use levels have dropped since the increase of backpacking use in the 1970s (see Figure 3.4). Backpacking and day use has increased more than riding and pack stock use. Backpacking increased steadily until the 1960s and then sharply in the 1960s and 1970s (USDA Forest Service, Inyo National Forest, 1974). With limitations put into place in the late 1970s and early 1980s, overall use may have dropped off. However, visitation has shown a predictable pattern of

high and low use years, usually depending on snowpack, for the past fifteen years (USDA Forest Service, Inyo National Forest, 2003a), maintaining a similar overall use level.

Figure 3.4: Inyo National Forest - overnight use visitor trends in the John Muir Wilderness. This demonstrates some coarse trends of use over the past 30 years. Prior to the 1970s visitor use data was not estimated with any recording tool, such as at trailhead register or permit, so data is not comparable prior to the early 1970s.



While backpacking use has steadily increased in popularity, commercial pack stock use shows a gradual decline. The type of trips, the locations of trips and the season of use has changed more than the overall use, and these are as significant factors as overall use. The type of commercial pack stock use has changed from a business of renting stock to visitors and primarily all expense and spot trips to an increase in the dunnage type trips. More importantly, locations where commercial stock use occurs has changed more than overall numbers. This will be discussed further in the geographic scale.

The historical use by the Sierra Club has also contributed to the past and present impacts of these wildernesses. The Sierra Club outings began in 1900. They traveled on long multi-week trips with large numbers of stock (horses, mules and burros) and people. The Club itself recognized the impacts associated with their use and conducted a study on these impacts in the mid 1970s. The study investigated effects of trampling by humans and pack stock, firewood production and availability, human waste disposal, and impacts of pack stock on meadows (Stanley et al., 1977). The effects detailed in this document indicate that the same issues found in 2001-2004 existed in the 1970s. This helps confirm that these impacts do go back in time and have not gotten particularly worse in the past twenty years, and that other use groups, namely the Sierra Club, have contributed to the effects that exist on the ground today.

Use Data Sources

Tally Sheets – used for stock numbers, clients, service days actually used, type of trip, location of service provided.

Wilderness Permits – used for party size, managing quota, total public use by trailhead (including commercial uses).

Day use study – estimates of day hiking by trailhead (INF only).

Current Use

Visitor use data is most accurate in recent years⁵. Use data for overnight visitation is collected from two primary sources, wilderness permits and “tally sheets.” In analyzing use data, some data sets are more accurate than others. Commercial stock numbers and people served (clients), for example, are more accurate and precise on tally sheets since data on wilderness permits estimates the stock to be used while the tally sheets record what was actually used.

Service days⁶ are a less reliable or precise indicator of use trends. Service days count the number of people and days serviced by the pack station. For operators that do a lot of all expense trips, the service days used are higher than the operators running primarily spot and dunnage. An operator who runs spot and dunnage may actually serve more people and the people may spend more time in the wilderness. An operator may change their operations one year to running only spot and dunnage trips and use less service days than the previous year when they used more service days with all expense trips. It does not necessarily mean that they have less use that year, even though they used less service days.

Yet, it has also been noted by the interdisciplinary team that all expense trips have a higher impact than spot and dunnage trips. All expense trips require larger campsites. The holding and grazing of stock causes more disturbance than a string that travels in and out in a day, dropping the party. For these reasons, service days are not a good indication of use levels, or use-impact relationships. For the purpose of analyzing the effects of commercial packstock operations, the data sources listed in the inset box above provide the best understanding of the context and intensity of use levels. Typically, the number of people is a more reliable indicator of use levels and trends.

Wilderness Permit data on the Inyo National Forest has some irregularities that need to be accounted for. During the wilderness reservation contract (1996-1999) increased quotas were used to account for lack of no shows⁷. This resulted in elevated overall use levels. The 1980s and early 1990s data lacks precision with unreported use (data gaps) by commercial operators and/or ranger districts. With the advent of computers the quality of data has improved.

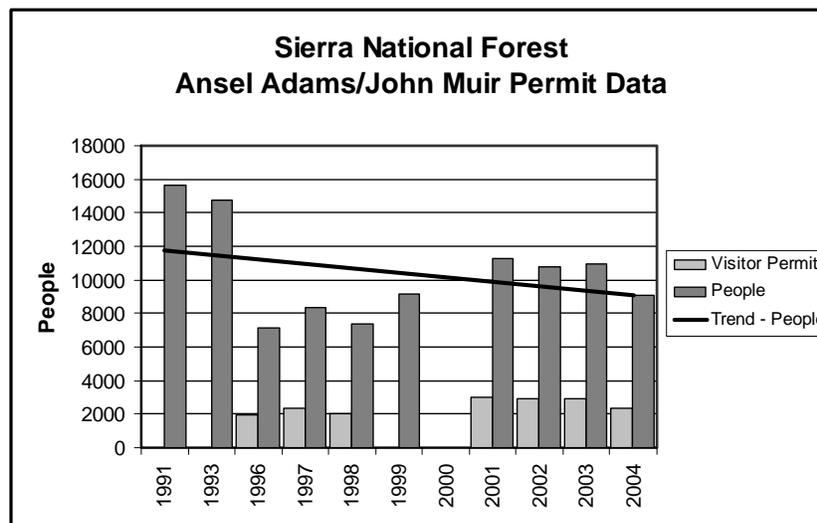
Overall visitor use (commercial and non commercial) has been mostly stable in the last ten years with approximately 18,000 permits and 50,000 to 60,000 visitors per year accessing from the Inyo National Forest. Entry from the Sierra National Forest use is less than the eastside, with an average of approximately 2500 permits and 9000 visitors per year (see Figure 3.5).

⁵ Use reports (wilderness permits and tally sheets) vary in accuracy over the years. 2001-2004 have been the most accurate on the Inyo, due to improved database capabilities and improved reporting by commercial operators. In the 1980s and 1990s there are reports of use but the data lacks precision or completeness. The Sierra National Forest data is most accurate for 2002-2003 with incomplete data for the 1980s and 1990s.

⁶ A service day is a day or any part of a day on National Forest System land for which an outfitter or guide provides goods or services, including transportation to a client. (FSM 2709.11-95-9,37.05)

⁷ The wilderness permits were sent out upon reservation during these years. Since there was no need to pick up the permit, no shows were not accounted for and the Forest estimated a no show rate that was added to each trailhead quota.

Figure 3.5: Visitor use trends on the Sierra National Forest



Notes:

- 1) 1991, 1993 - Data from 2001 wilderness permit + visitor days data from Minarets RD (conversion @ 6.54 VD/P)
- 2) 1996-2000 - Data recalculated from many original source records
- 3) 2001-2004 - Data from SNF Visitor Permit Database
- 4) 99-00 Data for HSRD lost on DG computer system

The timing of this use is concentrated into an eight week period. Most visitation takes place from the end of July to early September, with the highest peak of use within the first two weeks of August. July 4th is also a peak of use that is typically followed by a lower period before it peaks again in August.

The percentage of commercial pack stock use on primary access trails are listed in Table 3.3. While the overall percentage of commercial pack stock clients is at 6-10% of total use, this use is concentrated at the trailheads where the pack stations are located. At these trailheads the percentage of use is higher⁸.

Commercial Packstock Use

As stated above, use reports prior to 2001 are incomplete and cannot reliably show accurately the trends of all pack stations over time. What we can assess, based on limited information from the 1970s compared to the same data today, is whether overall levels of use have significantly changed. Data indicates that commercial pack stock client use has shown an overall decrease by approximately 22% from 1970s to 2004, when measured in percent of use. Table 3.2 and Figure 3.6 shows the decrease in commercial pack stock client numbers in these wilderness areas (in terms of both overall numbers and as a percentage of overall use).

⁸ Percentage of use is a very coarse and unreliable indicator of use levels. A severe spike or drop off in overall use can affect the percentage of commercial use even if the level of commercial use remains stable. On the Inyo, the Mt. Whitney area, which receives a very intense amount of use can greatly skew the percentage figures. Estimates over the years may show wide variations in estimations of percentage of commercial use because of this factor. For this reason using the number of people is a more reliable indicator of use trends. This will be discussed in more detail at the geographic scale.

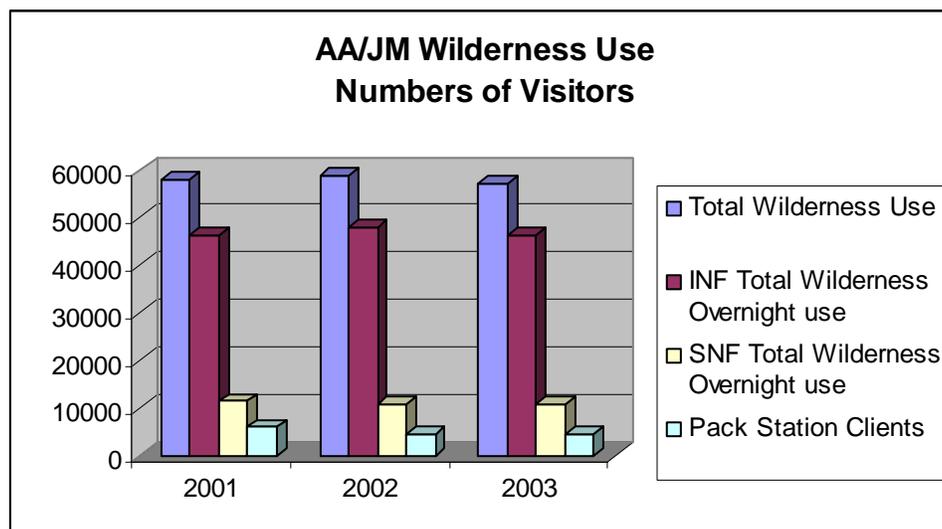
More currently, from the most accurate data sets, data shows commercial pack stations are servicing fewer people. 2001 was the last year that the pack stations operated without the new constraints from the 2001 Wilderness Plan. It was also a high use year for pack stations compared to the previous five years of recorded use. For these reasons, it becomes a good baseline from which to measure changes in use and effects of the 2001 Wilderness Plan on the pack stations.

Table 3.3: Current overnight use in the Ansel Adams and John Muir Wildernesses. Inyo and Sierra total overnight use figures come from Wilderness permit data. Pack station clients come from tally sheets for all pack stations.

Year	INF Total Wilderness Overnight use	SNF Total Wilderness Overnight use	Total Wilderness Use	Pack Station Clients	Percent of Use that is Commercial Pack Stations
2001	46,451	11,427	57,878	5991	10.4%
2002	48,048	10,804	58,852	4640	7.9%
2003	46,204	10,920	57,124	4479	7.8%
2004	44,155	9,011	53,166	4015	7.6%

Note: 2001 estimates

Figure 3.6: Ansel Adams and John Muir Wildernesses: number of visitors. This figure displays the percentage of overnight visitor use entering from each Forest compared to pack station clients in the Ansel Adams and John Muir Wildernesses. Sources of data are described in the Use data Sources box above.



The extent of pack station use in the wilderness can be described in overall numbers, in location specific numbers (expressed at the geographic unit scale below) as well as overall spatial distribution of use. The results of a spatial analysis that buffered all trails, campsites and grazing areas that packers identified as having used (even when they have not used some of these

locations for years or decades) indicates that the total area that pack stations use is 9% of the land base for these two wildernesses.

Although total amount of use and extent of the operation provides an understanding of the overall magnitude of use that occurs over the 800,000 acre planning area, the timing and type of use may have more of a bearing on resources impacts. For instance, in looking at the above information, one cannot tell if a destination or trail is receiving more use even if overall use is decreasing. For this reason, the discussion at the geographic scale becomes particularly relevant to the effects of pack station use in these wildernesses.

Quota Availability

Trailhead quotas were implemented for pack station use in 2002 at the direction of the 2001 Wilderness Plan. Prior to this pack stations wrote their own wilderness permits and were not subject to trailhead quota limits. In implementing the Wilderness Plan direction any new or reduced quota was phased in over a three year period. (The Record of Decision had identified five years, but the District Court injunctive relief directed three years). The target quota level was implemented in 2004.

An analysis of the commercial and non-commercial quotas reveals that the quotas for both of these uses are fairly equitable.

On the Inyo National Forest, there are a total of 81 trailheads managed with specific quotas. Twenty-two trailheads are identified as “commercial” trailheads, where the packers compete with outfitter and guides for this quota space. For 18 trailheads, commercial operations must compete with the general public for quota space. A full analysis of quotas being filled can be found in the project record.

On the Sierra National Forest, the 2001 Wilderness Plan listed 23 trailheads with specific quotas. In addition, eleven additional trailheads were inadvertently omitted from the 2001 Wilderness Plan, for a total of 34 trailheads managed with a quota. Of these, seven have separate quotas for commercial and public use, and three of those further separate commercial use into quotas for packers and non-stock outfitter/guides.

For Sierra National Forest trailhead entries, Table 3.5 shows that for 2004, the first year when the new Wilderness Plan quotas were fully implemented, the public did not have a disadvantage when attempting to acquire quota space. In 2004, public quotas only filled to capacity a few days during the peak season.

In summary, wilderness wide, trailheads fill at approximately the same frequency in a season for commercial trailheads as for the general public trailheads. The most significant example of a potential equity issue in commercial and non commercial access occurs on a non pack station used trail, the North Fork of Lone Pine Creek. On this trail, the general public quota was filled 50 days in 2004 while the commercial quota (mountaineering guides) was filled 3 days. Tables 3.4 and 3.5 show some of the comparisons between commercial and non commercial quota accessibility indicating that quotas are having an affect on pack stations, and on some trails more than the general public, in other cases less than the general public.

Table 3.4: Quota availability on the Inyo National Forest, 2004. This indicates that quota availability varies by trailhead and no clear trend is evident.

Trail	Number of Days Commercial Quota Reached 2004	Number of Days General Public Quotas Reached 2004
Shadow Creek	4	2
Hilton Lakes/Creek	8	3
North Fork Big Pine	5	17
Piute Pass	4	5
Rush Creek	7	0
Mono Pass	8	2
Bishop Pass	2	8
Lamarck	1	8

Table 3.5: Quota availability on the Sierra National Forest, 2004. This indicates that the commercial operators are experiencing more difficulty getting quota than the general public.

Trailhead	Number of Days Packer Quota Reached 2004	Number of Days O/G Quota Reached 2004	Number of Days General Public Quotas Reached 2004
Fernandez	8	12	6
Isberg	4	14	0
Maxson	2	18	4
Trailhead	Number of Days Commercial Quota Reached 2004	Number of Days General Public Quotas Reached 2004	
Devils/Graveyard	6	2	
Florence	2	4	
Jackass/Norris	16	3	
Walton	17	1	

Day Rides and Day Use

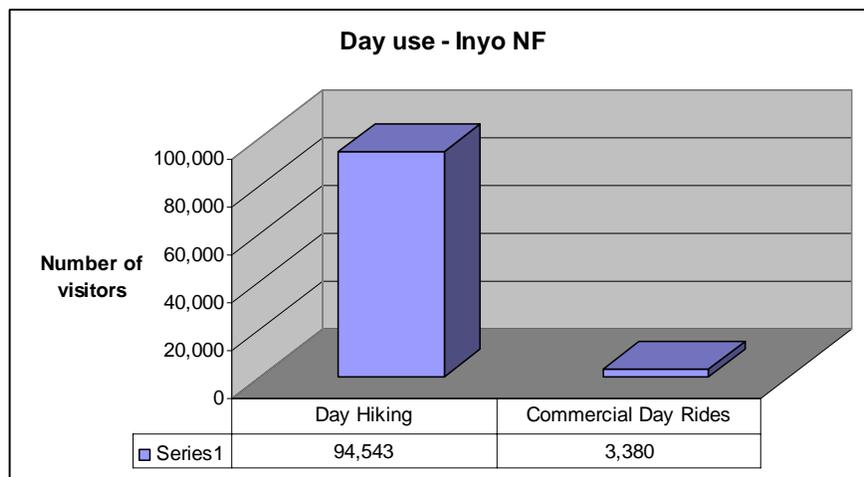
On the Inyo National Forest, day use activities in the wilderness are popular. Many people desire to hike, fish and lightly explore the wilderness environment. On these excursions, visitors rarely travel more than six to ten miles into the wilderness. Many trailheads are not at the wilderness boundary, and there are up to three miles that must be traveled to reach the actual designated boundary. Most day use only occurs at the very perimeter of the wilderness.

The level of commercial day ride activities occurring varies by operator. On the Inyo N.F., 11 of the 12 pack stations have an allocation and provide day ride services. Of these 11, 5 operators operate at low use levels, offering less than 100 service days (one person for either 1 hour ride, 2 hour ride, half day ride or a very rare all day ride) a season (the equivalent of 8 maximum party sizes over the course of 3 months). Three pack stations use between 100-200 service days. Two

pack stations have moderate to high levels of day rides (McGee Canyon and Mammoth Lakes Basin) and one operator has a very high level of day rides (at Reds Meadow) for which most of these rides go less than ¼ mile into the wilderness. Most all of these day rides go a very short distance into the wilderness.

Conversely, non commercial day hiking amounts to a very large volume of use in these two wildernesses. Findings from a study done on the Inyo National Forest between 2001-2003 estimates 94,543 day hikers in the Ansel Adams and John Muir, not counting Mt. Whitney day hikers (recorded by required wilderness permits at between 9,000 and 10,000 people).

Figure 3.7: Day use comparison between hikers and commercial day rides on the Inyo National Forest.



Commercial day rides and day use on the Sierra National Forest is not a significant use. Day rides amount to 242 to 310 commercial day rides a year in the Ansel Adams and John Muir Wildernesses. The locations of day rides vary. No data exists for day hiking visitors on the Sierra N.F. portion of these wildernesses.

Party Size

There have been few empirical studies of group size influences on either the extent or intensity of ecological impacts (Monz et al., 2000). Consumption of firewood and disturbance to wildlife are two areas where group size may have some quantifiable differences in impact (the former showing that large groups consume more wood resources leading to increased impacts, and the latter showing that one large group may be less of an impact than many smaller groups on wildlife). Generally, “where use and pre-existing impact levels are high, even large differences in amount of use have little effect on amount of impact” (Monz et al., 2000). Large groups of hikers and stock users can, if they do not use minimum impact techniques, cause observable impact in trail-less areas and while camping. Management of group size can be accomplished through limits on group size, as well as through other means.

The experiential impacts of large groups may be more of an issue than the ecological impacts of large groups. According to Monz et al. (2000):

From the standpoint of impact on experiences, we believe that the current groups size limits in place in most areas do have some benefits for protecting wilderness experiences. Seeing very large groups, for example, more than 20 people in a group, does bother many wilderness visitors. Such groups once

existed in wilderness, although they were always a minority. Now, in part because of group size limits they are very rare. But research also shows that encountering many other use, user and impact variables in wilderness is more bothersome than group size issues.

Whether the group size “problem” is widely experienced is clearly debatable. Repeatedly, studies find that the effect of large groups on a visitor’s experience ranks low, though this varied by wilderness (Monz et al., 2000). When ranked against other perceived problems it is consistently amongst the lowest ranked problem. In the John Muir Wilderness it ranked as 13th in the list of problem identified by hikers (Watson et al., 1993).

The current condition of the wilderness resource cannot be attributed to any one user group or type of use. However it is documented that the impacts associated with stock do tend to be greater than hikers (DeLuca et al., 1998; McClaran and Cole, 1993; Cole and Spildie, 1998). McClaren and Cole (1993) state that: “Even low levels of pack stock use can cause substantial impacts. Compared to impacts caused by backpackers, pack stock impacts to trails and campsites are more severe, and pack stock impacts to grazing areas have no corollary for backpackers’ impacts” (McClaren and Cole, 1993). They also state that party size is not the most effective means of reducing physical impacts and again, responds to social rather than biophysical impacts:

Of these behaviors [limiting party size, requiring feed to be packed in, encouraging riders to stay on trails, restricting loose herding of stock, restricting the practice of tying stock to trees or picketing stock and encouraging hobbling of stock] limits on party size may have the least effect of physical impacts. Party size limits are likely to be the most effective where physical impacts are likely to occur quickly (Cole and others 1987). Because most impacts occur with the initial use in such areas, subsequent use isn’t as important. Party size limits may be more important to avoid conflict with backpacking groups. Such groups particularly dislike encountering large parties with stock (Stankey 1979) (McClaren and Cole, 1993)

An analysis of party size in the Ansel Adams and John Muir Wildernesses, based on reported pack station use, indicates that amongst all pack stations over the course of eight years of data, 18% of trips had a party size greater than eight persons and 11% of trips greater than ten persons. There was a shift in 2002 when the court ordered a reduction in wilderness wide party size of 12 persons and 20 stock. For 6 years, up to 2001, the average trips with parties greater than eight persons was 17% and dropped to an average of 13% for 2002 and 2003. Even more dramatic a shift occurred with party size greater than ten persons, with the 6 years up to 2001 averaging 14% and dropping to 6% for 2002 and 2003.

Even though the party size limit was 12 persons, the reduction in parties between 8-10 may have resulted from total number of allowed stock per party being reduced from 25 to 20. This may have eliminated commercial pack stock services for groups greater than eight. Operators reported being effected by this change in 2002, stating that it restricted the size of spot parties as it limited the number of pack animals that could accompany a “full” party of 12 persons.

User Conflicts

A 1990 study was conducted in the John Muir Wilderness to understand the nature of conflict between stock and hikers. Findings from this study, combined with two other wildernesses, one being the adjacent Sequoia-Kings Canyon National Park, provide some insight into the conflict and potential management options for reducing the conflict (Watson et al., 1993). Findings point

out that conflict between these two user groups has increased with an increase in use of the wilderness, in particular with an increase in hiker use. It also showed that hikers who disliked horses were in the minority. The source of most of the reported conflict in the John Muir and Sequoia Kings Wildernesses were related to horse manure in places where hikers have to walk and noisy or rude stock groups. According to Watson et al. (1993), “Strong, consistent predictors of conflict between hikers and horse users were general feelings of inappropriateness of horse use in wilderness, differences in perceptions of visitors’ status related to horse use, differences in the strength of attachment to the wilderness, and the value placed on opportunities for solitude.”

Watson found that in the John Muir Wilderness less than 10% of stock users disliked their encounters with hikers, while 53 % of hikers disliked encounters with horseback riders. Hikers indicated that the behavior of others had interfered with their enjoyment of the wilderness. The main behavior of stock users that hikers complained about was stock defecation in places (primarily along trails) where hikers would have to walk. The next most frequently disliked behavior was stock groups making noise, being rude to hiker groups and littering. Hikers were found to place more importance on solitude than stock users.

Watson et al. (1993) also summarizes his findings with:

Stated as simply as possible, hikers who dislike meeting horses in wilderness believe the horse should not be in wilderness; they believe they are an inappropriate use of the resources. These hikers also are not as likely to accord high status to horse users, have stronger relationships with the wilderness, and place more value on the opportunities for solitude than those who do not dislike horses. Translating this knowledge into management strategies requires acknowledging first of all that hikers who dislike horses are in the minority.

Visitor Impacts

Use/Impact Relationship

For forty years, research on ecological impacts in wilderness has pointed to a curvilinear relationship between use and impact. In particular, research on soils and vegetation show that damage can occur at low levels of use, and these impacts do not always become greater as use increases (Frissell and Duncan, 1965; Dotzenko et al., 1967; LaPage, 1962; Merriam and Smith., 1974; Young 1978; Cole 1982). Research has gone so far as to conclude that amount of use alone may not be the most relevant factor to control (Washburne, 1982).

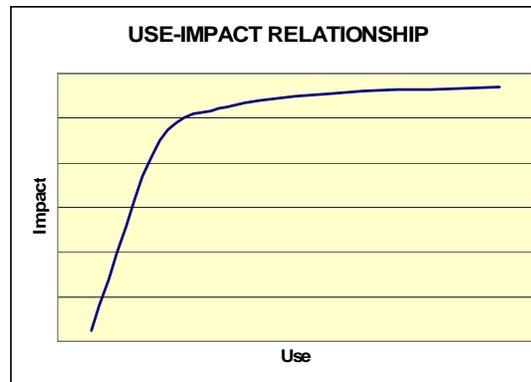


Figure 3.8
Use/Impact
Relationship

Many ecological impacts are often influenced by factors other than the amount of use including situational factors such as the type of use, the timing of the use, the behavior of the visitor and the bio-physical character of the resource being affected.

Research on the influence of various use types on trails has repeatedly shown that stock use has more erosion potential than either hikers or llamas. (Cole and Spildie 1998; Dale and Weaver, 1978). However trail location may be an important factor in causing deterioration of a trail (Helgath,1975). Kuss (1987) found that the greatest change in trail depth, cross-sectional area and soil penetration resistance was found to occur with low levels of use. Burdee and Renfro

(1985) found that trail depth was related to visitor use amongst other factors, while trail width was related to soil type of vegetation type on the Appalachian Trail. The timing and frequency of maintenance is also a factor in trail deterioration. Amount of use is merely one variable for impacts on trails.

Noticeable impacts exist at popular and easily accessed destinations. Any primary trail that accesses a subalpine lake or stream within 6-10 miles of a trailhead can expect camping impacts, trailing impacts and less solitude. These are areas where backpackers, day hikers and commercial pack stock users all converge. Once off the main trail corridors, these two wildernesses offer exceptional opportunities for cross country travel and more primitive experiences abound. In these areas off the main trail, which dominate the landscape, impacts are mostly unnoticeable, especially to the average visitor. In fact, the average visitor probably does not notice many of the impacts that managers record in a high use area.

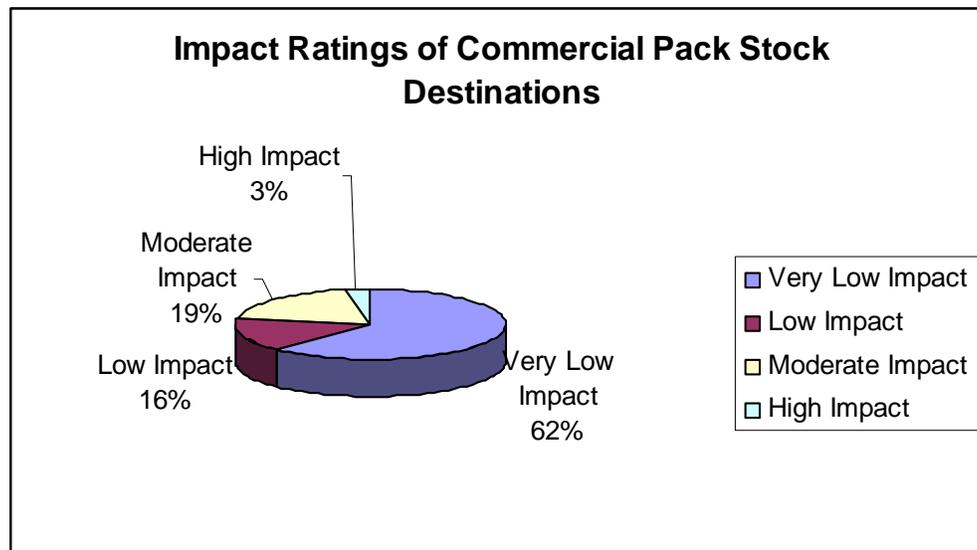
The most noticeable impact for visitors is likely the experiential effects of perceived crowding on the trail and at camping locations and use conflicts.



Goethe Lake, Glacier Divide. Use and impacts are light in trail-less destinations. Such areas are prevalent once inside the wilderness more than six miles from a trailhead. Access to these locations are relatively easy for hikers, yet commercial pack stock do not frequent these locations.

Data that was collected on the general conditions of destinations reveals few destinations with high levels of impact (Figure 3.9). Of 167 destinations that were identified for use by commercial pack stations, 4 rated as high impact sites (2%). The factors used for this rating include access issues (trail and use trail effects), riparian concerns, recreation impacts, camping potential and identified risk factors. Forty destinations rated out with moderate impacts (24%) while the rest (74%) rated out with low impacts. This indicates that while there are some locations of intensive impacts associated with use and are used by commercial pack stock, the vast majority of the destinations do not show significant signs of deterioration. These conditions will be more detailed in the geographic unit discussion.

Figure 3.9. Impact Ratings of Commercial Pack Stock Destinations. This figure shows the proportion of destinations identified by commercial pack stations for use under four categories of impact: high impact (4 destinations); moderate impact (24 destinations); low impact (20 destinations) and very low impact (79 destinations).



Trails

Trails have a high localized impact on the wilderness character. There is a high percentage of both highly developed and highly degraded trails, with little middle ground of primitive well maintained trails. This may have the single most effect on the wilderness character of these wildernesses. Highly developed trails, with substantial structures show the noticeable influence of humans, while highly degraded trails diminish the primitive, unconfined, and pristine qualities that wilderness represents. Though most of the wilderness is trail-less, and many visitors seek the trail-less experience, the majority of visitor's wilderness experience is associated with trails. As cross country travel increases, discernable use trails are increasing. Continued foot and stock travel on these developing use trails tends to facilitate more use to the more pristine destinations. (Gimblett, 1999)

The condition of the wilderness resource varies greatly across the 800,000 acres. There is a vast majority of the landscape that gets very light to no visitor use at all and therefore no impact or influence of recreational use is visible. However, where use concentrates, impacts are noticeable. Campsite density and occupied campsites is higher in popular locations (Gimblett, 1999; Inyo National Forest, undated). These destinations comprise less than 30% of the wilderness, but probably closer to 90% of the average visitor's experience. So, although the majority of the wilderness offers high opportunities for solitude, undisturbed qualities and primitive, unconfined experiences, the majority of visitors experience the impacts of heavily used and highly developed trails, moderate and severely degraded trails, sometimes crowded corridors and destinations, and noticeable recreational impacts associated with camping and traveling in the wilderness.

The 2001 Wilderness Plan provided direction for trails management. No new trails will be constructed and no trails will be upgraded solely to provide access for stock. Trails will be managed consistent with the recreation categories to prevent inconstant trail objectives with the desired

conditions and qualities of destinations. Use trails guidance is provided to help manage these trails consistently over time.

Campsites

As described above, campsite impacts reach a peak with light to moderate use and beyond this point decreases significantly. (Frissell and Duncan, 1965; Dotzenko et al., 1967; Young, 1978; Cole, 1982). Soil compaction leads to increased runoff and erosion potential. Often the core area of activity of a campsite receives intense compaction.

Expansion of a campsite is an impact that occurs over time. Expansion of a campsite can occur when an existing site is too small to accommodate the size of the party. Change occurring at the periphery of the site may increase the area of impact and cause more significant impact than amount of soil compaction or vegetation loss at the core of the site. Wood fires can also profoundly change the ecology of an area. The removal of woody resources may deplete surrounding area of nutrient recycling in the ecosystem. The fire itself can change soil properties, loss of nitrogen, organic matter, changes in pH and concentration of minerals (Shreiner, 1978) in the localized area of the site. Ash and charcoal concentration may cause changes that repeated use exacerbates (Cole and Dalle-Molle, 1982).

The proliferation of campsites and their associated impacts (described above) can lead to a larger area of impact. When campsite choice is left to the visitor, as it is in these two wilderness, with few areas closed to camping other than the 50 foot buffer from water, more management is often required to reduce the number of sites, remove newly created sites, and reduce the expansion of a site, known as containment. Each year wilderness rangers and volunteers remove hundreds of campsites that have been created by visitors. Most new campsites result from the non commercial visitor, as commercial pack stock destinations tend to be to the same location, and overnight holding of stock occurs at existing sites. Very few new stock camps have been created in the past twenty to thirty years.

Impacts that affect the functionality of a site may lessen its desirability. Campsites used by stock parties do tend to be larger and have more impact than sites used by hikers. Stock camps typically have areas where stock is held, areas where “high-lines” are placed between trees to hold stock. If trees are impacted to a point where they lose their functionality for high-lining, or increased impact would be considered unacceptable, the site either expands or can be abandoned for a new site. Campsite expansion at stock sites has been observed over the years and it has been up to permit administrators to work with the packers on campsite management.

The ecological impacts of pack stock use are similar but more severe than hikers (Cole and Spildie, 1998; DeLuca et al., 1998). A case study in the Selway-Bitterroot Wilderness in Idaho demonstrated the value of a containment strategy on stock campsites at heavily used destination areas. The number of campsites as well as the intensity of the site impacts changed as a result of an intensive management strategy. Designated stock holding areas, containment of the size of the site combined with restoration efforts in closed areas all contributed to a reduced area of disturbance, less bare soil and tree scarring. Root exposure and bare mineral soil exposure increased as a result of concentrated and repeated stock use in the same area. But improvement in the former stock holding area compensated for the deterioration in other parts of the campsite.

Campsite inventory has been conducted in the last ten years over the majority (70%) of Inyo National Forest’s portion of the Ansel Adams and John Muir Wilderness. Similar inventory work was done in the late 1970s and 1980s in some locations.

The condition of campsites can change with annual maintenance of campsites and containment and restoration work accomplished by wilderness rangers. In preliminary analysis the density of campsites appears to be within standards throughout the wilderness, with a few pockets where on-going ranger work can target elimination of some sites in locations where density appears to be approaching standards. Similarly, considerable work has been done since 2001 to remove campsites that are within 50 feet of water. Project work in Humphreys Basin, (specifically Golden Trout Lakes), French Canyon (Moon, L Lake, Elba) and other locations have accomplished implementation of the 2001 Wilderness Plan standards for distance from water and density of sites.

Specific effects of campsite, including stock holding campsites used by commercial pack stations can be found in the geographic unit discussions.

Geographic Unit Scale

In the discussion below, commercial use—people and stock—is categorized as very low, low, moderate, and high. The client and stock use recorded on tally sheets by pack stations was divided into these categories to provide a consistent method of characterizing use levels in these wildernesses. In the methodology used to analyze tally sheet data, a two way spot or dunnage trip with 10 people and 10 stock in and 10 stock to return and bring the party out, would be counted as 2 trips, with 10 people and 20 stock total. Not all spot and dunnage trips are two way. It is believed that this most accurately analyzes the amount of stock used to service a party.

People and Stock Use Categories

Very Low	= 1-10
Low	= 11-50
Moderate	= 51-200
High	= 201-350
Very High	= 351-800

Ansel Adams East

The northern portion of this Geographic Unit receives no commercial pack stock use. From Parker south to Crater Creek, however, there is moderate to high commercial pack stock use. This unit is very desirable for many types of recreational activities. Popular trips include those starting or ending from the Reds Meadow vicinity. The John Muir Trail and Pacific Crest Trail traverse this unit and it is a popular trip to start at Reds Meadow area and travel to Tuolumne Meadows or Yosemite Valley. In 2004, 1007 people reported exiting to Yosemite, via Donahue Pass, from various trailheads entering the Ansel Adams and John Muir Wildernesses on the Inyo National Forest. Most of this unit is Recreation Category 2⁹ with the Thousand Island, Garnet, Rush Creek and Shadow/Ediza Analysis Units being managed as Recreation Category 3.

Very high commercial stock numbers are recorded in the Rush Creek Analysis Unit (AU). Rush Creek and tributaries of Middle Fork of the San Joaquin drainage have a high percentage of commercial pack stock use. Up to 34% of the use in Rush Creek is commercial pack stock, with

⁹ “Recreation Category” is the desired setting for areas in the Ansel Adams and John Muir Wildernesses. Three categories were established for social and ecological conditions and are defined and mapped in the 2001 Wilderness Plan.

up to 100 wilderness permits issued to Frontier Pack Trains in a season. The primary destinations are Clark, Alger, Davis, Waugh and Weber Lakes. Commercial pack stock use is distributed amongst these primary destinations, with Clark Lake receiving a slightly higher proportion of the use.

The areas where pack stock use occurs show light to moderate wilderness impacts. Frontier Pack Trains is required to use specific campsites for their overnight holding of stock. This generally protects the destination from the expansion of impacts by the pack stock use, but the sites are large and heavily impacted.

Waugh Lake has a low level of wilderness character due to the presence of the constructed dam for water storage. Generally the wilderness character of this area is diminished by the presence of the structures and, to a lesser extent, the heavy stock use.

High to very high commercial stock numbers are recorded in the Upper Rush Creek AU. Pack station destinations in this area include Marie Meadows, Davis Lake and Donahue Meadows. Davis and Marie Meadows have established campsites with stock holding areas and/or grazing associated with them. These camps concentrate impacts associated with stock and people into fairly contained areas. These locations, just off the John Muir Trail, have moderate opportunities for solitude.

In the Thousand Island AU, Thousand Island and Garnet Lakes receive a high amount of overall use. Very high commercial stock numbers are recorded in this area. This high use, which has been occurring for at least 40 years, has contributed to visible impacts to wilderness character. The area is being managed as a Recreation Category 3, and requires considerable management to maintain the qualities of wilderness character. There are low opportunities for solitude at Thousand Island and Garnet Lake due to the popularity and draw of these destinations.

Day use is high in this area, with the combined use on the High Trail, River Trail and John Muir Trail. Highly impacted campsites (large total area, proximity to water, social trails, vegetation loss, barren core), combined with grazing impacts at the inlet and trailing to grazing, leads to a perception of a disturbed landscape at Garnet Lake. These conditions are, to some extent overshadowed by the high scenic qualities of the area.

The Shadow/Ediza AU also has high to very high recorded commercial stock numbers. Specifically, the Shadow Creek corridor and Ediza Lake receive high use. A moderate percentage of the use is commercial pack stock. Rosalie Lake receives moderate pack stock use with some associated grazing. The area has low opportunities for solitude as it draws over 1,500 overnight visitors and up to 50 day hikers a day (USDA Forest Service, Inyo N.F., 2003b). Primarily due to the proximity of a holding area near water, campsites for Reds Meadow's full service trips in the Shadow corridor show signs of moderate impacts. A camping site used at the inlet of Ediza Lake is also showing impacts. The highest concern at this site involves access that bisects a riparian area.

Moderate commercial stock numbers are recorded in the Minaret AU. Less than ten permits a year are issued to commercial pack stock parties. Total use ranges from 140-200 permits a year. Emily Lake shows considerable impact, due to camping conditions and trail deterioration. This human disturbance affects the wilderness character at this destination.

The King Creek AU, managed as Recreation Category 2, has a low level of overall use and subsequently has higher opportunities for solitude than the remainder of the Ansel Adams East

region. A few destinations used by commercial pack stock, including Holcomb, Superior, and Anona Lakes, show signs of diminished wilderness character due to human disturbance caused primarily by stock campsites and trails impacts. Although no one destination in this analysis unit receives high stock numbers, cumulatively this area has high to very high stock numbers, equivalent to Thousand Island, Rush Creek and in some years Shadow/Ediza. Reported stock numbers are higher at Superior Lake than the other destinations.

Ansel Adams West

This area receives a moderate level of overall recreation use. Commercial pack stock use is distributed fairly evenly throughout this region, with light to moderate levels of use throughout the area. Higher use (moderate) occurs in the Lillian, Staniford, Lake Catherine, and Cora Analysis Units. Throughout the region the wilderness resource shows evidence of light to moderate impacts with a few exceptions of areas that show evidence of heavy use.

High use in the 1970s led to the establishment of camping closures at all or part of four lakes: Lillian, Cora, Rainbow and Sadler. One effect of these closures was the dispersion of use and impacts elsewhere. A ¼ mile circumference around Rainbow Lake, which has limited capacity for campsites, was closed entirely to camping. After this closure, pack stock use drifted over to Flat Lake where two large established stock camps became the destination for this area.

Relative to other Recreation Category 3 areas, the Staniford AU receives moderate use and shows only moderate impact. There are access issues with Staniford, as the system trail does not go to the actual lake and use trails have developed to access the camping. The lake has some good camping opportunities. Lady Lake has moderate opportunities for solitude and a high capacity for camping.

Moderate commercial stock numbers are recorded in the Lillian Analysis Unit. Fernandez Creek junction has multiple large stock camps that are large in total area, with extensive vegetation loss, barren core and soil compaction. The sites also have campsite development, including benches, hitching rails and shelves.

Low commercial stock numbers are recorded in the Triple Divide AU. Anne Lake has some impacts associated with pack stock use. The trails, use trail, and campsite around this lake all show signs of moderate impact and disturbance. Rutherford Lake offers very limited camping opportunities and the existing sites are close to water. The area is below the elevational fire closures but has very sparse firewood resources.

Moderate commercial stock numbers are recorded in the Sadler AU. Sadler Lake has a higher density of highly impacted campsites, including two large pack stock camps and associated grazing impacts. Opportunities for solitude are moderate. Isberg and Joe Crane Lakes show moderate recreational impacts and moderate opportunities for solitude.

Low to moderate commercial stock numbers are recorded in the Cora AU. Cora Lake has moderate opportunities for solitude. Moderate to severe impacts at many large campsites affect wilderness character. Low to moderate commercial stock numbers are recorded in the Lake Catherine AU

Fish Creek/Convict/McGee

While this region shows overall low to moderate use levels of use by six pack stations (relative to other geographic units), this use makes up a high percentage of non-John Muir Trail use. Despite this overall moderate use, three AUs—McGee, Purple Bench, and Silver Divide— have high commercial numbers. The commercial pack stock use of the area shows a high proportion of full service traveling trips. This area is accessible from the east side over Duck Pass, Reds Meadow, and McGee Pass trailheads. From the west side, Goodale Pass is nine miles from Lake Edison. Impacts to the wilderness character are moderate at a number of the destinations used by commercial pack stock. Impacts are high relative to the use levels occurring.

Moderate commercial stock numbers are recorded in the Convict AU and commercial stock access is via the Laurel Lakes trailhead only. Convict shows impacts from past heavy use, including noticeable tree mutilations from firewood gathering and campsite development. Current overall use is low but commercial pack stock use is moderate to high. In 2001, commercial use was high but dropped off in 2002 and 2003. Genevieve shows impacts at a large campsite and the condition of the site diminishes the wilderness quality at that location. Opportunities for solitude are likely high, but if more than one party is in the vicinity the opportunities would be compromised. Cloverleaf Lake has high opportunities for solitude and generally very high wilderness character.

High commercial stock numbers are recorded in the McGee AU. This very scenic drainage accesses Upper Fish Creek. Overall use in this drainage is moderate—typically 200-300 parties a year enter at the trailhead. Since 1995, the highest number of people served was in 2003, with 215 clients. Stock numbers have been less than 200/year except for in 2003 when the stock number reached over 200. The pack station destinations in this area are light to moderate and spread between Grass, Round, Steelhead, and Big McGee Lakes. A campsite used near Round Lake shows moderate impacts mostly associated with site access. Big McGee Lake has a cluster of campsites where the pack station drops parties off in the only area appropriate for camping. The opportunities for solitude are moderate to low. These are the last sites before McGee Pass. This, combined with topography, has caused a concentration of sites around McGee Lake.

Very high commercial stock numbers are recorded in the Purple Bench AU. Purple Lake has a high concentration of pack stock use and impacts. Most of the impacts are contained to three primary campsites in the vicinity of Purple Lake. However, use trails between camps and the general condition of these trails add to the overall level of recreation impact. Although the area is of high scenic quality, the wilderness character is diminished by the disturbance and human influence. Opportunities for solitude are low. The solitude of the area is further compromised by its popularity with John Muir Trail (JMT) through-hikers. At Duck Lake (where overnight camping has been closed) some of the historical impacts that exist are in a recovery stage. There is high day use to Duck Lake. Also in the Purple Bench AU, Lake Virginia has moderate levels of impact with low opportunities for solitude (mostly due to its location on the JMT). It has a high capacity for durable camping.

Moderate commercial stock numbers are recorded in the Upper Fish Creek AU. Three pack station destinations, Tully Lake, Horse Heaven, and Tully Hole, show moderate impacts to wilderness character. Tully Hole has low opportunities for solitude due to its location on the John Muir trail and very little opportunities for camping away from the influence of the trail. It has some moderate impacts from camping with one stock camp at the east end of the meadow. Horse

Heaven has a high concentration of campsites that are moderately impacted and one large and highly disturbed stock camp with a wire drift fence that extends across the trail. Tully Lake (Recreation Category 1) has some access issues, a small capacity for camping right at the lake, but most of the year likely experiences high opportunities for solitude. One relatively small and contained stock camp, suitable for moderately sized parties (6-8 people), is located in a saddle at the north east end of the lake. This location is currently not accessed by the system trail, requiring a use trail to be used to access the camp.

Very high commercial stock numbers are recorded in the Cascade Valley AU. This unit has high scenic qualities where the trail follows Fish Creek as it cascades down the valley. It has relatively light use throughout the unit, except for one location, Iva Belle Hot Springs, which draws a concentration of use. Pack stations transport parties to the area but are prohibited from camping closer than ½ mile from the hot springs. The destination has low opportunities for solitude and is severely impacted with a high density of heavily impacted campsites. The unique qualities of the area, however, may offset the disturbance and high human influence that diminishes the wilderness character. Cascade Valley (proper), Second Crossing, and Third Crossing show moderate impacts to wilderness quality, with large stock camps noticeable at both Second and Third Crossing. The Fish Creek Trail bisects the Third Crossing stock camp. This site is an expansive area of disturbed soils and vegetation/tree mutilations with evidence of stock holding throughout the area.

High commercial stock numbers are recorded in the Silver Divide AU. Moderate to high impacts are evident throughout this analysis unit. Squaw Lake, located on the JMT, has low opportunities for solitude. Peter Pande has moderate opportunities for solitude, with severe impacts along the trail accessing the lake. The human influence and disturbed environment of the access trail have contributed to a diminished wilderness character. It is a large lake but has relatively few good campsite options, with limited capacity for holding stock. Olive Lake is a moderately small lake with very little capacity and a well-established stock camp. Due to the size of the lake, opportunities for solitude would be greatly affected if more than one party were camped at the lake at the same time. Due to its proximity off the main trail, it appears as though the lake gets little use, and with the exception of the one large stock camp, the impacts are minimal. Lost Keys Lakes appear to have sustained impacts in the past but gets very little use currently, either by the public or by the pack stations. Lake of the Lone Indian has low opportunities for solitude due to its location adjacent to the trail and limited camping opportunities. Like Olive Lake, more than one party camped at Lake of the Lone Indian would diminish the solitude. Jackson and Grassy Lake receive a high concentration of use. Grassy Lake exhibits more impact than Jackson Meadow, perhaps due to its smaller size and concentration of intense impacts of stock camps and grazing. The stock camps contribute to a sense of a disturbed area and diminish the qualities of wilderness character.

Mono Creek/Rock Creek

This region covers a large area of high visitor use, much of which has a high proportion of commercial stock use. A large percentage of very degraded trails characterize the area.

In this geographic area, Hilton, Fourth Recess, and Graveyard AUs have high-recorded commercial stock numbers. Pioneer and Silver Peak AUs have moderate to high-recorded stock numbers, while the Bear AU has moderate commercial stock numbers. Little Lakes, Tamarack,

Morgan Lakes, Hopkins, and Volcanic AUs have low-recorded stock numbers. There is no recent recorded commercial stock use in Laurel, Second Recess, and Devils AUs.

In the Hilton AU, Hilton Lakes were historically the location of a resort and recreation residence structures and there is a noticeable human presence on the land. The area has been improved greatly since its designation as wilderness, when these structures were removed. Some remnants of this era are the logjam of structure materials at the outlet of Davis Lake, and a garbage dump in the vicinity of one of the campsites. Presently, the area receives a moderate level of overall visitation, but very high commercial stock numbers are recorded in this area. The Hilton AU has the highest proportion of commercial pack stock use to overall use (45%) of all areas on the Inyo N.F. The area shows evidence of this heavy stock use with large impacted sites, holding areas, and the extensive use trails that have resulted from stock travel between camps. Some rehabilitation occurred in 1999 to reduce the impacts at the peninsula of Second Lake. At many times in July, the opportunities for solitude are low. The presence of human disturbance is noticeable throughout Second and Davis Lake and on up to 3rd and 4th Lake. Beyond 4th Lake the area retains a more primitive quality with no record or evidence of use.

Little Lakes Valley receives the highest level of day use in the Ansel Adams/John Muir on the Inyo National Forest. An average of 100 -150 day hikers per day visit this area annually (USDA Forest Service, Inyo N.F., 2003b). It has high scenic qualities, easy hiking, and access to popular mountaineering. Commercial pack stock use is very low, both relative to hiker use and in general. In 2001, seven parties with commercial stock support entered into this area: in 2003; one party. Gem Lake, the farthest trailed destination, has high recreational impacts with the campsites and trails, and shows very little potential and capacity for good durable campsites. Chickenfoot Lake has capacity for durable camping and is suitable for larger groups. Long Lake is also impacted with campsites at the inlet; suitable camps are located in this vicinity but access is not hardened and crosses some riparian areas. The entire unit is a Recreation Category 3.

Up to five trips a year has been recorded by Rock Creek Pack Station into the Tamarack AU. This is a quiet area that receives very light use (40 total parties in 2003). There are high opportunities for solitude. The wilderness character is high as it offers a very quality primitive and unconfined type of recreation experience as the areas is generally low in development of trails. Some historic manipulation of the water below Dorothy is noticeable, most likely for grazing purposes.

Morgan Lakes AU is commonly accessed from Little Lakes Valley. Historic impacts from mining are noticeable and remains of this use along with old camping impacts are noticeable. It receives very light overnight use currently. Commercial pack stock use is low to moderate.

In the Fourth Recess AU, the condition of the Mono Creek trail is very poor. The highly degraded Mono trail corridor with unsigned spurs that often lead to large packer camps diminishes the wilderness qualities of the area. Three large packer camps, two in the vicinity of the confluence of Third Recess and one below the junction to Hopkins are extensive in size and received a high condition class rating for barren core, extensiveness of social trails, vegetation loss, and total size. The presence of humans and particularly stock use are substantially noticeable in this corridor. Opportunities for solitude are moderate. Fourth Recess itself has limited camping, but is very popular due to it being the first major destination over Mono Pass (Gimblett, 1999). It has the potential to be crowded with parties. This crowding is probably

exacerbated by the camping potential limited to a relatively small area around the outlet. One very suitable site for large parties exists at the west side of the outlet.

The Pioneer Basin AU receives a moderate level of overall use but shows unmanaged recreation impacts—moderate in severity. Although grazing was prohibited in the 1980s, the trail system has deteriorated and use trails are proliferating as a result of a trail system that does not meet the needs of the use demands. Campsite impacts are moderate at Mudd Lake with a high density of Class 3, 4, and 5 sites. The upper basin receives use by hikers camped lower in the basin. Very few good camping opportunities exist above Lake 10,880. Severe trail degradation to Lake 10,900 and up to Lake 10,880 from the east side of the basin has visual as well as resource impacts. Opportunities for solitude can be high at times but in mid-season are most likely moderate, even low. Multiple stock camps exist in the lower basin, including one primary camp at Mudd Lake, but two or three other large sites at the northeast side of Mudd show vegetation loss, barren core, soil compaction, and some severe tree mutilations from firewood gathering. There are many use trails that serve to connect these large camps, including a trail from Mudd Lake stock camp to the Third Recess stock camp. One very suitable stock camp exists at the stream crossing ½ mile above Mudd Lake.

Use in the Hopkins drainage is concentrated at lower Hopkins Lake. An old trail over Hopkins Pass to Big McGee Lake in the McGee drainage has not been maintained and there has been no recorded commercial pack stock use for years. Commercial pack stock operations utilize lower Hopkins Lake where campsite impacts are noticeable from stockholding and a large site shows vegetations loss, a large barren core, soil compaction, and is within 50 feet of water. This is the most logical site for the camp, but is poorly located and expansive. There is a use trail from the inlet of Hopkins Lake that travels through springheads and then reaches the ridge and descends down to the main Hopkins Valley and is noticeably degraded in a few locations. It appears to be used for stock to access upper Hopkins area and provides a loop trip opportunity back to the lower lake.

Laurel AU has no recorded commercial pack stock use and appears to have received only very light use for a long period of time. Very light impact is noticeable at camp locations lower down in the valley. There are few sites at Laurel Lake and virtually no noticeable sites at Grinnell Lake. The area has high opportunities for solitude and is substantially undisturbed with only historic impacts at an old stock campsite lower in the valley. It provides a primitive experience.

Similar to Laurel Lake, Second Recess has no evidence of stock use in many years. The trail is overgrown and has not been cleared making stock travel very difficult. Camping impacts are old, and as such, show little evidence of the presence of humans. The opportunities for solitude are high.

The PCT/JMT is the primary travel route through the Silver Peak AU. It is a moderately high use corridor for thru-hikers, Rock Creek's full service trips from Mono Creek to Mammoth and Yosemite, as well as High Sierra's spot and dunnage trips. Use appears to be concentrated in the vicinity of Quail Meadow for thru-hikers and Rock Creek Pack Station. Mott Lake is receiving a very high level of use as well and has some moderate camping impacts with a moderate capacity for camping. The area appears to be quite popular and can become crowded. High Sierra has recorded up to ten trips a year into Mott and D&F was observed servicing clients in this area in 2004, although there is no recorded use in the past three years by this outfit. Recreation impacts

are moderate to high mostly due to the condition of the trail, specifically the last ½ mile to the lake.

With the presence of a snow survey cabin and snow sensor structure, the Volcanic AU shows a high degree of human presence. Other than this site and its associated impacts on wilderness character, the area has high opportunities for solitude and is otherwise untrammled and undisturbed. Light commercial pack stock use is recorded.

In the Graveyard AU, Graveyard Lakes is a very popular primary destination and high commercial stock numbers are recorded in this area. High Sierra and D&F Pack Station combined have about 40 trips a year in the area and bring over 100 people a season. The camping is concentrated around the outlet, as the camping potential is rather limited to this area. It is a mid-sized lake and with more than one or two parties the area can feel crowded. It is likely that many nights a summer there are more than three parties camped at a time. The upper lakes in this basin receive lighter use. Some impacts at the campsites exist at the second and third lakes. Above these lakes, the imprint of humans is substantially less noticeable, other than the trail, which becomes non-existent after the third upper lake. Opportunities for solitude are low at the lower lake and moderate at the upper lakes.

Two other destinations, Feather and Arrowhead Lake, receive some pack stock use. Arrowhead Lake has no recorded use in the past three years, but the narrow trail offers primitive and unconfined recreation that accentuates the wilderness character of the area. Light impacts are noticeable at Feather Lake, but there are high opportunities for solitude. The trail to Feather Lake is not entirely visible and difficult to follow. This combined with the high scenic qualities at the lake makes the setting high in wilderness character. Only one reported trip to this destination was recorded in the past three years.

The Devils AU receives very light commercial stock use with moderate camping impacts at the inlet of the lake. Four trips were reported in this area in 2003, with no recorded trips for 2001 and 2002. Opportunities for solitude are moderate, particularly near the outlet of Devil's Bathtub where there is a high concentration of campsites. Devil's Bathtub, the primary recreation attraction within this analysis unit, is primarily a day use destination.

The Bear AU has moderate commercial stock numbers. This area is used primarily as a corridor for traveling into the Bear Creek and John Muir Trail (JMT) corridor. The presence of humans is mostly limited to parties accessing the JMT, although one very lightly used site below the JMT junction offers a suitable campsite location for larger parties and stock parties. The opportunities for solitude are moderate on this corridor. Given that this is a primary access to the region from Lake Edison, the area probably has a high proportion of commercial stock use.

Bishop/Humphreys

This area receives moderate to high visitor use and moderate commercial stock use throughout the area. Two analysis units have no reported commercial stock use, Granite Park and Gable.

There is low commercial stock numbers recorded in the Horton AU. This area is a Recreation Category 2 and receives low use, less than 75 permits a year. Commercial pack stock use has mostly been day trips associated with spring horse drives. Although there are past indications of human use in the area (mining cabins), there are high opportunities for solitude. There is a moderate level of day use (average of eight people a day).

Very high commercial stock numbers are recorded in the Piute AU. Piute Pass Trail is a high use trail with 700-800 permits a year. Up to 15% of this use is commercial stock use. Visitors on this trail experience a high level of stock use (Gimblett, 1999) most of which continues over the pass. Very low levels of day rides occur (only 2-3 trips a year) and most go to Loch Leven Lake. Piute Lake has good campsite potential and shows moderate impacts from sustained high use that occurs by the general public. Commercial packers have applied material (sand, manure) to the Piute Pass Trail (referred to as “sanding”) to harden the snow pack and make it easier for stock to pass and melt the snow. The area is a Recreation Category 3.

In the Lamarck AU, the trail to Lamarck Col accesses Sequoia Kings Canyon National Park. Use is moderate on this trail and pack stock use is low with 4-6 trips a year to either Lower Lamarck or to the Col area. Day use is moderate with an estimated 12 parties a day. Lower Lamarck has limited camping opportunities at the outlet, and opportunities for solitude are low and easily diminished if more than one party is camped there. The area has evidence of recreation impacts—moderate trail development and concentration of campsites—but is otherwise scenic and mostly undisturbed with limited human influence.

Sabrina AU receives a moderate level of overnight use (over 500 permits a year) with about 11% of this use serviced by commercial pack stock. The area is a Recreation Category 3. High commercial stock numbers are recorded in this area. Popular destinations for pack stock service are Emerald Lakes, Dingleberry Lake, Moonlight Falls and Midnight Lake. Blue Lake, the first destination, has low opportunities for solitude, moderate recreation impacts and limited good camping. Emerald Lakes is currently accessed by a primitive use trail, and has some large campsites that are of moderate impact. The campsite identified for pack stock use at Dingleberry Lake is close to water and exhibits moderate impact. All these locations have low opportunities for solitude and show slight disturbance. The upper basin, Hungry Packer, Midnight Lake, and Moonlight Falls, all have better opportunities for solitude.

Tyee receives low overnight use (40-60 permits a year) and moderate day use (11 persons a day). Rainbow Pack Outfitters reported two trips in 2002, one trip in 2004 and none in other years. Very low commercial stock numbers are recorded in this area. Day use occurred in 2004, but had not been authorized into the area prior to that. The trail is primitive and opportunities for solitude are mostly low during the daylight hours. Solitude likely improves after daylight hours.

Low commercial stock numbers are recorded in the Treasure AU. Treasure Lakes receives moderate overall visitor use and low commercial stock use. Day use is moderate at an estimated 12 people per day. The area has moderate opportunities for solitude despite its proximity to very popular developed recreation area. There is a moderate capacity for camping at the lower lake and the impacts to campsites are moderate. Use trails are not extensive. The area is in a Recreation Category 2.

Bishop Creek is one of the highest use areas in the two wildernesses. Moderate commercial stock numbers are recorded in this area, with just fewer than 1,000 wilderness permits (parties) issued annually. One of the primary draws is the access to Sequoia-Kings Canyon National Park; particularly the very popular “North to South loop” between North Lake and South Lake through the Park, with start and end points in the Bishop Creek drainage. Both Bishop Pack Outfitters and Rainbow Pack Outfitters offer North-South loop full service trips. With this high visitor use, commercial pack stock use is proportionately low. Stock use overall in this area is moderate. The majority of the pack stock use goes into the Park. In 2001, 20 trips went into the park, and in

2003 41 trips went into the park; those same years 16 trips and 12 trips were serving clients just on the Inyo N.F. side of the pass. The area has a highly developed trail to the pass, with more primitive trails accessing Chocolate, Ruwau, and Marie Louise Lakes. Long Lake is the primary destination for day rides into the area. Most of the use on the Inyo N.F. side of the pass is spot or dunnage to this location. Very light pack stock use is currently reported at Marie Louise, and the destination has low camping potential with campsites that are not suitable for more than six persons. The trail is primitive and with current light use maintains a primitive character. Ruwau, Chocolate, and Bull Lakes are similar to Marie Louise in access and camping potential at the destination. The area is a Recreation Category 3. No grazing was reported in this analysis unit.

Very high commercial stock numbers are recorded in the Glacier Divide AU. Between 2001 and 2003, commercial stock numbers have averaged about 650 per year. The primary destinations for commercial pack stock use are Golden Trout Lakes, Muriel Lake, and Hutchinson Meadow, with light or occasional use to Packsaddle Lake. Golden Trout Lakes shows severe impacts on trails and use trails and at campsites. The location and scenic qualities of the area draw a high concentration of visitors. Two large stock camps in the vicinity are contained but are close to water. In the mid-summer, opportunities for solitude are low. Muriel also shows a high concentration of use and pack stock service up to fourteen trips a year. There is a high density of campsites around the outlet of Muriel; some that show severe impacts with vegetation loss, barren core, soil compaction, and overall high impact ratings. There was some restoration work done in the summer of 2003 that may have improved conditions at both Golden Trout Lakes and Muriel Lake. Hutchinson Meadow receives a high concentration of use. Campsite density is high in this area with very high impacts. An extensive drift fence along with the campsite impacts causes the presence of humans to be substantially noticeable.

Florence/Bear

This area is heavily used by thru-hikers on the John Muir Trail. Very light use occurs off this main corridor. Stock use is relatively light and mostly dispersed throughout this area, with the highest of this use occurring in the Sallie Keyes and Seldon AUs. Very light use occurs in Italy, Bear Lakes, Apollo, Hooper, and Dutch Analysis Units.

Light commercial stock numbers are reported in the Apollo AU. Overall, visitor use here is also low. Much of the light use that does occur is by pack stations during hunting season. No more than light impacts are known to be occurring in this area. There is no visible trail to Orchid Lake.

Moderate commercial stock numbers are recorded in the Italy AU. Commercial stock trips rarely travel beyond Hilgard Meadow, but this meadow is currently and historically a popular destination for stock parties. Based on reports and current conditions, use is most likely considerably lower than levels in the past. There are multiple pack stock camps that show moderate impacts to vegetation and total area of use. There is a primitive trail from Hilgard Meadow to Lake Italy. The area around Hilgard Branch and up to Italy Lake has moderate levels of solitude, with occasional quite low levels of solitude in mid-summer, due to the popularity of trips that loop through this area.

Low to moderate commercial stock numbers are recorded in the Seldon AU. Most destinations used by pack stock in this unit do not show specific stock related impacts, with the exception of Rosemarie Meadow. Rosemarie Meadow has a large stock camp but the impacts have a moderate impact rating as the site is relatively well contained. Noticeable impacts of use trails,

stock camps, and grazing are low to moderate. It is a pass-thru area for most hikers and a suitable location for stock parties. Rose Lake receives a low level of use but shows evidence of higher use in the past, with a moderate density of impacted campsites. There is limited camping due to the topography and access limitations around the lake. The opportunities for solitude at Rose Lake and unconfined recreation are very high. Lou Beverly Lake also appears to have received more use in the past than it does currently. It has moderate camping potential with some evidence of moderate impacts, but these impacts are not readily noticeable. It is a quiet, pleasant setting with high opportunities for solitude, though this may not have been the case in the past. The chain of lakes above Lou Beverly Lake has minimal evidence of use and impacts from the light levels of use. Overall, this upper area exhibits high wilderness character and has high opportunities for solitude and unconfined recreation.

Moderate to high commercial stock numbers are recorded in the Sallie Keyes AU. Moderate use occurs by High Sierra Pack Station offering spot and dunnage services into their primary area. With the added use of traveling trips (recently by Mammoth Lakes Pack Station and occasionally by Rock Creek, Pine Creek, and Bishop Pack Outfits) use impacts concentrate at Sallie Keyes Lakes and vicinity. Commercial stock numbers are moderate (51-200 per year) in this unit. There is a high density of pack stock camps in this vicinity, with camps that show high vegetation loss, large barren core, and a large total area. Combined with associated grazing, stock use and the impacts associated with stock use are quite noticeable. A snow survey cabin detracts from the naturalness and adds to the overall sense of human presence in this area.

John Muir Southeast

Most of this region is characterized by the access it provides to Sequoia-Kings Canyon National Park. Commercial pack stock operators all use Shepherd, Taboose, Kearsarge, and Sawmill Trailheads and range from 3% (Sawmill) of the use on those trailheads to 11% (Taboose). Pack stock facilitates the ability of parties to exit one of these trailheads from Bishop Pass or farther north. North Fork of Big Pine, Onion Valley (Kearsarge Pass) and Cottonwood Lakes have pack stations adjacent to the trailhead and most of their use is contained in those basins.

Very low commercial stock numbers are recorded in the Coyote AU. Most of this AU is in Recreation Category 2. Overall, the area receives low use, 40-50 permits a year. Occasional hunting trips occur in the fall. The area has high opportunities for solitude.

Very high commercial stock numbers are recorded in the North Fork of Big Pine AU. Most of the lower portion of this basin is in Recreation Category 3. Total overall use is very high; up to 900 permits and 2600 people have been recorded in a season. Approximately 12% of the use is commercial. Total numbers of people and stock are high in this drainage, with almost all the use being spot and dunnage trips with no overnight holding of stock. There are moderate to low opportunities for solitude in this confined canyon where most of the use is concentrated at lakes and climbing areas. Day rides offered by the pack station accompany the pack stock going up the trail for the day.

Low commercial stock numbers are recorded in the Birch AU. This area is Recreation Category 1. Less than 20 permits are issued annually on this trailhead. Commercial use is limited to the occasional commercial pack stock supporting fall hunting trips. There are high opportunities for solitude and primitive and unconfined recreation opportunities.

The Taboose AU receives light to moderate use: 112 permits and 259 people total overall use. This trail is also primarily used to access Sequoia-Kings Canyon National Park. Commercial pack stock use comprised 11% of use in 2003. Moderate commercial stock numbers are recorded in this area. The trail offers moderate to high opportunities for solitude and is mostly in Recreation Category 2. Recreation impacts are light to moderate as most camping occurs over the pass.

Low commercial stock numbers are recorded in the Sawmill AU. Much of this area is Recreation Category 1 and current use levels (57 permits and 142 people) are consistent with that category. There are high opportunities for solitude and high wilderness character, with a strong sense of remoteness and primitive recreation opportunities. Commercial use is 3% of total use in this drainage. The trail enters Sequoia-Kings Canyon National Park providing access to the Woods Creek area of the Park.

The Baxter AU area receives very light total use. Commercial stock numbers are occasionally recorded in this area. On occasion, a commercial serviced party that entered by way of another trailhead may exit over Baxter Pass. The opportunities for solitude are outstanding with a primitive trail and sense of remoteness that enhances the wilderness character of the area.

The Kearsarge AU has one of the highest used trails by the general public on the Inyo N.F. (996 permits, 3064 people). The area is in Recreation Category 3. Low commercial stock numbers are recorded in this area and comprise 4% of the total use that enters at Onion Valley. Both commercial pack stock and the general public use Kearsarge as an exit on trips that may have entered on other trailheads. Opportunities for solitude are moderate to low in this area. A highly developed trail and long standing impacted campsites exist in this area.

Moderate commercial stock numbers are recorded in the Shepherd AU. Most of this drainage is a Recreation Category 2. Commercial pack stock use is 5% of total overall use, approximately 25 trips a year. Overall, 269 permits are issued to 691 people a year. This trail is a popular access to Sequoia-Kings Canyon National Park. There has been a prohibition on camping and grazing by pack stock at the primary camping location, Anvil Camp. There is a high density of campsites at this location and moderate opportunities for solitude.

In the Whitney AU, the main Mt. Whitney Trail is closed to all stock. Parties are, however, dropped off on the Sequoia-Kings Canyon side of Mt. Whitney and come over via Trail Crest, unassisted (no stock support after party separates from packer). Up to eight trips are authorized per year for this type of use.

Moderate commercial stock numbers are recorded in the Cottonwood AU. Most of this area is a Recreation Category 3. Cirque Lake and South Fork Lake are Recreation Category 2. In 2002, 1,200 permits (parties) and up to 4,000 people were recorded in this area as overnight visitors. Commercial pack stock use is light, with 18 permits issued in 2002 and 20 permits in 2003. The use is mostly spot and dunnage trips and no overnight holding of stock occurs in the basin. There are low opportunities for solitude. A California Fish and Game cabin near Lake 2 and associated fish rearing activities provides a presence of human influence in the area, though most of the activity surrounding the fish rearing occurs in spring.

John Muir Southwest

This area has light overall use and light-to-moderate commercial pack stock use.

In the Fleming AU, very low-to-low commercial stock numbers are recorded. Rae Lake and Fleming Lake receive a moderate to high level of use. Other destinations in the area show signs of light use and impact. Dale Lake has a signed use trail with the lower section noticeably degraded.

Low commercial stock numbers are recorded in the Red Mountain AU. This area receives low use and light-to-moderate impact. There is a stronger sense of remoteness in this area and high opportunities for solitude.

Very low-to-low commercial stock numbers are recorded in the Bench AU. Access to McGuire and Guest Lake are limited by the degraded condition of the trail. Both destinations show moderate impact from recreational use and have moderate opportunities for solitude. Horsehead Lake has high opportunities for solitude but remnants of past use (including a picnic table) indicate that use levels were higher than they are currently here.

3.1.3 Trails

Wilderness Scale

Introduction

Originally, trails in what are now the Ansel Adams and John Muir Wildernesses were undeveloped routes used by various Native American tribes. The first developed trails for equestrian travel in this area occurred in the mid-1800s to provide transportation for mining activities, and by the military to access remote forts and camps in the Owens Valley during western Indian wars. Most of these new trails likely followed the same general routes as the earlier Native American routes, except where terrain or other conditions forced them to follow more stock-friendly alignments. Recreational trail use in these areas began in the late 1800s, and continued to grow into the early 1900s. As greater numbers and less-experienced riders were taken into remote areas, rugged trails were gradually improved by stockmen and government agencies to provide safer and more comfortable passage.

System Trails

System trails serve as the primary transportation routes for both private and commercial visitors to destinations in these wilderness areas. Trail inventories have been maintained on the forests during the past 5-60 years, with varying levels of accuracy. System trails are defined as “forest development trails wholly or partially within or adjacent to and serving the National Forests and other areas administered by the Forest Service that have been included in the Forest development transportation plan.” Nearly 1,000 miles of system trail lie within the Ansel Adams and John Muir wilderness boundaries. Approximately 340 miles of these are within the Ansel Adams; and 635 miles are within the John Muir. Just over half these trails (approximately 55%) are managed by the Sierra National Forest. Additionally, approximately 200 miles of trail just outside of the wilderness boundary provide access to wilderness from trailheads and pack stations. All trails in these wildernesses (except trails in the Mt Whitney area) are open to both hiking and equestrian uses. Some trails are rough or impractical for equestrian use and may rarely or never be used by pack and saddle stock.

With less than 1,000 miles of trail in these combined wildernesses, the actual density of the trail system is exceedingly low. There is an average of one mile of system trail for every 830 acres of wilderness; or roughly $\frac{3}{4}$ linear mile of trail per square mile of wilderness. Due to terrain limitations, it would be impractical to build and maintain trails that would be suitable for normal hiking and equestrian use in much of the wilderness. Most trails lie near the bottoms of canyons, generally paralleling stream or river channels.

Commercial pack stock operations use roughly 80% of the trail system on at least an occasional basis, and have regular recurring use on about 50-60% of the wilderness trail system. Private equestrians are allowed to travel off of system trails—either on user-created trails or cross-country in areas with no trails. Commercial stock is limited to system trails unless otherwise approved (2001 Wilderness Plan).

In general, most trails show characteristics of development that are consistent with the recreation categories that they access, though the trail may be unstable or inadequately maintained. Since

the recreation categories were heavily developed around existing conditions and use levels, and (to the extent that trails have been managed) these trails have been managed in response to use types and levels. In areas of high intensity use, which often were designated as Recreation Category 3 in the 2001 Wilderness Plan, historically a more developed and maintained trail was necessary to handle the use. As repair or maintenance was performed, the trails were intuitively designed to be responsive to the high levels of use. Very remote areas with limited use (Recreation Category 1) have very few trails, and these tend to be lower development trails.

System Trails – Funding and maintenance

Trails on the forest trail inventory are funded for maintenance and reconstruction through a variety of funds. Recurring (or “annual”) maintenance funds are allocated to the forests on an annual basis, based upon various criteria—primarily miles of trail, with some slight added weighting for wilderness miles, trail class, etc. Maintenance funds allocated to the forests are also used for trail planning, Worker’s Compensation, Unemployment payments, overhead/support and general trail program management. Substantial changes in budget direction and for calculating the distribution of funds makes an accurate linear comparison of Forest level funding during the past decade difficult and inaccurate. Funding estimates discussed below are approximate, and reflect maintenance funds available to field level planning and maintenance.

Recurring maintenance funds are used for basic maintenance of all system trails and bridges. This includes removing fallen logs and rocks from the trailway; cleaning, repairing, and installing waterbars or other drainage structures; performing various incidental repairs on trail structures; and replacement of signs.

In general, trails with higher use have received higher levels and frequency of maintenance than those with more limited use. Determining maintenance work assignments is commonly driven by seasonal (usually winter) damage, such as trails with many downed logs in the trailway, damage caused by flooding or avalanches, etc. As reports of damage or obstacles are received, the urgency is determined in part by the extent of damage, whether health and safety is a factor, resource impacts, and the level of use, which may compound the other factors. Any one trail could have substantial maintenance needs one year, and very low needs in other years. The ability to respond in a timely manner to annual maintenance needs is directly related to available funds. Maintenance needs that are considered less urgent—commonly on trails with relatively low use—may be deferred into future years.

In addition to recurring maintenance funds, the forests receive construction (or reconstruction) funds that are specifically earmarked for larger scale projects—usually focused on deferred maintenance work. These funds vary widely year to year, and are very unpredictable. These may be used for replacing bridges, repairing trails, constructing new trails, and obliterating abandoned trails. Other trail funding sources are available on occasional and unpredictable cycles. These are generally targeting specific types of work or emphasis items, such as trail/resource stabilization, “Burned Area Emergency Rehabilitation” after fires, or other enhancement work.

In addition to pure infrastructure maintenance and structural repair, other work is performed on resources within the trail corridor which are affected by the existing trail or by trails which have been abandoned through realignments. In some cases, performing such resource stabilization—

such as repair of headcuts in meadows, damage to stream banks, placement of soil retention structures in abandoned trails, and naturalization of hydrological function—can be as or more costly than trail repairs.

The total non-motorized trail mileage of the Inyo National Forest is approximately 1200 miles, of which only about 1/3 are in the Ansel Adams and John Muir Wildernesses. Nearly half of the total trail funds for the forest are spent on these trails, however, due to the relatively high use, relatively rugged terrain, remoteness and wilderness designation (which increase mobilization and work costs).

Funding for trails was relatively high during the late eighties and early nineties, peaking on the Inyo N.F. in 1992 at approximately \$400,000 (equivalent to \$550,000 in 2005 dollars, due to inflation) for maintenance, and then gradually declined over the next decade, with some fluctuation.

Table 3.6. Inyo National Forest trail funding (entire forest - 1200 miles) and Sierra National Forest Trail funding (entire forest - 1100 miles)

Fiscal Year	Maintenance	Construction or earmarks
Inyo National Forest		
2000	\$300m	\$400m
2001	\$215m	\$300m
2002	\$200m	\$350m
2003	\$180m	\$370m
2004	\$160m	\$385m
2005	\$170m	\$215m
Sierra National Forest		
2000	\$250m	~\$200m
2001	\$290m	
2002	\$125m	
2003	\$190m	
2004	\$90m	\$60m
2005	\$130m	\$60m

Of the maintenance funds, approximately \$80,000 per year is spent on the roughly 420 miles of Inyo N.F. trail in the AA/JM Wildernesses, including inventory and support. This averages to approximately 190 maintenance dollars per mile of trail. Trail construction funds include some construction and reconstruction of trails outside of these wilderness areas, as well as replacement of trail bridges inside and outside of these wildernesses. The majority (approximately 75%) of trail reconstruction funds on the Inyo N.F. are expended within the AA/JM Wildernesses. This is highly variable from year to year, however, since such funding is project-specific.

The Sierra National Forest has approximately 1100 miles of system trail, of which roughly half is in the AA/JM wilderness. It is estimated that approximately 75% of the system budget is spent on trails in the Ansel Adams and John Muir Wildernesses.

In 2005, approximately \$90,000 was spent by the Sierra National Forest on trails in the AA/JM Wilderness, including inventory, planning and support. This averages to about 160 dollars per mile of trail. Less reconstruction funding has been available on Sierra NF wilderness trails as compared to Inyo NF trails. This has made it difficult to reduce or offset maintenance backlogs, where funding is lower than maintenance need.

In the Affected Environment section (below), certain trails in the planning area are described as degraded, unstable, or substandard. These terms are used as general descriptions, though the implications of poor condition or substandard development are further described in the Environmental Consequences section (Chapter 4).

The estimated costs to maintain the trail system to standard and to reconstruct trails to standard are dependent in part upon the development level (Trail Class) of each trail, so this varies by the alternatives described in Chapter 4. Current funding for trail maintenance is not sufficient to perform all maintenance activities on every trail in order to meet standard. Additionally, certain trails are currently in need of reconstruction before they can be stably maintained. This accumulated backlog is also addressed by alternative in Chapter 4.

In addition to accomplishing work through Forest Service funded staff, other opportunities exist for repairing or maintaining trails. These include various volunteer groups or individuals, permittees providing stock support or labor, grant-funded work, etc. Such resources help extend limited maintenance funds, and provide a more stable trail system. Whether work is funded by the Forest Service, or provided from other sources, the same guidance governing NEPA, design, and implementation applies.

Use Trails

“Use trails” are trails or routes that are not on the Forest inventory. These trails have generally formed from repeated use, accessing campsites, remote lakes or other locations not served by system trails. Certain “use trails” may have been constructed at one time for a purpose which has changed, so the trail or former road has not been managed as a system trail. Occasionally use trails provide alternate access to an area also provided by system trails. Some of these have developed primarily by and for non-commercial users, such as angler trails along creeks and lakes, mountaineering routes, or paths over high un-trailed passes. Others are primarily used by commercial stock to access campsites away from system trails or to access lesser-used destinations where no trail has been constructed. Some of these use trails are nearly undetectable, because the use levels may be so low—in some cases less than one trip annually.

Since use trails are not on the forest trail inventory, trail maintenance funding is not provided to maintain the trails. Where resource conditions on use trails require stabilization, funds other than trail maintenance are occasionally used. This has traditionally been rare and at relatively low levels.

System and Use Trail Assessments

Trails were evaluated for trail infrastructure stability and associated resource stability, as well as potential for impacts on both. Assessments were made of current conditions, effects of trails on resources, and on risk factors (natural factors and human-caused) such as terrain steepness, connectivity to hydrology, proximity to riparian, steepness of trail alignment, and others. These were combined into a numerical rating that summarized the level of impacts and potential

concern of that segment of trail. The primary focus of the assessments was on trails in the lower development levels, which were generally assumed to have the greatest risks and the lowest chance of mitigation through purely physical treatments. Certain higher development primary trails were also assessed when they were clearly out of character or showed substantial resource effect and trail deterioration.

Approximately one third (330 miles) of the total system trail network was both field-assessed and assigned a rating. These trails were lower development trails that also appeared to have the highest commercial pack stock visitation and potential concerns. The overall rating was on a scale of zero to five (0-5). The project record contains the assessment protocols and rating definitions for system and use trails. A rating of “0” represents a trail with no discernible effect or instability. Only about 10 of the system trails assessed had this rating, and these were generally lightly defined routes that received little use. The remaining designations from “1” to “5” assigned a ranking that ranged from generally stable with few notable effects or risk factors to increasingly severe instability and higher risks. Trails with a rating of “5” reflected severe current effects, combined with substantial risk factors leading to further instability. Two system trails in the analysis area received a rating of “5”.

Approximately 90 use trails, totaling roughly 80 miles, were field-assessed and assigned a rating. Since these trails tended to have less use and minimal active management or development than system trails, many of these show minimal impact and, in some cases, were undefined for parts of their length. Approximately 1/3 of the use trails evaluated are currently rated “0”, which implies that the trails were very lightly defined (or undefined) and stable. Almost 60% of the assessed use trails had a resource rating of “1” or less. Of the 90 use trails assessed, 12 (or 13%) had ratings of 3 or 4, which implies that these trails had measurable impacts and/or risk factors likely leading to high instability.

Most trails, even those with higher (more severe) resource ratings, are generally stable for most of their lengths. It is uncommon to find more than 10% of a trail with high levels of instability or resource concern, and many were less than 5%. Five system trails had problems of high concern over the majority of their lengths, and one was considered unstable for its entirety.

The following table summarizes the assessed system and use trails for the entire AA/JM wilderness.

Table 3.7 Wilderness scale trail resource ratings in the Ansel Adams/John Muir Wildernesses

Overall Rating	# Trails Assessed	Approx System Trail Length (Mi)	# Use Trails Assessed	Approx Use Trail Length
0	10	25	29	35
1	56	78	24	20
1.5	3	16	1	0.4
2	40	64	17	13.5
2.5	13	26	5	5
3	37	85	7	3

Overall Rating	# Trails Assessed	Approx System Trail Length (Mi)	# Use Trails Assessed	Approx Use Trail Length
3.5	3	20	1	1
4	13	16	4	3
5	2	2	0	0

Geographic Unit Scale

Ansel Adams East

There are approximately 135 miles of trail in the Ansel Adams East Geographic Area (AAEA). All trails in this area are managed by the Inyo National Forest, though a few miles of trail on southernmost edge of the area are on Sierra National Forest lands and managed by the Inyo NF through formal agreement. The northern 1/3 of the AAEA area (north of Rush Creek) lies immediately east of the Yosemite Park boundary, and is very lightly used, with a low density of trails—most of which are rarely, if ever, used by commercial pack stock. Conversely, the southern 2/3 of the AAEA area—mainly lying west of the Mammoth Lakes area—is used intensively by commercial pack stock operators, as well as by many hikers and some private equestrians.

The Ansel Adams East Geographic Unit has a relatively high density of system trails, roughly one mile of trail in every 640 acres (or one mile of trail per square mile).

In general, the trails in this area receive a large amount of stock and hiker use, and are developed at fairly high levels. Most high development trails were not assessed for resource condition, but were generally stable with incidental localized exceptions. As shown in the table below, of the system and use trails which were specifically assessed and rated, approximately 2/3 were generally stable (rated at “2” or less). However, where trails were damaged, they appeared to be particularly damaging to the resource. This area had the most assessed trails with severe conditions (rating of 4 or 5).

Table 3.8 Summary of system and use trails assessed in Ansel Adams East

Overall Rating	# Trails Assessed in GEO UNIT	Approx System Trail Length (Mi)	# Use Trails Assessed	Approx Use Trail Length
0	3	6	5	7.5
1	15	25	2	1.2
1.5	n/a	n/a	n/a	n/a
2	10	10	1	2
2.5	2	2	1	0.6
3	8	13	1	0.3
3.5	n/a	n/a	n/a	n/a

Overall Rating	# Trails Assessed in GEO UNIT	Approx System Trail Length (Mi)	# Use Trails Assessed	Approx Use Trail Length
4	3	4	3	2.3
5	1	1	n/a	n/a

The most intensively used areas and trails accessing these areas are in the northern Minarets. These are the trails into the Shadow and Ediza Lakes area and the Garnet and Thousand Island Lakes area (Thousand Island and Shadow/Ediza Analysis Units). The primary corridor trails here are the Pacific Crest Trail and John Muir Trail, running north/south on either side of the San Joaquin River drainage. The River Trail parallels these trails along the course of the San Joaquin River, leading to Thousand Island Lake, where all three trails converge. The Shadow Creek Trail provides access to Ediza Lake at the base of Mounts Banner and Ritter. All of these primary trails are highly developed and maintained (Trail Class 3) and are used heavily by commercial pack stock.

Use Trails in the AAEA are primarily used to access grazing. Some of these trails are currently highly degraded and travel thru areas with high risk factors. In particular, use trails accessing grazing on the west side and north of Thousand Island Lake, and to the west side of Garnet Lake are impacting meadows and the lake shores—including one area where commercial stock are actually traveling in Garnet Lake for 200-300 feet to bypass a rocky outcrop.

In the Rush Creek AU, commercial stock and private backpackers heavily use trails. The primary trails are well developed and generally stable. Most secondary system trails accessing the outlying lakes and camps are less developed, but appear to be maintained consistent with use levels.

Spooky Meadow is accessed via two trails. The most direct trail climbs from Gem Lake on the north and the longer route is via the Clark Lakes trail on the south. The northern/direct trail is highly degraded with severe access issues and high risk factors, primarily steepness, rocky terrain, and inadequate design.

Three use trails in the Rush Creek AU that are mostly undefined—the Crest Creek Use Trail, the Lost Lake Use Trail, and the Weber Lake to Sullivan Lake Use Trail—access areas rarely visited by commercial pack stock. The route between Weber and Sullivan is in close proximity to the lakes and descends awkward rock slabs between the lakes. The other two routes are basically undetectable and in relatively open slopes with minimal risk factors present.

In the Upper Rush Creek AU, the Marie Lakes trail provides good access to camps at meadows below the lakes, but beyond the camps it is extremely difficult and undeveloped. Commercial stock is not currently using this trail.

A use trail accesses grazing near Rodgers Lake from Davis Lake. The trail winds through small meadows and rock benches, and crosses two small streams, causing some bank damage, and meadow trampling. The use trail between Lower and Upper Davis Lake is barely discernible and rugged, and appears very awkward for stock travel. There are slight impacts with moderate risk factors on this trail. Two undefined routes have been identified as use trails in the Upper Rush AU including one that leaves the PCT about one mile below Donohue Pass, travels across an

open alpine basin with few risk factors, and has little or no evidence of past use. A possible shortcut route between Marie Meadows and the PCT, (duplicating the Marie Lake Trail) was identified by a pack station, but no discernible trail is present.

In this AU, the Garnet Lake to Emerald Lake Trail (this is the old John Muir Trail, relocated in the 1960s, but continues to receive use) shows severe impacts over much of its length. The Garnet Lake to River Trail, which also provides access to Altha Lake from the north, is very steep and undeveloped with risk factors present and a high potential for worsening. The Garnet Lake Spur Trail (along the north shore) travels in close proximity to the lake and through small meadows, has few trail structures, and is being used to access camps by commercial stock.

The Shadow Ediza AU has a high density of social and user trails, mostly related to campsites. Of the seven analyzed trails, two are causing severe alteration of soil and hydrologic processes. The Ediza-Iceberg System Trail is one of the trails in the project area with the most severe soil and hydrology impacts, with deep incision, multi-trailing, and hydrologic function alteration of the adjacent meadow.

In the Shadow/Ediza and Thousand Island Analysis Units, some of the less-developed trails currently have degraded conditions, including deep incision and riparian impacts. The trail leading between Ediza, Iceberg, and Cecile Lakes has some of the most consistent and severe impacts of any trail surveyed (rated “5” on a scale of 5), even though few, if any, commercial stock have recently used it. Almost the entire section of trail from Ediza to Iceberg Lake has severe risk factors, primarily because of its steep alignment almost entirely within riparian for its entire distance. The Laura Lake Trail from the JMT above Shadow Creek travels through a steep and confined route through meadows and along a stream and shows severe impacts. Though past maps and inventories showed a trail connecting Laura and Altha Lakes, none was apparent, and the terrain does not appear conducive to stock access.

The Cabin Lake Trail is lightly used, but climbs a steep slope, has isolated impacts to small meadows in the lower sections, and is in very close proximity to (and may be affecting) a stream channel for a short distance near the lake. Nydiver Lake Trail climbs the opposite side of the Shadow Creek drainage and disperses above a small camp half way to the lakes.

A use trail accessing Clarice Lake from the John Muir Trail is lightly used and lightly defined with few resource issues. This route was used as a camp access for administrative purposes, but any places where a trail had become evident were restored to a natural appearance. A use trail leading around the south and west sides of Ediza Lake is well defined, and used by the public and commercial operators as the only route available to access good camps on the west/north sides of the lake. There are short sections with moderate incision and some impacts at two stream crossings, as well as some short steep sections with some erosion.

The PCT traverses River-High unit, is highly developed and receives heavy use, but goes through many areas with risk factors. It requires frequent maintenance to keep it stable.

A use trail accesses grazing near Badger Lakes, and has some erosion on a dry slope between the lakes and the grazing area. A faint trail climbs from the PCT to San Joaquin Peak along its northern slopes. It appears to receive very little use and is generally on open dry slopes, with minimal risk factors. An easily followed spur leads from the PCT to Badger Lake, with no resource problems or risks.

In the Minarets AU, Emily Lake Trail travels steeply along a small stream and through a very wet spring-fed meadow before reaching the lake and currently shows substantial impacts to the trail and resources in the corridor. Attempts to stabilize the trail in the worst sections appear to have failed. Deadhorse Lake Trail is completely indistinct, and appears to have little or no use. Terrain below the lake makes stock passage impossible. Access from Minaret Lake to Cecile is via an undeveloped trail that stops in cliffs before reaching Cecile Lake.

In the King Creek AU, the trail to Superior Lake is generally stable until just before the lake, where impacts to meadows and streams are moderate to severe for short distances, just before reaching the camps. Likewise, the Holcomb Lake Trail is generally rough and stable thanks to rocky soils, but has severe resource effects going around the south side of the Lake, just past the primary packer camp.

The Anona Lake user trail is faint immediately above Fern Lake, but becomes more defined as it continues to Anona. There are slight problems with incision on riparian, which appear to be worsening without even simple trail drainage structures in place.

In the Crater Creek AU, the Deer Creek trail from the PCT to the Mammoth Crest Trail is faint in the canyon below the lakes, with few resource impacts or risks. At the head of this canyon, the Mammoth Crest Trail continues north to George Lake, and southeast to Duck Pass. This southern section of trail is sporadically defined, and rocky with some erosion above the lake.

Ansel Adams West

There are approximately 185 miles of system trails in the Ansel Adams West (AAWE) geographic unit. The Sierra National Forest manages all trails in this geographic area. The density of system trails in this Geographic Unit falls in the same range as the average for the entire wilderness, roughly 0.8 miles of trail per square mile (or one mile of trail per 807 acres of land).

Partially due to the remoteness of trailheads from population centers on the west side, most areas and trails in the AAWE receive light to moderate use. Trails in these areas are generally stable, but are lacking adequate drainage structures and general maintenance. Since trails in the area have received minimal maintenance and repairs, trails in areas with even moderate use show some signs of instability, especially where risk factors, such as steepness or meadow environs are present.

Overall, the majority of trails assessed for resource stability were generally stable in this unit. Use trails receive low enough levels of stock and hiker use that they were generally stable, and none received more than a rating of “2”. No system or use trail was rated higher than a “3”, indicating moderate impacts with some potential increase of instability.

Table 3.9 Summary of system and use trails assessed in Ansel Adams West

Overall Rating	# Trails Assessed	Approx System Trail Length (Mi)	# Use Trails Assessed	Approx Use Trail Length
0	n/a	n/a	1	1.4
1	7	4	1	0.4

Overall Rating	# Trails Assessed	Approx System Trail Length (Mi)	# Use Trails Assessed	Approx Use Trail Length
1.5	1	8	n/a	n/a
2	3	2	2	0.5
2.5	1	10	n/a	n/a
3	3	7	n/a	n/a
3.5	n/a	n/a	n/a	n/a
4	n/a	n/a	n/a	n/a
5	n/a	n/a	n/a	n/a

There is a relatively low density of use trails in the AAWE. Since use levels are low to moderate, the use trails are generally lightly defined, with some exceptions. Various routes exist to some less-visited locations, or to traverse between the north-south system trails. The most intensively used trails in the AAWE are those in the Fernandez and Lillian Lake Loop areas, leading toward Fernandez, Post-Peak and Isberg Passes into Yosemite National Park. The “California Riding and Hiking Trail” is a compilation of other existing trails in this area, and traverses this Geographic Area north to south.

In the Staniford Lakes AU, commercial operators are using an alternative access route to Staniford Lake, to bypass a short, rough, degraded section of the Lillian Lake Loop Trail. This trail leaves the system trail from near Vandenberg Lake and traverses a short steep pass to the east of the main trail on an alignment that would not be practical to maintain. Risk factors include steepness and loose soils, as well as a creek crossing with incision and bank damage, which would not sustain increased use. Chittenden Lake Trail is mostly a cairned route across gentle rock slabs, until about ½ way to the lake, where the trail crosses extremely steep slabs and travels through a small hanging meadow with some incision.

A spur trail leading to and through camps at Vandenberg Lake, is also the shortest way to continue on the main trail, so stock and hikers are walking through the camps and creating a parallel trail with an unnecessary creek crossing with moderate impacts. The main trail is in better shape with few or no impacts and risk factors.

In the Lillian Lake AU, the Fernandez Trail (one section of the California Riding and Hiking Trail) is one of the primary trails through this area and has short, isolated resource problems—a few rated at severe—due to poor trail location across meadows and at stream crossings. A lightly defined use trail accesses camps near Fernandez Meadow from the Fernandez Pass Trail. The trail appears to have very limited current use, so resource effects are minimal, but many risk factors, mainly meadows and stream crossings, are present along the route. A similarly undefined trail accesses Monument Lake from Flat Lake through bedrock slabs and ledges, where route finding would be difficult for most equestrians, but very few resource risk factors exist.

In the Triple Divide AU, the Anne Lake system trail is receiving moderate to high use, and is located in areas with high risk factors, including stringer meadows and steep slopes, with short, isolated sections with severe impacts. A use trail leading from Anne Lake north to a grazing area

(Avalanche Meadow) follows a poor alignment, but the use appears low enough that the use trail is not overly degraded. Risk factors such as steepness and alignment could be a problem if use increases. The Post Creek - Timber Creek Use Trail (mostly undefined route) traverses between the Post Creek Trail and the Timber Creek Trail across about 1.5 miles of dry, moderately sloped, lightly timbered hillside with very few risk factors. This “use-trail” is ill defined, and is difficult to find, except by experienced riders.

In the Sadler AU, the McClure Lake Trail, which leads to grazing and camps south of and above Sadler Lake, is badly incised and affecting hydrology with many severe impacts in meadows on the south shore of Sadler Lake and where it climbs between the two lakes. The trail becomes vague just below McClure Lake. The Isberg Trail has short, isolated resource problems due to poor trail location across meadows and at stream crossings. The Timber Creek System Trail is degraded and rough, with some resource problems (mostly moderate) and appears to receive very limited use and maintenance.

In the Cora AU, the Cora Lake Use Trail accesses camps on both the West and North sides of the Lake. The trail is well defined, and mostly travels across low angle slopes around the lake. Slight incision and impacts at small stream crossing and crossing are present through a meadow on the north side of the lake.

In the Arch AU, the Margaret Lakes Trail and the California Riding and Hiking Trail are the primary travel routes. The Margaret Lakes Trail receives the moderate traffic, with all other trails in this analysis unit receiving very light use. In general, the trails in this analysis unit are fairly stable, though they have received minimal maintenance in recent years. Because of low use and minimal maintenance, many of the trails in this analysis unit may be difficult to follow, with sections of intermittent tread and many downed trees. There is one notable use trail in this analysis unit. This use trail links the String Meadow Trail with the Rock Creek Trail. The use trail leaves the String Meadow Trail, contours around a forested side slope, where it crosses an unnamed boggy stream, and later crosses Rock Creek proper just before the junction with the Rock Creek Trail.

Trails in the Bench Canyon AU receive light use. Rockbound Lake is accessed by an undefined use trail with no visible tread.

The Lake Catherine AU is the northern-most analysis unit on the Sierra National Forest, and contains the western slope of the Minarets. The Stevenson Trail is the primary travel route in this analysis unit. The trail receives light to moderate use and shows some incisions and rutting due to lack of maintenance. The Dike Creek Use Trail, used to access Lake Catherine, is visible and continuous, with few notable resource effects.

In the Cargyle AU, the primary system trail passing through this unit is the Mammoth Trail, which receives light to moderate use and is used to travel between the Sierra National Forest and Inyo National Forest. The trail is well-developed but shows signs of degradation, with major incisions and other erosion problems, especially in areas with high risk factors. There are sections of the trail in Cargyle Meadow that contain puncheon in need of repair. There are two notable use trails in this analysis unit. The East Fork Cargyle Creek Use Trail is difficult to follow due to low and discontinuous tread. There is also a use trail between the Iron Lake Trail and Straub/Spano meadows which is visible and continuous.

The Onion Springs AU contains one system trail, the Devil's Bathtub Trail. This trail receives moderate use, and is a popular day use trail from Edison Lake. It follows parts of an old jeep road, which makes the trail wider than wilderness standard widths in some areas. Two use trails fall in this analysis unit, and both receive low use. The Devil's Bathtub Cutoff use trail is generally stable and in areas of low risk factors. The Saddle Mountain Use Trail leaves the end of Onion Springs Road and is generally stable to the northern edge of this analysis unit. It is primarily used during hunting season by commercial stock operations.

The Fuller Buttes AU contains part of the French Trail, a historic trail that receives low use. Currently, this trail is maintained by a volunteer group on an annual basis. Two other system trails in this analysis unit, the South Fork Trail and the Hell's Half Acre Trail, are steep and in need maintenance. These trails are generally used to access the San Joaquin River by hikers.

In the Lower Mono Creek AU, trails generally see low visitor traffic and may be hard to follow, with several notable exceptions. The Tule Lake Trail, Doris Lake Trail, and Mono Meadow Trail all receive moderate use due to their proximity to Mono Hot Springs. Generally, all three trails are stable with isolated resource problems. An old cable suspension bridge on the Mono Meadow Trail is in need of maintenance, and the Doris Lake Trail shows incisions through meadows on the way to Doris Lake.

The main trail through the Cold Creek AU is the Goodale Pass Trail. This trail receives heavy use from both hikers and stock users, including commercial stock. The trail is used to access Graveyard Meadows, Graveyard Lakes, and the Silver Divide (in the Fish Creek Geographic Unit). The trail is generally stable and does not show any significant resource damage south of the Pass. The Graveyard Cutoff system trail follows the old Graveyard jeep road and receives light use.

The Jackass AU contains two main trails. The Norris Lake Trail receives moderate to heavy use from day hikers and some commercial stock use. The trail is generally stable. The Jackass Lakes Trail is a popular day hiking trail and is used by climbers to access the Balls. The trail receives moderate to heavy use and is generally in stable condition.

The Chiquito AU contains three system trails that are used to access Chiquito Lake and Yosemite National Park. Commercial stock use trails in this analysis unit to access Yosemite National Park.

The Cassidy AU, Junction AU and South Fork AU all share the California Riding and Hiking Trail as their primary travel corridor. Use on these sections of the California Riding and Hiking Trail varies from low to very low, and the trail is difficult to follow in certain sections. In the Cassidy AU, the trail has severe risk factors due to steep grades as it drops into the Middle Fork San Joaquin. All secondary system trails in these three analysis units receive low to very low use. The Miller's Crossing Trail in the Cassidy AU and Junction AU displays severe risk factors due to steep terrain and lack of maintenance and trail structures. The section of this trail in the Junction AU is difficult to find.

In the Iron Creek AU, there are two system trails. The Iron Creek Trail is the primary trail between the Mammoth Trail and the Stevenson Trail, and receives low to moderate use. The trail has narrow rocky sections that present difficult travel for stock. A short section of the Iron Lake Trail in this section is fairly stable and receives low use.

In the Bridge Crossing AU, there are three primary system trails and a secondary system trail. The Mammoth Trail, Iron Creek Trail and Snake Meadow Trail are generally steep with multiple trailing and rutting and lack of trail structures. These trails receive low to moderate use. The section of the Mammoth Trail in this analysis unit has area of severe incising of two to three feet east of Sheep Crossing. The Junction Butte trail, a secondary trail, drops steeply into the Middle Fork San Joaquin and receives very low use from both commercial and private parties.

The Hot Springs AU contains two main trails: the Mono Crossing Trail and the Rattlesnake Creek Trail. Both trails receive low to moderate use. These trails are fairly stable but do have sections that show moderate risk factors, including rocky steep sections. At times, both trails are used as a stock driveway. These trails receive very low commercial stock use.

Fish Creek/Convict/McGee

There are approximately 170 miles of trail in the Fish Creek/Convict/McGee Geographic Area. The Inyo NF manages just over 100 miles of trail in this area, the majority of which are Sierra NF trails managed by the Inyo under formal agreement. This Geographic Unit has the highest density of system trails in the planning area, nearly twice the wilderness average. There are roughly 1.3 miles of system trail per square mile (or 1 mile of trail per every 490 acres). This can be attributed to relatively moderate terrain and a long history of mining, sheep grazing, and recreation.

Table 3.10 Summary of system and use trails assessed in Fish Creek/Convict/McGee

Overall Rating	# Trails Assessed	Approx System Trail Length (Mi)	# Use Trails Assessed	Approx Use Trail Length
0	3	6.5	2	1.5
1	10	11	1	0.3
1.5	1	5	n/a	n/a
2	11	19	4	3.6
2.5	2	4	n/a	n/a
3	8	12	2	1.1
3.5	n/a	n/a	1	0.5
4	3	6	n/a	n/a
5	1	1.5	n/a	n/a

The most intensively used and primary corridor trails are the Duck Pass Trail, the Pacific Crest Trail (PCT) between Duck Lake and Silver Pass, McGee Pass Trail (both east and west of the Pass), Goodale Pass Trail (north side of Silver Divide), Minnow Creek Trail and the Fish Creek (Cascade Valley) Trail. Although there are isolated resource problems, these trails are fairly stable and seem to be maintained at close to their standard. The trails do travel through areas with risk factors—especially at the many creek crossings and across some meadows—but have generally been well located and fairly well developed in these higher-risk areas.

In the Convict AU, the drainage above Convict Lake is accessed by the Laurel Lake Trail, because the Convict Creek trail, which would be more direct, has been impassable to stock since the early 1980s when much of the trail and two trail bridges were destroyed by cataclysmic natural events. The trail is impractical to maintain for stock, and is difficult for hikers. Trails in the vicinity of Dorothy Lake, Genevieve, Edith, and Cloverleaf Lakes are generally under-maintained and poorly located, often forced into meadows or riparian areas to access the primary destinations and campsites. These trails have moderate resource effects, and have some risk factors present if stock use were to increase.

In some cases, non-system trails have developed to bypass problem sections of system trail. In the case of a use trail accessing Cloverleaf Lake on the north side of the creek, this use trail is currently in better condition and more stable than the system trail. Access to Bighorn Lake is via a steep undeveloped trail from Dorothy Lake. This route has moderate effects and high risk factors. The use trail to Bright Dot Lake is undefined, shows little or no evidence of recent use, travels through areas that would be difficult for equestrians, and has high resource risks. In addition, the Edith Lake and Genevieve use trails have caused moderate soil and water resource degradation.

The McGee Analysis Unit has trails with severe soil and hydrology effects. Major trail erosion occurred in 2003 resulting from heavy summer rain. The Baldwin Canyon Trail above Baldwin/Scheelore meadow eroded and deposited sediment covering about 15% of the meadow. The trail is incised with headcutting above and below the meadow. Other trails in the AU, including the primary McGee Pass (eastside) Trail, are generally stable, although the secondary trails leading up steep draws on either side pass through areas with many risk factors, primarily wet meadows and steep side hills. The Steelhead Lake Trail and Grass Lake spur have some resource problems, mostly caused by poor design considerations. One section of the Steelhead Trail was rerouted in the early 1980s, but, due to poor design, was never adopted for use by commercial packers. The old trail, which had problems prior to the rerouting, continues to be used as the primary route. A primary destination at Big McGee Lake is accessed via the first part of the old Hopkins Pass Trail, with some slight resource problems where the trail crosses meadows.

In McGee Canyon, two use trails have particular concerns and risk factors. The Baldwin Cutoff cuts between the Baldwin Canyon Trail and the McGee Pass Trail, accessing a campsite along the route, which could be accessed directly from the McGee Trail. Problems with the primary McGee Pass Trail at the Steelhead Lake junction have increased the desirability of the Baldwin Cutoff for equestrian travel. The trail has moderate resource problems and is affecting hydrology at a creek crossing. Golden Lake Use Trail travels across a meadow/bench past “Meadow Lake” before climbing steeply along streams, meadows, and rough terrain toward Golden Lake. Other camp access trails, such as the routes accessing the Round Lake camp and “CCC Camp” have slight resource problems, which could be readily addressed.

In the Coldwater AU, Duck Pass trail is the primary route through this unit, and is heavily used by commercial stock and private hikers to access the PCT and a very large backcountry area south of Mammoth and west of McGee Pass. Despite and due to the heavy use, the trail is highly maintained and generally stable with isolated resource problems. Certain secondary trails in the Coldwater/Duck Pass area, such as the Sky Meadow trail from Emerald Lake, the Emerald to Skelton Lake Trail, and the Woods Lake Trail, are located in areas with many risk factors, including climbing along stream channels and within riparian corridors. The trails have very few

features, and despite relatively low use-levels, appear degraded, with potential to degrade further. Commercial stock has used these trails lightly in past years. The Sky Meadows Trail has some severe resource impacts with very high risk factors, climbing steeply in the immediate vicinity of a stream and wet meadows.

In the Purple Bench AU, the Ram Lake (Purple Lake) Trail from the PCT is heavily used by commercial operators to access camps immediately above Purple Lake. It becomes increasingly degraded with severe resource impacts, despite relatively low stock use, due to proximity to streams, riparian, and meadows, eventually dispersing in very difficult terrain. Pika Lake Trail has some moderate resource problems over much of its length, with steep grades and some incision on dry slopes leading to incision in meadows on the south side of Duck Lake.

Routes between Virginia Lake and Ram Lake and Ram Lake to Franklin Lake are undefined and rarely used, accessing some of the remote areas away from the primary trails and destinations. Meadows and steep slopes between granite benches and talus slopes would be especially susceptible to increased use in these areas. Other use trails access dispersed campsites along the PCT. Some of these are in high-risk areas or shortcut system trails.

In the Upper Fish Creek AU, the trail to Lee and Cecil Lake above “Sheep Camp” was one of the most severely degraded trails in both of the wilderness areas, with severe impacts to meadows and springs along almost its entire length. The trail is incised and acts as a channel that diverts surface flow and spring flow, lowering the water table in meadows adjacent to the trail. Climbing straight up along streams and steep stringer meadows, with few or no structures, this trail is susceptible to future degradation under even very limited use. Use trails continue beyond Lee Lake outlet to Cecil Lake area. Tully Lake is accessed by a slightly developed system trail and by use trails accessing camps. All have resource problems and high risk factors, mainly proximity to streams and meadows. Other use trails access grazing at the south side of the Lake.

Other than incision at some stream crossings, trails in the Cascade Valley Analysis Unit have only minor impacts to soil and water resources. System trails provide stable access to most destinations, so very few use trails are present or needed other than to access campsites or grazing areas. Such trails exist at Pond Lily Lake and the Second Crossing Campsites. A use trail accessing a wet grazing area at Second Crossing has severe impacts with severe risk factors where it climbs to the meadow. This trail is subject to rapid degradation if use continues.

In the Silver Divide AU, the Goodale Pass Trail and the Minnow Creek Trail are the two primary travel corridors. The Goodale Pass Trail crosses between the Mono and Fish Creek drainages. It receives relatively low commercial stock use and, primarily due to steep alignment and erosion, it is in degraded condition on the north side. A “bypass” trail (original system trail over pass) drops down to Lake of the Lone Indian Trail, and is equally awkward with jump-offs and erosion. This trail appears to be used for bypassing late-melting snowdrifts for a short period in spring. In the same area, a steep use trail shortcuts the system trail and parallels the creek between Lake of the Lone Indian and Papoose Lake, causing moderate to severe impacts to streamside vegetation. The Minnow Creek Trail serves as the primary access route for lakes on the north side of the Silver Divide. The trail is generally stable, with the exception of high stairs and multiple trailing near the junction with the Goodale Pass Trail. The Peter Pande Trail climbs steeply above Grassy Lake, and is severely degraded with severe resource effects. The trail is incised and affecting surrounding resources, capturing surface flows, and transporting massive amounts of sediment. The trail is in a poor location and would be impractical to fix in place. The

Long Canyon Trail to Beetlebug Lake is lightly used, with slight to moderate impacts, and deteriorates to a steep, rough trail with moderate erosion and soil loss before reaching the lake.

Use trails access the basins and benches above the system trails in the Olive Lake and Peter Pande area and are undefined and go through areas with high risk factors. Use trails accessing Pick and Shovel Mine and Brave Lake are generally stable and in areas with relatively few risk factors.

In the Margaret AU, trails in the Margaret Lakes area receive light to moderate use by commercial pack stock. The main trail has some moderate resource effects, but is generally stable until it goes past Rainbow Lake. Here there are some moderate resource impacts associated with the trail including one very high-risk section of incision in a meadow above the lake, before becoming faint and dispersed. The trail beyond Baby Lake becomes extremely steep and hazardous for foot and equestrians through bedrock slabs and cliffs descending to Silver Creek. The Silver Creek trail climbs from Fish Creek into the Margaret Lakes area via a steep, brushy trail, which shows minimal evidence of use during the past twenty years or so. It is highly degraded and has not been maintained for many years. The upper mile of the trail is used to access grazing areas between Coyote Lake and the Silver Creek-Baby Lake junction. Stock is turned out between the grazing and a drift fence near Coyote Lake, leading to severe multi-trailing, widening, and soil loss in the upper ½ mile. The trail is decimated, but not directly affecting stream courses.

Saddle Mountain Use Trail from Onion Springs to Fern Lake near Margaret Lakes is nearly undetectable on the Fern Lake (John Muir Wilderness) side of the saddle and appears very awkward and is practically unused by stock for decades. It has to traverse at least two meadows with high risk factors, including one near Fern Lake, which shows some incision near a stream. South of the John Muir boundary, this use trail is more evident and generally on dry, timbered slopes.

Mono Creek/Rock Creek

There are approximately 92 miles of system trails in the Mono Creek/Rock Creek Geographic Unit. The Sierra NF maintains 63 miles of these on the west side of the crest, and the Inyo NF manages the remaining 29 miles east of the crest. The density of system trails is under the average for the wilderness area, with roughly one mile of trail per 950 acres of wilderness land, or about 0.7 miles of trail per square mile. The analysis units on the east side of the crest (Inyo NF) have a much higher density of trails, than on the west side (Sierra NF). Generally, the terrain is more moderate and access to the trailheads is considerably easier on the east side of this geographic unit than the west side.

System trails assessed in this unit had a relatively large number of trails with moderate to high levels of resource effect and instability. No trails were designated at the most severe level, but nearly half were rated higher than “2”, indicating moderate current impacts with potential for further instability. In, general, assessed use trails were relatively stable, with the exception of two particularly impacted trails, rating higher than “3” for much of their lengths.

Table 3.11 Summary of system and use trails assessed in Mono and Rock Creek

Overall Rating	# Trails Assessed	Approx System Trail Length (Mi)	# Use Trails Assessed	Approx Use Trail Length
0	n/a	n/a	2	1.6
1	9	11	5	6.2
1.5	n/a	n/a	n/a	n/a
2	6	12	3	2
2.5	1	0.2	2	2.5
3	8	11	n/a	n/a
3.5	2	15	1	1.1
4	2	2	1	.5
5	n/a	n/a	n/a	n/a

The primary access trail through this area is the Mono Pass (Mono Creek) Trail, which traverses the Sierra Crest from Rock Creek (Little Lakes Valley) to Thomas Edison Lake. The Pacific Crest Trail crosses this area just above Lake Thomas A. Edison. West of Mono Pass, the Mono Creek Trail is heavily used by stock and is highly degraded for a primary system trail.

Generally, the trail appears to have been adequately designed with a few locations where poor alignment is the primary problem; rather, it is evident that maintenance performed is not consistent with the very high levels of use. The Pacific Crest Trail south of Mono Creek is lightly used by commercial stock and is adequately maintained, but is used heavily north of Mono Creek, and is substandard in some sections heading north toward Silver Pass.

East of the crest, the most intensive use occurs in the Hilton Lakes area, where multiple pack operations use the trail system. The trails in this AU are causing moderate hydrologic and soil impacts. A high concentration of user trails has reduced soil productivity and increased erosion beyond normal trail impacts. The system trail accessing Lake #3 and #4 climbs a steep slope and has become badly eroded. Between the two lakes, the trail crosses a stream where multiple stream ford locations have affected the stream morphology. The Pine Grove to Hilton Lakes Trail is a steep trail that was moderately developed with switchbacks and some simple structures, but has not been used regularly by stock since the main Hilton Trail to the upper pack station was developed. It now serves as access for hikers from the Pine Grove camps.

Due to moderate terrain, a myriad of use trails access different destinations and campsites in the canyon. Most of the use trails have only low to moderate resource impacts, but there is a high density of trails near Lake #2 and Davis Lake. Use trails on Hilton Ridge and the Hilton Cutoff trail are simply shortcuts from the system trail. A use trail to Lake #5 has received very little use in decades, but is in a location with high risk factors, following the outlet stream and riparian corridor. Lower in the canyon, old mining roads access the Hilton Mines, which have long been out of operation. These are mostly located on an open rocky slope, and are mostly passable but have not received maintenance since operations ended.

In the Little Lakes AU, Little Lakes Valley trails are used heavily by hikers—especially day hikers—but have very limited commercial pack stock use. The main Little Lakes Valley Trail is

an old road that has been maintained as a high level trail. Spur trails to side destinations include a system trail with moderate resource impacts and a less-used use trail with lower impacts to Gem Lakes. Chickenfoot Lake also has both a system and a use trail accessing the lake and camps, though there are few risk factors along these routes, until reaching the lakeshore. A spur trail traveling along the southern shore of Long Lake leads to camps south of the lake, and has some impacts on wet meadows and Yosemite toad habitat before reaching the camps. This trail continues across meadows, and eventually to Treasure Lakes, but cliffs and talus make this impassable to pack stock. Snow bypasses have formed during early-season use at multiple locations in the canyon.

The system trails in the Tamarack area are generally stable, with the exception of some isolated problems on the Dorothy Lake loop at creek crossings and at the inlet to Dorothy Lake. Tamarack Lake Bench has a myriad of use trails with generally low to moderate impacts, crossing the wide-open benches and meadows between the various lakes. Some of these travel through areas with high risk factors.

The system trail through northern portion of the Morgan Lakes Analysis Unit is an old mining road that has not been maintained. The trail has a minor amount of rilling that is eroding the trail, but it is not contributing sediment to surface water. In this AU, one lightly defined use trail climbs from below Morgan Lakes to Bear Lake. This route is steep, but has relatively few risk factors.

In the Fourth Recess AU, the Mono Creek Trail has severe impacts in a variety of locations and is especially degraded for a primary corridor trail. These impacts are especially prevalent in the Fourth Recess AU. Obstacles, including seasonal downed logs, which are common in this avalanche-prone zone, often force both stock and hiker traffic into sensitive meadows, springs, and archaeological sites, creating multiple bypass trails.

Golden Lake in the upper headwaters of Mono Creek is accessed by a system trail with minimal development that parallels Golden Creek and stays in the riparian corridor for almost its entire length. This trail has severe resource impacts, primarily incision, spring and stream impacts, and headcuts, with severe risk factors.

Third Recess Trail shows signs of inadequate design and alignment, including very steep grades through bedrock and riparian habitat and very few structures, mostly old waterbars. Moderate to severe effects are present on the majority of trail length. These effects include effects to springs, tread widening, incision, and water diversions. Sphagnum is present in meadows in trail corridor.

The Fourth Recess area is accessed by a use trail that is generally stable with few risk factors, except at a stream crossing near the outlet of lake, where there are moderate problems with incision, multiple trailing, and bank damage. Stock and hiker parties currently and historically use the area.

The Pioneer Basin AU has extensive widespread moderate soil and hydrology impacts from trails, and a few areas with severe impacts. Of the six trails analyzed for overall resource impacts, half are causing severe impacts. The system trail is moderately incised and multi-trailed along most of its length, and at many stream crossings, the incision is severe and has the potential to divert a portion of streams during high flow. Trails are capturing water from some small channels and therefore leading to alteration of flow and increased trail erosion in local

areas. Therefore, some trails are locally out of compliance with Riparian Conservation Objective #2, Standard and Guideline #100 (see project record for a list and explanation of RCOs).

In the Fourth Recess AU, the area with the heaviest trail effects and resource impacts is Pioneer Basin on the bench north of Mono Creek, just west of Golden Lake. This basin is dominated by large alpine meadows, springs, and myriad streams. Trails and use trails are in areas with many risk factors, creating a network with many access and resource issues. Due to changed use patterns and confusing trail maps/inventories, it is unclear which routes in this basin have historically been maintained as system trails and which are just well worn use trails. Trails with the worst resource impacts include access to Lake 4 (10,900'), a system trail between Mudd Lake and Lake 2 (10,840') and 3 (10,862'), and a use trail to the same destination. All of these have severe resource impacts, most with moderate to severe incision, water diversion, stream impacts, headcuts, and multiple trailing. Above Lake 3 and 4, there are some very lightly used routes with little to no trail definition.

A shortcut use trail descends a steep, grassy slope below Mudd Lake directly to a camp on Mono Creek, duplicating access provided by the Pioneer Basin system trail and Mono Creek Trail.

Hopkins Basin immediately west of Pioneer Basin has a system trail and user trail with conditions, geography, and risk factors very similar to those in Pioneer, though the use is lower. Both are incised, with moderate to severe resource effects present. The use trail provides a shortcut route from Hopkins Lake to the upper reaches of the system trail. The system trail ends about a mile below Hopkins Pass, and becomes an undefined route through the upper basin to the pass. The north (east) side of pass has not been maintained for decades and is not passable to stock. The portions of the trail through the Hopkins Creek meadow complex are moderately incised and multi-trailed. While this diverts some overland flow and has the potential to alter the meadows' hydrologic function, there is no evidence that the overall meadow hydrologic function has been altered. A trail at Lower Hopkins Lake is also incised and multi-trailed, and continues to erode through overland flow capture. However, the trail is in a dry area and is not degrading water quality or causing erosion off-trail.

A rough system trail accesses Laurel Lake in the Laurel AU. A system trail is shown accessing Grinnell Lake, but is not evident on the ground. There appears to be no likely route, and risk factors are present between the lakes.

Second Recess trail appears to be receiving very little, if any, commercial stock use. The trail is rough, with major overgrowth, avalanche debris, and very awkward conditions. The Mono Creek crossing is nearly impassable during even moderate flows. Resource impacts are low to moderate with the very low use levels, but risk factors exist if use patterns changed. An undefined use trail continues beyond the system trail to Mills Lake.

In the Silver Peak AU, the PCT climbs from Mono Creek to Silver Pass. Parts of the PCT are degraded and awkward, and some resource effects are present at stream crossings and where it crosses meadows below the pass. Some resource effects continue from abandoned sections of the PCT trail, which were rerouted decades ago. Mott Lake Trail in the Silver Pass corridor has moderate to severe resource impacts in a few areas along its length, including heavy incisions. The trail is at times degraded and awkward to travel, with slickrock in the tread, and awkward jump-offs and obstacles—especially just below the lower lake.

In the Volcanic AU, a use trail accesses the Volcanic Knob area from the PCT on the southern edge of the Mono Creek drainage and follows a moderately defined trail past a snow-survey cabin, then continues east to some small lakes at the base of Recess Peak. The trail is generally stable and follows moderate grades through areas with few risk factors, with the exception of a short section where it crosses the southern lobe of Volcano Meadow accessing the snow-survey cabin. The trail to Volcano Meadow is not causing soil or hydrologic degradation outside of the trail tread.

In the Graveyard AU, the Goodale Pass trail serves as the primary travel route, providing access to Graveyard Meadows, Graveyard Lakes and the Silver Divide. The Goodale Pass Trail is generally stable in this analysis unit. The Graveyard Lakes system trail climbs steeply from the Goodale Pass trail on a mostly dry timbered slope. There are very few trail structures on this trail relative to the evident high level of use. Erosion and soil loss and very awkward conditions are present. The trail becomes much less developed and undefined after reaching camps at the lowest lake. Access to these upper lakes is provided by a use trail with moderate to high resource effects, and severe risk factors (primarily proximity to streams and meadows between the lakes, as well as steepness of alignment). The uppermost lakes have no evidence of a defined use trail.

A well-defined use trail that shows signs of past maintenance leaves lower Graveyard Meadows at an unmarked junction, and climbs mostly on a dry brushy ridge with few risk factors to Arrowhead Lake, then becomes very faint and sporadically defined to Feather Lake. Some risk factors exist if stock use increased in the section above Arrowhead.

Bishop/Humphreys

There are approximately 81 miles of trail in the Bishop Creek and Humphreys Geographic Area. The Inyo NF manages roughly 54 miles of trail. This Geographic Unit has a relatively low density of system trails, approximately 0.6 miles of trail per square mile (or one mile of trail to 1,060 acres).

Table 3.12 Summary of system and use trails assessed in Bishop/Humphreys

Overall Rating	# Trails Assessed	Approx System Trail Length (Mi)	# Use Trails Assessed	Approx Use Trail Length
0	n/a	n/a	13	15
1	7	15	14	10
1.5	n/a	n/a	1	0.4
2	11	11	6	4.6
2.5	3	3	n/a	n/a
3	5	18	2	1.1
3.5	1	5	1	0.5
4	2	4	n/a	n/a
5	n/a	n/a	n/a	n/a

There are three main high-use corridors over the Crest of the Sierra: the Piute Pass corridor (Piute Pass Trail and Piute Canyon Trail), the Pine Creek Pass corridor (Pine Creek Pass Trail and French Canyon Trail), and Bishop Pass, which accesses destinations in Kings Canyon National Park. Another high-use area with a well-developed trail system is the basin above Sabrina Lake on the east side of the crest, but there is no trail access across the crest.

The Gable AU contains the Gable Lake trail that climbs from Pine Creek on a steep, poorly designed trail that originally provided access to various mining claims in the area, which have long-since stopped operations. The trail is awkward and collapsing at the start, and then becomes less developed as it approaches the lakes. About one mile below the lakes, the trail enters a meadow and stream system, where it has captured water flows. The main trail ends at a mining cabin and shaft just east and below Gable Lake, but a less-developed trail climbs through benches to the lake.

Most of the trails in the Pine Creek AU area have only localized hydrologic and soil impacts, with some erosion at stream crossings and some incision in meadow areas. The main Pine Creek system trail, leading almost to the wilderness boundary was an old mining road, and is therefore wider than a hiking trail. The area is rocky, however, and relatively little soil is disturbed. This trail is highly developed and travels through very rugged, rocky terrain, with some awkward conditions. In early season, some sections of trail are under snowdrifts, and lightly used bypass trails have formed below Honeymoon Lake area and just below the pass. A route was identified to Birchim Lake, but was not found on the ground. The most likely access to this lake would have to cross-springs and steep slopes between granite benches, where moderate risk factors exist and degradation is likely if use patterns change.

In the Granite Park AU, the Italy Pass system trail leaves Pine Creek Trail near Honeymoon Lake, and becomes extremely awkward as it passes the southwest shore of the lake. The trail splits, with the only stock-passable access going through a mudflat at the inlet of the lake. The trail is mostly undeveloped and very, awkward, steep, sporadic, and frequently in areas with high risk factors, crossing streams and alpine meadows with Yosemite Toads present and steep slopes. No defined use trail is present to Chalfant Lakes (which are just north of the Italy Pass trail) and no stock-practical approach was identified with the lakes entirely closed in by rocky ridges and slabs.

The Horton Lakes system trail ends at an old mining cabin at the lowest Horton Lake. An old mining road—not used for mining for over a half century—continues on to Hanging Valley on the west side of Mt Tom, and is used by hikers/climbers to approach the summit of Mt Tom. Other old mining roads exist on the slopes of Mt Tom and have not been maintained since mining use stopped. These are all on steep rocky slopes, with little or no riparian, streams, or other risk factors. A poorly defined use trail follows Horton Creek toward the upper lakes and is almost entirely in riparian zones and in immediate proximity to the stream.

In the Piute AU, the primary Piute Pass Trail is highly developed, though it climbs through a steep granite canyon, and there are many steep and awkward sections with steps, jump-offs, and slick rock slabs. The trail runs along the North Fork of Bishop Creek over most of its length, and in a few places is directly on lakeshores or the streambank. However, the small amount of sediment eroding from the trails does not appear to be altering water quality. The trail has 3-4 culverts along its length, which alter surface flow patterns, and there is rilling below at least two of the culverts, bringing fine sediment into small ponds. This could alter the ponds' habitat value.

A snow bank persists just to the east of Piute Pass longer than snow on trails either side of the pass. Commercial packers have applied material (sand, manure) to the trail (referred to as “sanding”) to harden the snow pack and make it easier for stock to pass and melt the snow. The resulting runoff has a higher concentration of sediment than would occur without the sanding. The sanded area is far from the nearest surface water body and therefore does not likely directly degrade water quality. However, sanding can allow access to other snowy or wet trails that might be more vulnerable to soil loss and stream diversion than later in the season.

A faint and mostly stable use trail (mostly on bedrock slabs) accesses a snow-survey cabin south and east of Piute Lake. Another accesses camps on the north side of the lake and is generally low-angle and stable, though it crosses some meadows with slight incision present.

Lamarck Lake Trail is well developed up to Grass Lake, where most day use occurs. From here to Lamarck Lake, the trail is steep and not well designed, but generally stable to just below Upper Lamarck Lake. Here the trail is forced into the outlet creek of the lake and is causing impacts to the stream. The Lamarck Col trail is a partially constructed, low-development trail leading from the Lamarck Lake Trail (between the two lakes), up a steep slope with constructed switchbacks to a small alpine lake/tarn just east of the Col. Overall, the trail is generally stable, though moderate to severe impacts are present at a stream crossing and incision is affecting small meadows along short sections of the trail. A trail leading up the Grass Lake outlet stream directly to Grass Lake from the North Lake parking area was abandoned when the newer Lamarck Lake Trail and a spur trail to Grass Lake was constructed at least 30 years ago. Periodically, this trail was maintained, primarily for former access to grazing in past decades. The trail is steep, deeply eroded, has very few structures and much harder to stabilize for heavy use than the new trail.

Some trails in the Sabrina Analysis Unit have slight to moderate incision and incised stream crossings, but the effects are local and not causing overall water or soil quality concerns. The Sabrina Basin trail is a highly developed trail climbing steeply into a large granite basin. Most of the trail is stable, though some sections are awkward for stock, including short sections over 40% grade, with many steps and rip-rap tread surface.

Above Blue Lake, a low-development system trail contours up to Baboon Lake. Some sections of this trail are steep, with some risk factors, but currently show only slight resource impacts. A use trail also accesses Baboon Lake along the creek, but is steep, has moderate resource impacts, and becomes impassable to stock before reaching the lake. The system trail accessing Donkey Lake has some moderate impacts at creek crossings, and becomes faint and confusing before reaching the lake, but is generally stable with the current level of use. An alternative non-system route following the Donkey Lake outlet is undefined and impassable to stock.

Despite maps and inventory suggesting a system trail from the Sabrina Trail to Topsy-Turvy and PeeWee Lakes, no trail exists within about ¼ mile of the lakes, blocked by cliffs and a waterfall. Alternative access across granite slabs from the Hungry Packer trail, however, was found and it is stable with few or no risk factors and relatively easy for equestrian travel. Some evidence of past stock use was found. The Moonlight Lake system trail was also shown going all the way to the lake, but was not found above the “Moonlight Falls” camp.

Emerald Lakes are accessed by a well-defined use trail that generally follows a stable alignment with few risk factors, with the exception of short sections in close proximity to the creek. No use

trail was found accessing Fishgut Lakes from Dingleberry Lake. Any route in this vicinity would be steep, climbing between granite ledge systems, with high potential for risk factors.

In the Tyee AU, a moderately developed trail climbs from the South Lake Road to Tyee Lakes, and then becomes less developed as it climbs over the shoulder of Table Mountain and descends steeply to George Lake. It is more developed and easy to follow to Sabrina Lake trail, though the grades are consistently steep, with some soil loss.

Much of the Treasure Lakes system trail is severely eroded. The trail is incised deeply enough that overland flow is captured in the trail and cannot be improved using water bars. The trail continues to incise and widen. The Treasure Lakes system trail ends at the inlet to the lowest Treasure Lake. Some use trails, which appear to be used by hikers and climbers accessing the alpine basins above, continue steeply directly alongside the creek channel and through small alpine meadows above the lower two lakes.

In the Bishop Creek AU, the Bishop Pass Trail was recently reconstructed, and is generally stable and readily used by stock. Due to rugged, steep, rocky terrain, some sections of trail are awkward for equestrians, especially above Bishop Lake. The Chocolate/Ruwau Lake Loop leaves the Bishop Pass trail, and climbs steeply up a dry gully to Bull Lake, then enters a riparian zone, stream channels, and meadows with many moderate to high resource effects for much of its length. The trail deteriorates into multiple ruts and a scramble trail as it climbs over a steep saddle then down to Ruwau Lake. The section between Ruwau and Bishop Pass trail at Long Lake is steep, awkward and eroded, but not directly affecting riparian for most of its length. The Marie Lakes trail is only lightly developed and somewhat rough with some erosion problems, but is generally on dry slopes, with minimal resource problems. One creek crossing has slight resource impacts and risk factors with potential to worsen if use levels increased substantially.

Many short, lightly developed use trails access many camps and small lakes and tarns in the corridor on either side of the main trail. Some of these, such as the trails to Hurd Lake, Long Lake Campsites and campsites at Saddlerock Lake, are fairly stable with few risk factors. Others, such as Timberline Tarns, Margaret Lakes, and Ledge Lake trail must cross meadows or streams, and/or have other risk factors.

In the Glacier Divide AU, the Piute Canyon Trail is the primary corridor trail accessing Piute Pass from the west. It is highly degraded in sections, with some resource impacts, mainly capturing overland and stream flows. A section of the Piute Canyon trail was rerouted away from Golden Trout Lakes (just west of the pass), but the abandoned section of trail is still the primary route to Golden Trout Lake, so heavy use has continued, leading to severe resource impacts to meadows and stream channels. Near Golden Trout Lakes, there is a high density of trails, and many of those trails are incised and diverting surface flow and in one case, diverting an entire intermittent stream. The area is therefore not in compliance with Riparian Conservation Objective #2, Standard and Guideline #100 because trails are disrupting hydrologic connectivity of aquatic features.

A well-defined and heavily used use trail traverses at a moderate grade from near Piute Pass to Muriel Lake. The route is poorly located in some sections, traveling through some wet meadows with some moderate impacts, and descending a short, steep slope near the lake. Undefined and dispersed routes access Wahoo Lakes across moderate terrain with few risk factors. A use trail to Goethe Lake appears to be primarily used by hikers, and is mostly located on dry rocky slopes, except at a few short sections where the trail crosses small streams and sloping meadows.

Packsaddle Lake is accessed via a poorly defined trail with cairns. Yosemite toads are present in the trail vicinity. Other risk factors are present such as steepness and proximity to streams and meadows. Lower Honeymoon Lake is accessed via a similarly undefined trail, which appears lightly used, with some limited effects, and risk factors present.

In the Humphreys Basin AU, two low-development system trails exist, one leading to Humphreys Lake and another to Desolation Lake. Both have low to moderate resource impacts, which could be corrected with relatively minor repairs. Cross-country travel by hikers or stock is relatively easy throughout the basin, and multiple possible routes between destinations would be relatively easy to find. A mostly undefined use trail between Mesa, Tomohawk and Square Lakes is occasionally used, and not causing notable resource impact at current levels of use.

The French Canyon Analysis Unit has extensive trail incision and multi-trailing that is diverting overland flow, springs, and streams. Many of these trails continue to erode and new multi-trails are being created due to poor trail condition that encourages users to walk off-trail. Some of the deepest incision observed in the project area is along the L-Lake to French Canyon trail. The most visibly degraded areas along the trail are within 500 ft of the junction with the Elba Lake Trail. Here, the old trail is incised up to 3 feet, and is acting as an ephemeral stream channel. There is evidence that the trail completely diverted an intermittent stream for some time, and the stream cut its downhill bank to follow the incised trail. There is a check dam to keep water from flowing into the incised trail. It seems to be working, because the current creek bottom is lower than check dam. Therefore, the stream's flow will only go into the trail if it overtops its banks. The currently used trail is also incised about 1.5 feet.

The L Lake/Moon Lake Trail climbs onto the bench south of French Canyon. It has severe resource effects along much of its length, and is affecting springs, stream flows, and meadows. The Moon Lake Cutoff trail shortcuts some of the Elle Lake trail and follows a slightly better alignment, though it also has moderate to severe resource effects.

Both a system and use trail access Merriam Lake on either side of Merriam Creek. Both are low-development, but the system location west of the creek seems to have the least resource effect and lowest intensity of risk factors for continued use. The use trail on the east appears to have lower use but higher resource effect. A use trail continues past Merriam Meadow camp, and on to LaSalle Lake, but it is ill defined and upper part is not passable to stock.

A use trail from Pine Creek Pass to Royce Lake appears to receive very little use and is hard to distinguish. Current resource effects are low and other risk factors are few, though there are some potential problems with steepness of alignment near the pass.

A use trail between Elba and Alsace Lakes has moderate to severe impacts to meadows and incision on steep slopes. Risk factors include saturated meadows. Many other routes and very faint use trails connect the various lakes in the benches above/south of French Canyon, including French, Steelhead, Alsace, Chevaux, Puppet, Star, Paris, and Blanc. These are all either indistinct or only intermittent trails with minimal definition.

The North Piute AU contains a section of the Piute Canyon Trail that is steep and poorly located in sections. The trail is difficult for stock to use because of high steps and rocky chutes. A bridge that once spanned Pinnacles Creek was removed several years ago, and the current creek crossing can be treacherous or impassable during winter runoff or following a rainstorm.

Florence/Bear

There are approximately 73 miles of trail in the Florence Lake – Bear Lake Geographic Unit. All trails in the area are managed by the Sierra National Forest. This Geographic Unit has the lowest density of trails in the AA/JM wildernesses. On average there is only about ½ mile of trail per square mile, or approximately one mile of trail in 1200 acres.

Table 3.13 Summary of system and use trails assessed in Florence/Bear

Overall Rating	# Trails Assessed	Approx System Trail Length (Mi)	# Use Trails Assessed	Approx Use Trail Length
0	n/a	n/a	4	5.7
1	1	1	1	1.2
1.5	n/a	n/a	n/a	n/a
2	2	1	1	1
2.5	1	1	n/a	n/a
3	3	9	n/a	n/a
3.5	n/a	n/a	n/a	n/a
4	n/a	n/a	n/a	n/a
5	n/a	n/a	n/a	n/a

In the Bolsillo AU, there is one system trail (Corbett Lake Trail) and several use trails. The Corbett Lake Trail accesses Corbett Lake from the Kaiser Pass Road, is in generally stable condition and receives low to moderate use from visitors to the Bolsillo campground and High Sierra Ranger Station. Few commercial stock use this trail. The Corbett Lake Trail to Cunningham Lake use trail receives low commercial stock use and has few risk factors for trail degradation. This trail is barely discernable. The Kings Castle use trail is primarily used by commercial stock during hunting season. It receives low commercial stock use and shows few risk factors for trail degradation.

The few trails that are in the Ershim AU receive low use. The Ershim Lake use trail accesses both lower and upper Ershim Lakes from the Dusy-Ershim OHV trail, and receives low use from commercial stock.

The Dutch/Boulder AU and the Dutch AU are linked together by several system trails. The Florence Lake Trail receives much higher use than any other trail in these two analysis units. This trail provides access to the PCT, Kings Canyon National Park (Evolution Valley) and the Piute Canyon Trail, though many visitors choose to bypass the section of the Florence Lake Trail in the Dutch/Boulder AU by taking the Florence Lake ferry to the south end of Florence Lake. The Boulder Creek crossing on the Florence Lake Trail can be impassable during winter runoff or heavy rainstorms. The Florence Lake Trail also provides access to the Thompson Lake Trail and Hot Springs Pass Trail in these Dutch/Boulder and Dutch AUs. Both trails receive low use and see infrequent maintenance. They may be difficult to follow and may have moderate risk factors due to steep grades. The Crater Lake Trail, at the west end of Florence Lake, receives moderate day use from both stock and hikers. The trail is steep and rocky with moderate risk

factors including several creek crossings. The beginning of the trail is severely eroded. The Crater Lake Trail provides access to the Dutch Oven Trail in the Dutch AU. The Dutch Oven Trail receives low use and can be difficult to follow because of many cattle trails in the area.

In the Dutch AU, there are several use trails. The Lost Lake use trail is a bypass trail that starts and ends at the Thompson Lake Trail and is used to access Lost Lake. The Dutch Oven to Summit Lake use trail is difficult to follow, and has numerous trees across the trail. The trail is fairly level with minimal change in terrain.

In the Dutch/Boulder AU, the Slip Rock use trail follows a historic shepherd's route through numerous beaver ponds and wet meadow areas, and is obstructed by downed trees and vegetation. This use trail also travels through the Ward Mountain AU and Sallie Keyes AU after leaving the Hot Springs Pass Trail in the Dutch/Boulder AU. The Slip Rock use trail currently receives very little use.

Trails in the Hooper AU generally receive low use, though the Hooper Diversion Trail receives low to moderate use. All of the system trails in this analysis unit are poorly located and have moderate to high risk factors in some areas, including steep grades. The Hooper Diversion Trail receives low to moderate levels of hiker and commercial stock use for access to lakes in the Hooper Basin. The Hell Hole Trail is a commercial stock route used to access to grazing areas in Hell Hole Meadow. The Poison Meadow Trail and Cirque Lake Trail also pass through this analysis unit and receive very low use. The Infant Buttes use trail is a hunting trail that leaves the Hooper Diversion Trail east of Infant Buttes. The use trail contours along some steep side slopes before achieving a lower grade, where it crosses both intermittent and perennial streams and wet meadows.

In the Ward Mountain AU, the Ward Mountain use trail traverses a bench below Mount Shinn from the Thompson Lake Trail to Ward Mountain Lake. The final leg of this use trail is a steep climb to Ward Mountain Lake along a creek. The use trail is currently not passable by stock due to downed trees. The Heather Lake use trail departs from Blayne Hot Springs (in the Sallie Keyes AU) and traverses east along the south side of the San Joaquin River. This use trail then switchbacks up rocky, steep slopes and avalanche chutes to Heather Lake, just below Mosquito Pass. In its current condition, numerous downed trees and thick vegetation along this use trail make passage very difficult for stock.

The trails and use trails in the Apollo AU are very lightly used and tend to be sporadic and hard to find. The Cirque Lake Trail is the primary system trail from which these use trails depart. This trail is lightly defined but can be followed where it leaves the Bear Creek trail. The trail becomes less obvious as it nears Cirque Lake. At current levels of use, the trail is causing no notable resource effects.

There are several use trails in the Apollo AU. The Cirque Lake Trail to Depressed Lake use trail contours on easy grade through fairly stable rocky soil on the north side of a meadow to Gold Pan Lake. From Gold Pan Lake to Depressed Lake, the trail winds through rock and short stretches of meadow. The Marcella Lake use trail also leaves the Cirque Lake Trail and travels less than ¼ mile cross country to Marcella Lake. The Apollo/Orchid use trail does not connect with the Cirque Lake Trail, but rather leaves the PCT/JMT near the Seven Gables junction and climbs through slopes before reaching Orchid Lake followed by Apollo Lake.

In the Italy AU, the Lake Italy trail is used by commercial stock primarily to access camps at “Hilgard Bench,” about 1.5 miles from the PCT. Above this, the trail is poorly developed, confusing, and located in meadows, springs, along streams, and other extremely high risk factor areas. Even incidental stock use has created moderate to severe impacts, although the erosion is not severe and was not observed to be degrading water quality. Below Italy Lake, the trail becomes hard to follow, and goes through rock slabs, steep slopes and talus fields that are impractical to stock.

In the Bear Lakes AU, the Seven Gables Trail climbs steeply from the PCT into a narrow canyon, and is confined to very near the stream channel on both sides of the creek, with multiple creek crossings. The trail is hard to find and travels over granite slabs, eventually dispersing into extremely difficult terrain about 1.5 miles from the PCT.

In the Seldon AU, trails have very few structures and drainage improvements, with the exception of the PCT, so where trails are receiving moderate levels of use, erosion and potential resource effects are common. The Sandpiper Lake Trail leaves the PCT, and climbs at moderate grades to Lou Beverly Lake, with only moderate effects, but climbs steeply through bedrock slabs and short, steep chutes with erosion and very awkward conditions leading to Sandpiper Lake. This trail is causing moderate to high resource impacts on springs and meadows near the lake, and fades into a use trail that climbs directly up a stream course toward Three Island Lake. This use trail becomes undefined as it crosses meadows and streams in terrain with very high risk factors before reaching Three Island Lake.

In the Marie Lake area, no use trails are evident accessing the Medley or Sandpiper area or Seldon Pass, and would only be used for shortcutting system trails to the same destinations. An undefined route with no notable effects and, if use levels do not increase, few risk factors accesses Marshall Lake.

In the Sallie Keyes AU, the PCT has moderate to severe resource effects on meadows and streams south of Seldon Pass. This includes incision, stream diversions and multiple trailing. Trail condition is substandard for a high-development primary trail. Trails in the Sallie Keyes AU are generally not contributing to water or soil resource degradation, although there are a few instances where a trail is disrupting surface flow. Along one section of the PCT, in a meadow between Sallie Keyes Lakes and Senger Creek, the trail captures overland flow from the very wet meadow and transports it down the trail, acting as an intermittent stream. However, this diversion does not appear to be altering the meadow hydrologic function or vegetation composition. The Sallie Keyes Cutoff Trail between the PCT and Florence Lake Trail is severely incised in places due to steep grades and lack of water diversion structures, and receives moderate use. The Florence Lake Trail in this analysis unit (and in the East Florence AU) is one of the most heavily used system trails in the JM/AA on the Sierra National Forest. The trail has severe multiple trailing in places, but is generally flat and stable.

There are several use trails in the Sallie Keyes AU. A faint use trail climbs gradually along Senger Creek to a camp about one mile from the PCT. Most of this trail is on dry, low angle slopes with few risk factors. The Sallie Keyes to Muir Trail Ranch use trail follows Senger Creek down steep slopes. This use trail has been abandoned. The Tombstone use trail climbs steep slopes from Double Meadow to The Tombstone, and is not well defined. This use trail receives little use, and the use that occurs is primarily during hunting season.

The East Florence AU contains two of the most heavily used system trails in the JM/AA on the Sierra National Forest: the Florence Lake Trail and the Florence Ferry Trail. The Florence Ferry Trail connects the ferry landing on Florence Lake to the Florence Lake Trail. The trail parallels the private inholding access road, crossing rocky slabs and small sandy benches. The trail is generally stable with few risk factors. The section of the Florence Lake Trail in this analysis connects the South Fork San Joaquin River with Double Meadow. The section parallels the private inholding access road between the junction with the Florence Ferry Trail and Double Meadow (the trail continues to parallel the road to Muir Trail Ranch in the Sallie Keyes AU). There is severe multiple trailing along this section, but the trail otherwise is stable and has few risk factors.

John Muir Southeast

There are approximately 100 miles of trail in the John Muir Southeast (JMSE) Geographic Area. All trails in the area are managed by the Inyo National Forest. Due to the steep terrain with few practical routes through the area, this unit has a very low density of trails, the second lowest in the JM/AA wildernesses. There is roughly one mile of trail for every 1100 acres of land, or just over one half mile of trail per square mile. JMSE is a narrow north-south band of Wilderness, so trails cross into national parks on the west side of the crest in relatively short travel distance. Along much of this area, it is possible to travel from a trailhead on the Inyo National Forest into the National Park in 6-10 trail miles.

Table 3.14 Summary of system and use trails assessed in John Muir Southeast

Overall Rating	# Trails Assessed	Approx System Trail Length (Mi)
0	3	11
1	4	11
1.5	1	3
2	2	6
2.5	1	4
3	n/a	n/a
3.5	n/a	n/a
4	n/a	n/a
5	n/a	n/a

There are four intensively used primary trails in the JMSE. All of these trails are maintained at a high level and are generally stable. North Fork of Big Pine Creek accesses the northern Palisade glacier area and does not provide trailed access across the crest into the National Park. The Kearsarge Pass Trail provides the shortest access (approximately four miles) across the crest into Kings Canyon NP. The Mt. Whitney Trail crosses into Sequoia NP just below the summit of Mt Whitney, and—aside from summiteers that are briefly in the park—it is used by more overnight hikers exiting the park than entering from the east. New Army Pass Trail provides access

between Cottonwood Lakes and Sequoia NP, but is used less by commercial stock than Cottonwood Pass to access the same areas.

The primary system trail in the North Fork of Big Pine is heavily used and highly developed until 4th Lake, and then gradually becomes less developed until it ends at 6th Lake. From this trail, a steep low-development trail climbs toward Sam Mack Meadow and the Palisade Glacier. This rough trail was used most heavily when a guiding school had a semi-permanent camp on the east end of the glacier, and sometimes to assist in rescues when helicopters could not be used. Use, especially stock use of this trail, has dropped off dramatically during the past 30 years, and is now more of a scramble route. A very steep trail to 6th Lake was abandoned many years ago, when the current system trail was built, but is still being used by hikers. It has some moderate erosion problems and many risk factors if stock use were present, but is mostly stable with the current level of hiker use.

A variety of lightly used use trails are used by commercial stock to access seasonal hunting or to provide seasonal stock support for snow survey needs. The use trails are generally stable and are mostly on dry open slopes with few risk factors, with only occasional stream crossings or riparian effects. These include a trail from Black Lake to Coyote Ridge, a use trail between campsites at 4th and 5th Lake, a trail accessing the Snow Survey Cabin at 2nd Lake, and accessing a snow survey site, and a trail to the “Heidi Cabin.”

In the North Fork of Lone Pine, the “Mountaineers Route” has never been used by stock, due to the steep, scrambling character of the trail. Sections of the trail go through talus fields and up cliffs, requiring basic climbing techniques. Since this trail is accessed by the Mt Whitney Trail, it is also closed to all stock use.

In the Birch AU, a rough trail on mostly steep, dry slopes provides access to just below Birch Lake, where the trail disperses into dense willows and rocky terrain. Most commercial use in the area provides access for hunting parties, and stock must be trucked to the trailhead, so trail use by stock is sporadic and low. From this trail, an ill-defined use trail leads north to a camp near springs east of Kid Mountain. Other short use trails lead to camps used by hikers. The trails are very lightly used, and generally do not have high risk factors or current resource effects.

In the Taboose AU, the Taboose Pass Trail is steep, rough, and rocky, especially near the top of the pass, and receives very low commercial or private stock use. There are some low to moderate effects, mainly some erosion of tread and capture of seasonal surface flows. Due to poor trail location a snowdrift forces use off the trail into an obvious bypass during heavy snow years. This bypass is in a rocky area and is not causing notable effects.

At the lower end of the canyon, a use trail leads to Shingle Mill Bench. The trail is generally faint but can be followed and appears to be used occasionally for hunting trips by private and commercial stock.

In the Sawmill AU, the Sawmill Pass Trail is a moderately developed trail leading into Kings Canyon NP. The trail leading to Sawmill Meadow and Sawmill Lake had been built for heavy use at the turn of the century for providing access for oxen and stock to a sawmill and flume, and to a rudimentary dam at Sawmill Lake. Above Sawmill Lake the trail is less developed and generally stable due to rocky soils, with the exception of some alpine meadows near the summit. On heavy snow years, the trail is often buried and some use trails have formed around the drifts.

In the Baxter AU, the Baxter Pass Trail is a very low development trail that has suffered from multiple catastrophic events during the past two decades, including a flood that changed the course of the lower stream channel and creek, and a landslide which buried large sections of the trail about 2/3 of the distance to the pass. The trail is steep and has few structures. The trail is in a Sierra Nevada Bighorn Zoological area with use restrictions. This trail provides access to the Kings Canyon NP, but the trail on the west side is even less developed and in rougher shape than the east side.

In the Kearsarge AU, the Kearsarge Pass Trail was recently reconstructed, is in very stable condition, and is currently maintained to standard. Since the trail on the Inyo NF side of the pass is very short, and since most good overnight camping is west of the Pass, most trail use is by backpackers and commercial stock traveling through the forest into the Park or accessing the PCT.

A very low-development trail heads north from Onion Valley and splits into two trails accessing Golden Trout Lakes, which are in two sub-drainages. The main trail climbs a loose, rocky slope with multiple trailing and soil movement alongside a cliff band, and then follows the creek drainage up a rocky gully with sporadic trail tread. The northern spur of the trail is less defined and goes through rougher terrain.

Both hikers and commercial stock use two faint use trails to access Bench Lake (above Matlock Lake). One trail climbs a dry sandy slope above Matlock Lake, while the other climbs and contours over from Flower Lake. Both are of minimal profile, though the trail from Matlock is shorter and appears to have fewer risk factors. A faint trail provides access from the Sardine Canyon trail into the Little Onion Valley but becomes impassable and undetectable before reaching Parker Lake.

In the Shepherd AU, the Shepherd Pass Trail climbs steeply from Symmes Creek for about 10 miles to the pass and into Sequoia NP. The trail is moderately developed and mostly stable, except on some steep sidehills in the lower canyon and at the final 1/3 mile of trail ascending the headwall and chute of loose scree and talus east of the pass. This slope is constantly moving, making a quality trail nearly impossible to maintain. Resource effects are low and risk factors few, with little or no riparian effect from the trail.

The Junction Pass trail accesses the same area as the PCT over Forester Pass, but climbs through a steep talus slope and over the 13,200' shoulder of Mt Keith. It is subject to large boulders rolling into the trail. The trail is hard to find in many places. Resource effects and risk factors are low, but costs to improve and maintain this trail would be extremely high relative to the use. The George Creek Trail leading to the west side of Mt Williamson has never been constructed, and has gradually deteriorated to the point that it cannot be followed. Most of the trail in the lower canyon followed the riparian zone alongside George Creek, and is overgrown by willows.

In the Whitney AU, the Mt Whitney Trail has been closed to all stock, commercial and private, except for administrative purposes, since the 1960s.

In the Cottonwood AU, the Cottonwood Lakes area is accessed by highly developed trails that go through the Golden Trout Wilderness prior to reaching the John Muir Wilderness and the Cottonwood Lakes Basin. The New Army Pass Trail climbs out of the basin into Sequoia NP, but is used by very few commercial stock. In the Cottonwood Basin, a low-development trail travels between the inlet of 3rd Lake and the New Army Pass Trail, traversing just above 2nd

Lake. This trail is on the immediate eastern banks of 3rd Lake, and crosses a wet meadow and stream. It has very high and consistent risk factors, primarily the location of trail on the lakeshore and in wet, hummocky meadow and at the stream crossing.

A short use trail between the DFG cabin and the “Frog Pond” provides access for DFG administering the fisheries in the basin. It is mostly on dry slopes, except as it nears the outlet stream from 3rd Lake. Another poorly located and undeveloped trail connects South Fork Meadow and the Cirque Lake Trail. This provides access to the same destinations accessed by the well-developed trail system from Cottonwood Lakes Basin. Camps at Southfork Meadow are also accessed from the lightly developed Southfork Creek Trail. The upper segment of this trail climbs a moderate-angled rocky slope, and is dispersed and hard to follow.

A number of undeveloped use trails access dispersed and lightly used destinations such as Hidden Lake and Windy Gap. These trails are generally stable and have few risk factors unless use increased dramatically. Use trails have formed around 4th and 5th Lakes, primarily due to anglers. These are on the immediate shore of the lakes, and must cross a creek from the system trail at an awkward location.

In the South Fork Big Pine AU, primarily mountaineers accessing the southern Palisade Glacier and the peaks above use South Fork Big Pine Trail. The trail is moderately developed, but with some awkward, rocky sections as far as the first lake, with slight resource impacts at small stream crossings near Willow Lake. Above this lake, the trail climbs very steeply with few drainage or stabilization structures up to Brainard Lake. Some erosion and slight resource effects are present.

In the Meysan AU, the Meysan Lake Trail leaves from the Whitney Portal Trailhead, and has been closed to commercial stock use since the 1960s, as were the other trails in the Whitney Portal area. This trail is generally stable with the current level of use, but has risk factors in some steep sections, and is in close proximity to riparian for short sections.

John Muir Southwest

There is an estimated 131 miles of trail in the JMSW Geographic Area. The Sierra NF manages all trails in the area. This area has a moderate density of system trails, roughly—the same as the overall wilderness—at around 0.7 miles of trail per square mile, or 1 mile of trail per 880 acres. The primary trail corridors in the John Muir Southwest Geographic Area are the Blackcap Trail, the Woodchuck Trail, and the Crown Valley Trail.

Table 3.15 Summary of system and use trails assessed in John Muir Southwest

Overall Rating	# Trails Assessed	Approx System Trail Length (Mi)	# Use Trails Assessed	Approx Use Trail Length
0	n/a	n/a	2	2.4
1	n/a	n/a	n/a	n/a
1.5	n/a	n/a	n/a	n/a
2	2	3	n/a	n/a

Overall Rating	# Trails Assessed	Approx System Trail Length (Mi)	# Use Trails Assessed	Approx Use Trail Length
2.5	2	2	n/a	n/a
3	2	11	n/a	n/a
3.5	n/a	n/a	n/a	n/a
4	n/a	n/a	n/a	n/a
5	n/a	n/a	n/a	n/a

In the Hobler AU, the Blackcap Trail and the Hobler Lake Trail receive moderate use, while all other trails receive low to very low use. The Blackcap Trail is the primary access trail for the high altitude lake basins in the John Muir Southwest Geographic Unit. The trail is generally stable through this analysis unit but shows incision on the west end of Post Corral Meadow. The Hobler Lake Trail is generally stable and shows few risk factors. The Burnt Corral Trail receives low use, primarily from commercial and private stock use, and currently is obstructed by many downed trees. The Reddy's Hole Trail is nearly impossible to find in some areas, and receives very low use.

The Hobler AU also contains two use trails. The Burnt Corral to Reddys Hole use trail, which leaves the Burnt Corral Trail at 9200 feet where the Burnt Corral Trail crosses Burnt Corral Creek. The use trail traverses rocky timbered side slopes and crosses several ridges before dropping into Reddys Hole where it joins the Reddys Hole system trail. This use trail is currently very difficult to follow and receives low use. The beginning of the China Hole use trail is easy to follow through this analysis unit, before it becomes faint as it drops into the North Fork Kings River canyon.

In the Post Corral AU, the Blackcap Trail is the primary trail corridor. This section of the Blackcap trail receives moderate use and is in generally stable condition, though there is multiple trailing and incision in sections of Post Corral Meadow. The Hell For Sure Trail is a secondary trail that receives moderate use as an access route to Rae and Fleming Lakes area. This section of the Hell For Sure Trail is in poor condition as it climbs slopes. The trail is steep and lacking trail structures, allowing water capture and channeling and leading to erosion. A section of the Reddy's Hole Trail also passes through this analysis unit and receives very low use. The Post Corral AU also contains the Post Corral to Fleming Creek use trail. This trail is primarily used by commercial stock. The China Hole use trail travels through this analysis unit as well, and is used to access the North Fork Kings River. This section of the use trail is hard to follow and presents moderate risk factors as it steeply descends to the North Fork Kings River.

In the Fleming Mountain AU, there are several system trails, all of which are generally stable and receive low to moderate use. The Hell For Sure Trail in this analysis unit does show widening at the Fleming Creek crossing below Fleming Lake. The Dale Lake user trail is well defined and rocky in some areas. The tread shows some erosion and gullies. The Rae Lake user trail shows some erosion that is occurring on lower section of this trail.

In the Red Mountain AU, the Hell For Sure Trail shows some sections of erosions due to lack of trail structures. The section of this trail between Hell For Sure Lake and the Kings Canyon

National Park boundary is difficult for stock to navigate due to steep rocky sections. Also in the Red Mountain AU, the Blackrock Lakes use trail is difficult to follow between Devil's Punchbowl and Blackrock Lakes outlet.

In the Bench AU, there are several use trails and only one small section of the Bench Valley system trail. This short section of the Bench Valley system trail is generally stable with few risk factors. The Crabtree to Horsehead user trail is not visible for most of its length, though there are sections of clear tread near Roman Four Lakes. The Fall Creek to Crabtree user trail is generally not continuous, though it is marked with blazes from historic routes.

In the Big Maxson AU, there are many secondary system trails that spur off of the primary trail corridors of the Blackcap Trail and the Woodchuck Trail. Generally, the primary and secondary system trails in the analysis unit are in need of maintenance and lacking trail structures. The Bench Valley Trail in particular is in very poor condition along certain sections of the trail. The trail leaves the Blackcap trail at the North Fork of the Kings River and climbs a steep ridge. The trail is in very poor condition along this section. It is rocky and difficult for stock. It is stable as it contours and climbs around a ridge to Fall Creek. It continues up the drainage, crossing creeks, wet sections, meadows and rocky areas before switchbacking up a very steep ridge to McGuire Lakes. This section of switchbacks is severely eroded, with gullies greater than three feet deep in sections. In some flat dry meadows above Guest Lake, the trail shows multiple trailing and incision. Failed trail features are causing erosion problems and trail reroutes are common on this trail. A small section of the Blackcap Trail between the Potholes (PG&E cabin) and Big Maxson Meadow is in very poor condition where it climbs a steep rocky ridge. The trail here has become loose, rocky, and eroded.

There are two user trails in the Big Maxson AU. The Bench Valley user trail connects the Meadow Brook system trail to the upper Bench Valley system trail and is currently used by commercial stock as an alternative to the lower section of the Bench Valley system trail, which is currently difficult for stock to travel on. The Fleming Creek to Meadow Brook user trail climbs steeply out of Fleming Creek and is generally not suitable for stock travel.

In the Basin AU, the Blackcap Trail is generally stable, but has areas where it crosses wet meadows and is incised. This section of the Blackcap Trail has moderate risk factors. The Crown Basin Trail is fairly stable with low to moderate risk factors. The use trails in this analysis unit are faint, hard to follow, and display general characteristics of low use trails.

In the South Woodchuck AU, the primary trail corridor is the Woodchuck Trail. The trail is generally in stable condition with low risk factors. All other system trails in this unit receive low to moderate use, are generally easy to follow and show low to moderate risk factors in some areas. The use trails in this analysis unit are faint and difficult to follow.

The North Woodchuck AU contains no system or use trails.

The Crown Valley Trail is the primary trail corridor in the Crown Lake AU. The trail sees moderate use, is easy to follow and travels across generally low grades. There are few risk factors. All other system and use trails in this analysis unit receive low use.

In the Crown Basin AU, there are two system trails and one use trail. The Coyote Pass Trail is primarily used to access a private inholding near Mountain Meadow, and receives low use. The analysis unit also contains a low use, low grade section of the Crown Basin Trail. The

Hummingbird Lake use trail received low use as it connects the end of the Crown Basin Trail to Hummingbird Lake. The use trail travels across a wet meadow, presenting moderate risk factors.

In the Finger AU, there are several system trails that receive low use and infrequent maintenance. The Hoffman Mountain Trail in particular is severely eroded in certain sections due to intermittent stream capture and lack of trail structures. The Cabin Trail is impassable to stock in certain areas due to downed trees. A short section of the Woodchuck Trail passes through this analysis unit. This section is stable and receives moderate use.

In the Spanish AU, the Crown Valley Trail is the primary trail corridor. Two secondary trails, the Statham Trail and the Spanish Loop Trail receive low to moderate use. All system trails in this analysis unit show a lack of maintenance and trail structures.

In the Rodgers AU, there are several system trails and no use trails. Generally, the system trails in this unit are steep and have sections of incision and erosion. All system trails in this are generally in need of maintenance. The Crown Valley Trail is the primary trail corridor and sees moderate use. It passes through a private inholding in this analysis unit. Several secondary system trails access various destinations from the Crown Valley Trail. The Tehipite Trail receives moderate use and is primarily used to access Kings Canyon National Park. The Blue Canyon Trail, which receives light use, also accesses Kings Canyon National Park and passes through a private inholding.

3.1.4 Heritage Resources and American Indian Concerns

Heritage Resources

Wilderness Scale

Heritage resources include archaeological sites, historic buildings, cultural landscapes, objects, and environmental features that inform us about human activities. In the Ansel Adams and John Muir Wildernesses treatment of Heritage Resources is done under the provisions of the Programmatic Agreement: Controlling Impacts on Historic Properties; Management of Ansel Adams, John Muir, and Dinkey Lakes Wildernesses, Sierra and Inyo National Forests.

Human history takes place within an environmental context. When the first evidence of human activity in the High Sierra appears, the passes had long been deglaciated and the region supported big game. The climate continued to change and between 5000-3000 years ago, forests and meadow systems developed (Wood, 1975), opening up new niches for human occupation. During this time eruptions from the Inyo-Mono Craters periodically blanketed the Sierran crest from Yosemite to Sequoia-Kings National Parks, causing localized disruptions in use (Jackson and Morgan, 1999). Information about past environments may be found in fens, meadow soils, and tephra deposits.

Scientific evidence first puts people in the Sierran alpine and sub alpine zones at about 7500 years ago. The High Sierra was used by both east and west side peoples and reflects the prehistoric culture history of both California and the Western Great Basin. The earliest uses reflect big game hunting and procurement of obsidian for tool making from the volcanic landscape of the eastern Sierra. Use was probably by individuals, or hunting and trading parties. As meadow systems developed, archaeological evidence shows that whole groups of people traversed and even summered in the high country, continuing the all important obsidian procurement and tool production. In the latest prehistoric period, obsidian procurement had dropped off while trade in other goods was maintained through to the 19th century AD. In both the High Sierra and the White Mountains to the east an intensive summer high altitude occupation pattern developed around 1300 years ago. In the Sierra, these sites are located along the major trails. There is ample evidence of continual east-west relationships from sites in the Sierra and from the ethnographic literature. (Bouey and Basgall, 1984; Davis, 1965; Essene and Hulse, 1935; Fowler and Liljeblad, 1986, Gayton, 1948; Gifford, 1932; Hall, 1982; Hinds, 1959, 1962a, 1962b; Jackson and Jackson, 1997; Jackson and Morgan, 1999; Kroeber, 1925; Latta, 1936; Liljeblad and Fowler; 1986, McCarthy, 1993, 1996; Merriam, 1967; Polanich, 1996; Steward, 1933; Stevens, 2002; Theodoratus et al., 1984; Wickstrom, 1992; Woolfenden, 1996.). The “Summary of Regional Prehistoric Changes” table summarizes these relationships and provides the context for regional research and interpretation and is in the project record.

With the discovery of gold, “The World Rushed In” (Holliday, 1981) to the Sierra Nevada, drastically disrupting indigenous lifeways. Historic era activities that occurred in the High Sierra include mining, grazing, hydroelectric development, recreation, film making, academic research, and land management activities (Cook, 1943; Hull, 2004; Reid, 1983, Theodoratus et al., 1984). Much of this activity was supported by pack stock operations (e.g. Jackson, 2004). With wilderness designation, certain activities have been reduced or eliminated.

Each of these eras and activities has helped shape the modern landscape of the wilderness and has left distinctive remains. The most enduring are the trail corridors used throughout human history (Jackson, 2004; Snyder, 2001; USDA Forest Service, Inyo and Sierra National Forests, 2001). Site condition monitoring in the project area (Jackson et al., 2005; Kerwin, 2005; Morgan et al., 2005, Planas and Parrish 2004; Reynolds 2002; Reynolds and Kerwin 2003, 2005) has found that some pack stock operations have adverse effects on some heritage resources and not on others. For instance, shod hooves trampling flaked stone tools may be an adverse effect while trailing past Basque aspen carvings is not. Activities that cause erosion of tephra deposits are. The monitoring results will be used to compare alternatives.

Approximately 60% of the project area has been inventoried for heritage resources. The areas inventoried to date are those most intensively used areas by commercial pack stock. The numbers of sites and site types given under the Geographic Scale discussion are based on both formally recorded sites, sites noted but not formally recorded and reported sites.

Geographic Unit Scale

Ansel Adams East

Sixty four percent of the Ansel Adams East geographic unit has been inventoried for heritage resources. Additional inventory in high impact areas may be needed. There 107 known sites; 86 prehistoric and 21 historic.

Of note are the Rush Meadows Archaeological District; the Mammoth Trail (2601, 26E01) was an important transportation corridor in prehistoric and historic times. The latter runs through both Ansel Adams East and West Geographic Units. The Bloody Canyon Trail (2516), a prehistoric trail goes through the Bloody Canyon AU.

Known resources by analysis unit:

- Bloody Canyon AU: three prehistoric and one historic site.
- Parker AU: one prehistoric site
- Rush Creek AU: 8 historic and 18 prehistoric sites.
- Upper Rush Creek AU: 3 historic and 34 prehistoric sites.
- Thousand Island AU: nine prehistoric sites.
- Shadow Ediza AU: two historic sites.
- River Corridor AU: four prehistoric sites.
- River High AU: four prehistoric and two historic sites.
- Minaret AU: an historic mining complex.
- King Creek AU: two prehistoric and two historic sites.
- Crater Creek AU: one prehistoric site on the Inyo portion; nine prehistoric sites and two historic sites on the Sierra NF portion managed by the Inyo.

Ansel Adams West

Inventory of all the trails, campsites, and grazing areas proposed for in the Strategy has been completed. This work includes ten historic Native American travel routes that have been inventoried, including the French (26E16), Mammoth (26E01), Isberg (24E01) and Mono Trails (27E46), major aboriginal travel and trade corridors. A total of 116 heritage sites are recorded in

the Ansel Adams West Geographic Unit of which 109 are prehistoric, six are historic, and one has both historic and prehistoric components.

The Mono Trail, a prehistoric and ethnographically known travel corridor, passes through the Lower Mono, Onion Springs, Hot Springs, and Cold Creek Analysis Units. The Mammoth Trail (26E01) is currently recorded as a historic trail as is the French Trail (26E16).

Known resources by analysis unit:

- Lillian AU: one prehistoric site.
- Triple Divide AU: three prehistoric sites and one historic site.
- Sadler AU: three prehistoric sites.
- Cora AU: 11 prehistoric sites and 2 historic sites.
- Bridge AU: 12 prehistoric sites.
- Cassidy AU: one historic site.
- Junction AU: three prehistoric sites.
- Arch AU: seven prehistoric sites and one historic sites.
- Lake Catherine AU: four prehistoric sites.
- Cargyle AU: 16 prehistoric sites and 1 historic site.
- Lower Mono AU: 10 prehistoric sites and 1 site with historic and prehistoric components.
- Cold Creek AU: six prehistoric sites.
- Chiquito AU: one prehistoric site.
- Staniford AU: one prehistoric site.
- Onion Springs AU: three prehistoric sites.
- Fuller Buttes AU: six prehistoric sites.
- South Fork AU: 13 prehistoric sites and 1 historic site.
- Hot Springs AU: eight prehistoric sites.

Fish Creek/Convict/McGee

Inventory of this geographic area on the Sierra NF is 100% of the areas identified in the Strategy. On the Inyo NF 25% of the total area has been inventoried. Addition inventory may be needed. There are 60 known sites, 59 prehistoric and one multicomponent.

Known resources by analysis unit:

- McGee AU: four prehistoric and one multicomponent site.
- Purple Bench AU: 18 prehistoric sites.
- Upper Fish Creek AU: one prehistoric site.
- Cascade Valley AU: 12 prehistoric sites.
- Silver Divide AU: 17 prehistoric sites.
- Margaret AU: seven prehistoric sites

Mono Creek/Rock Creek

In this geographic area the Sierra NF surveyed 100% of the area identified in the Strategy and the Inyo has surveyed 17%. Additional inventory may be needed. This geographic area contains most of the Mono Trail (2901 and 29E01). The trail runs through the Fourth Recess, Pioneer, Hopkins, Laurel, Second Recess, Silver Peak, Volcanic, Graveyard, and Bear Analysis Units. There are 83 sites, 80 prehistoric, one multicomponent, and one historic site.

Known resources by analysis unit:

- Hilton Creek AU: six prehistoric sites and three historic sites.
- Little Lakes AU: one prehistoric and one historic site
- Fourth Recess AU: 10 prehistoric sites.
- Pioneer AU: four prehistoric sites.
- Hopkins AU: four prehistoric sites and one historic site.
- Laurel AU: three prehistoric sites.
- Second Recess AU: nine prehistoric sites and one multicomponent site
- Silver Peak AU: seven prehistoric sites
- Volcanic AU: one prehistoric site.
- Graveyard AU: 19 prehistoric sites and one historic site.
- Bear Ridge AU: 10 prehistoric sites.
- Devils AU: one prehistoric site.

Bishop/Humphreys

The Sierra NF has surveyed 100% of the area identified in the Strategy and the Inyo NF has surveyed 22%. Additional inventory may be needed. The Piute Trail (30E01), a prehistoric travel corridor, is in this geographic unit. There are 42 reported sites; 38 prehistoric and 5 historic.

Known resources by analysis unit:

- Gable Creek AU – historic mining remains.
- Pine Creek AU – historic mining remains, one prehistoric site.
- Horton AU – one prehistoric and one historic.
- Piute AU – four prehistoric sites and one historic structure.
- Lamarck AU – two prehistoric sites.
- Sabrina AU – dispersed prehistoric remains reported.
- Bishop Creek AU – some prehistoric and historic remains reported.
- Glacier Divide AU – 20 prehistoric sites.
- Humphreys AU – three prehistoric sites.
- French Canyon AU – five prehistoric sites.
- North Piute AU – one prehistoric site.

Florence/Bear

All of the area identified in the Strategy was inventoried. A portion of the Piute Trail (28E25, 30E01) is in the geographic area and goes thru the East Florence and Sallie Keyes Analysis Units. A grand total of 63 sites with 55 prehistoric, one multicomponent, and seven historic sites formally recorded:

Known resources by analysis unit:

- Dutch AU: 18 prehistoric sites, 5 historic sites, and 1 multicomponent site.
- Bolsillo AU – one prehistoric site.
- Dutch Boulder AU – two prehistoric sites.
- Hooper AU – one prehistoric and two historic sites.
- Italy AU – three prehistoric sites.

- Bear Lakes AU – three prehistoric sites.
- Seldon AU – seven prehistoric sites.
- Sallie Keyes AU – 13 prehistoric sites.
- East Florence Lake AU – one prehistoric site.
- Ershim AU – six prehistoric sites.

John Muir Southeast

With 27% of the project area surveyed, there are six known sites: four historic and two prehistoric. Additional inventory will be needed. Site of note include the Lon Chaney Cabin and the Tuttle Creek Ashram

Known heritage resources by analysis unit:

- Coyote AU: site reported at a trailhead parking/camping area.
- North Fork Big Pine Creek AU: one historic site.
- Taboose AU: one prehistoric site.
- Kearsarge AU: one historic site.
- Cottonwood AU: historic remains reported.
- North Fork Lone Pine Creek AU: one historic site.

John Muir Southwest

Inventory has been conducted on all of the area identified in the Strategy, with 21 formally recorded prehistoric and 7 historic sites.

Known resources by analysis unit:

- Hobler AU: three prehistoric sites.
- Post Corral AU: six prehistoric sites.
- Red Mountain AU: one prehistoric site.
- Big Maxson AU: two historic sites.
- Basin AU: one historic site.
- South Woodchuck AU: one prehistoric and one historic.
- Rodgers AU: four prehistoric and two historic sites.
- Spanish AU: five prehistoric sites.
- Finger AU: one prehistoric site and one historic site.

American Indian Concerns

Wilderness Scale

The project area is part of the traditional territory of indigenous people who today belong to the following tribes, communities, and organizations.

Federally Recognized Tribes: The Bishop Paiute Tribal Council, the Big Pine Indians of Owens Valley, the Utu Utu Gwaitu Paiute, Fort Independence Paiute, the Lone Pine Paiute-Shoshone, Big Sandy Rancheria, North Fork Rancheria, Cold Springs Rancheria, Picayune Rancheria, and Table Mountain Rancheria.

Tribes in the process of seeking federal recognition: Mono Lake Indian Community, North Fork Mono Tribe, Dunlap Band of Mono Indians, and American Indian Council of Mariposa County.

Organizations include American Indian Center of Central California, Haslett Basin Traditional Committee, Mono Nation, Sierra Mono Museum, Central Valley Indian Health, Native Earth Foundation, and Sierra Nevada Native American Coalition.

Many Indian people retain a deep, abiding concern about what occurs within their aboriginal territory. These lands are considered the center of their universe, their homeland; spiritual reverence for the land is often expressed by tribal members. Thus, we are speaking not only of cultural survival, but spiritual survival as well; among many Indian people the concepts are inseparable. It is felt by many that they have a responsibility to manage the land properly; that Creator put them there to do just that.

Archaeological sites and landscapes have a value to Indian people beyond the scientific information they contain. Although the surface material has in some cases disappeared or been greatly diminished, the cultural value of the trail, the prehistoric site, the gathering site, the sacred place, the history of travel and trade, the need to conduct ceremonies, etc. remains. One kind of significance assigned to a site or place is called a Traditional Cultural Property. Thus, access to sites and the protection of places of tribal value is important. (Administrative Record of consultation for the Sierra PA on file at the Sierra National Forest, Clovis; Administrative Record of consultation for the Sierra Nevada Forest Plan Amendments, on file at the Regional Office, Vallejo.)

Geographic Unit Scale

Ansel Adams East

The Bloody Canyon Trail (2516) has tradition cultural significance to the Southern Miwok and Mono Lake Kuzeditkaa , who conduct an annual walk over it. A Traditional Cultural Property (TCP) evaluation has been requested by the participants.

Ansel Adams West

The Mono Trail Corridor is considered a potential Traditional Cultural Property and is currently being evaluated as such. Western Mono peoples conduct an annual walk over it.

Mono Creek/Rock Creek

The Mono Trail is considered a potential Traditional Cultural Property and is presently being evaluated as such. Western Mono peoples conduct an annual walk over it.

A traditional gathering area of *Carex sp.* in Quail Meadow (Graveyard AU) requires protection from grazing impacts.

Bishop/Humphreys

The Piute Trail is considered a potential Traditional Cultural Property. It is the site of an annual traditional walk by the Western Mono peoples. It goes thru the Piute, Glacier Divide, Humphreys, French Canyon, and North Piute AUs. Hutchinson Meadow, along the trail, is an important meeting area and retains traditional cultural values.

Florence/Bear

The Summit Lake area in the Dutch AU is an area of traditional cultural value. Another location, Blaney Hot Springs also has traditional cultural value. Protection and preservation is important.

John Muir Southeast

Taboose Pass Trail and Kearsarge Pass Trail are becoming used for annual traditional walks. These are potential Traditional Cultural Properties.

3.1.5 Socioeconomics

This section examines the economic and social environment of the region affected by the alternatives. The project area consists of four counties divided into two general geographic areas. The eastern Sierra portion of the project area consists of Inyo and Mono Counties, while the western Sierra project area is made up of Madera and Fresno Counties. These counties provide services to visitors and employees and receive tax revenue or benefits through retail and other trade. Consequently, these counties could be affected by changes in the levels of commercial pack stock use in the Ansel Adams and John Muir Wildernesses. The following discussion is an overview of the economic and social affected environment for these four counties.

Population and Demographics

Relative to the west side counties and California in general, the east side counties are sparsely populated and slowly growing. In the 2000 census, the population for Inyo County was 17,945—a decrease of 1.8% from the 1990 census (California average was an increase of 13.6%) with an average of 1.8 persons per square mile (California average was 217.2 persons per square mile). Mono County's population in 2000 was 12,853—an increase of 29.1% from the 1990 census—with an average of 4.2 persons per square mile. Conversely, the west side counties are far more densely populated and are growing at faster rates. In 2000, the population of Madera County was 123,109—an increase of 39.8% from the 1990 census. The county had an average of 57.6 persons per square mile. Fresno County reported a population of 799,407 in 2000—an increase of 19.8% from the 1990 census. The county has an average of 134.1 persons per square mile (U.S. Census Bureau, 2000).

In terms of demographic characteristics, the counties are fairly similar. In 2000, the median age in Inyo County was 42.8, Mono County's was 36, Fresno County's was 29.9, and Madera County's was 32.7 (California's median age was 33.3). For race, counties have similar characteristics with the west side counties having slightly higher percentage of individuals reporting Latino or Hispanic origin. In Inyo County, 80% of the census respondents reported that white was their race and 10% reported American Indian and/or Alaskan Native as their race. In addition, 12.6% of the respondents stated that they were of Hispanic or Latino origin. For Mono County, a large majority of census respondents report white as their race (84.2%), while 9.5% report "some other race," and 2.4% report American Indian and/or Alaska Native. In addition, 17.7% of the respondents stated that they were of Hispanic or Latino origin. In Madera County, 62% of the respondents identified their race as white, 24.4% reported "some other race," and 4.1% reported their race as Black or African American. In addition, 44.3% reported that they were of Hispanic or Latino origin. For the 2000 census in Fresno County, 54.3% of the respondents identified their race as white, while 25.9% responded that their race was "some other race." Also, 44% of the respondents to the 2000 census reported a Latino or Hispanic origin. By comparison, in California as a whole, the 2000 census reported that 59.5% of the respondents reported that their race was white, followed by 16.8 % reporting "some other race," and 10.9% reporting Asian. Statewide, 32.4% of the respondents reported Latino or Hispanic origin (U.S. Census Bureau, 2000)

Economics

In terms of economics, the east side counties are far more reliant upon tourism and recreation for their jobs compared to the west side counties. On the east side, the arts, entertainment, recreation, accommodation, and food services sector of the economy accounts for 30% of all jobs in Mono County and nearly 18% of all jobs in Inyo County (compared to 7.2% in Fresno County and 7.7% in Madera County). West side counties rely heavily on the educational, health, and social services sector for employment. This sector was the top employer for west side counties in the 2000 Census and was responsible for 19.2% of all jobs in Madera County and 22.8% of all jobs in Fresno County (U.S. Census Bureau, 2000). In addition, as shown by the top employers in each county, the west side counties have far more diversified economies.

In Fresno County, the top fifteen employers in the county, include three hospitals (Community Medical Center; St. Agnes Hospital; US Veterans Hospital); two colleges/universities (California State University, Fresno; Fresno City College) and wholesale groceries and related products (Lyons Magnus Manufacturing and Stamoules Produce); and one employer each in poultry and eggs (Foster Farms), department stores (Gottschalks), wholesale machinery, equipment, and supplies (Grundfos Manufacturing), meat products (Harris Ranch Beef Company), groceries and related products (Ito Packing), farm labor and management services (Kreger Inc.), electrical goods (Pelco), and preserved frozen foods (Wawona Frozen Foods). A majority of these employers are in Fresno (eight out of fifteen) (California Employment Development Department, 2004b). It is projected that the services sector will experience the most growth in Fresno County between 1999 and 2006 (17.4% growth with 11,900 new jobs added) (California Employment Development Department, 2004a).

Out of the top fifteen employers in Madera County, two are related to public administration (Central California Women's Facility and Valley State Prison); hospitals (Children's Hospital of Central California and Madera Community Hospital); general farms, primarily crop (Deniz Packing and RJ Sales); and groceries and related products (Lamanuzzi & Pantaleo and Papagni Fruit Company). The remaining top employers in the county are from a wide range of industries including beverages (Canandaigua Wines); personnel supply services (Central Ag Labor); lumber and other building materials (Certainteed); apparel, piece goods and notions (Gottschalks); general farms, primarily livestock and animal specialties (Johnson Morgan); glass and glassware, pressed or blown (Madera Glass); and hotels and motels (Pines Resorts). The majority of these employers (eleven out of fifteen) are in Madera (California Employment Development Department, 2004b). (California Employment Development Department, 2004b). It is projected that the services industry will experience the most growth in Madera County between 1998 and 2006 (17.4% growth with 11,900 new jobs added) (California Employment Development Department, 2004a).

Of the top eleven employers in Inyo County, four are related to public administration (California Department of Transportation, Death Valley National Park, Inyo County Government, and Los Angeles Aqueduct Systems); two are related to hospital/medical clinics (Northern Inyo Hospital and Toiyabe Indian Health Project); two are related to miscellaneous amusement and recreation services (Bishop Paiute Gaming and Paiute Palace Casino); and one each in hotels/motels (Furnace Creek Ranch), water well drilling (Coso Operating Company), and food store (CG Roxane Water). The majority of these businesses are in Bishop, California (five out of eleven). (California Employment Development Department, 2004b). Similar to Fresno and Madera Counties, it is projected that the retail trade sector will experience the most growth in Mono

County between 1996 and 2006. (10.5% growth with 190 new jobs added) (California Employment Development Department, 2004a).

Of the top nine employers in the Mono County, three are categorized as hotel/motel (June Mountain Ski Area, Mammoth Mountain Inn, and Mammoth Mountain Ski Area); two are eating and drinking places (Mountainside Grill, Whiskey Grill at Mammoth); and one each are in public administration (Mono County Government), elementary and secondary schools (Mammoth Elementary School), and miscellaneous business services (Mammoth Lakes Fire Department). The majority of these employers (seven out of nine) are in the Town of Mammoth Lakes. (California Employment Development Department, 2004b). It is projected that the services industry will experience the highest percentage of growth between 1999 and 2006 (17.1% growth with 360 new jobs added) (California Employment Development Department, 2004a).

In terms of unemployment, west side counties generally have had high unemployment rates relative to the averages both statewide and in the east side counties. In 2001, Madera County had an unemployment rate of 12.1%. From 1995 to 2000, the unemployment rate varied from a high 15% in 1995 to a low of 11.6% in 1999. Fresno County's unemployment rate in 2001 was 13.7%. From 1995 to 2000, the unemployment rate varied from a low of 13.1% in 1996 to a high of 14.2% in 2000 and 1998. By contrast, east side counties had a lower unemployment rate over this period. The unemployment rate Inyo County in 2001 was 4.9%. From 1995 to 2000, unemployment in the county has varied from 9.4% (in 1995) to 5.5% (in 2000). The unemployment rate in Mono County in 2001 was 5.6%. From 1995 to 2000, the unemployment rate has varied from a high in 1995 of 10.8% to a low in 2000 of 5.6%. Statewide, the unemployment rate in 2001 was 5.3% (U.S. Department of Labor, 2004).

Median household incomes in the west side counties are slightly lower compared to east side counties and the poverty levels are slightly higher. For the 2000 census, Inyo County had a median household income in 1999 of \$44,970, with 12.6% of the population below the poverty line. Mono County's median household income was \$44,992, with 11.5% of the population below the poverty line. For Madera County, the 2000 census reported median household income of \$36,286, with 21.4% of the population below the poverty line. For Fresno County, the 2000 census reported that the median household income in Fresno County was \$34,725 with 22.9% of the population below the poverty line (U.S. Census Bureau, 2000).

All four counties have added jobs between 1998 and 2002, with Mono County experiencing a higher job growth rate compared to the other counties. In Inyo County, 320 jobs were added during this time, an increase of 4.1%. In Mono County, 1,010 jobs were added to the economy (an increase of 17.6%). The analysis area for the west side counties to measure job increase is the Fresno Metropolitan Statistical Area (MSA) (combination of Fresno and Madera Counties). From 1998 to 2002, 25,800 jobs were added to the Fresno MSA (an increase in 6%) (California Employment Development Department, 2004a).

Economic Analysis of Pack Station Activities

The Impact Analysis for Planning (IMPLAN) model was used to calculate the direct, indirect, and induced labor income generated by commercial pack station operations in the project area. The IMPLAN model is an input/output model. The inputs included the reported gross revenue from pack station operations in the project area and average spending per visitor group that utilizes pack station services on a visit to the project area. Commercial pack station revenue

numbers were generated from reported gross revenue. Much of this information, however, was incomplete and some assumptions were made to determine the gross revenue for all commercial pack stations operating in the project area. Two studies were used to determine visitor spending in local communities when visitors utilize the services of commercial pack station operations. Since spending studies used by the Forest Service typically use a unit known as party days, visitors utilizing commercial pack stations services were converted into parties. According to the National Visitor Use Monitoring Results for the Inyo National Forest, the average party size of forest visitors is two. The total pack station number of visitors was determined from tally sheets and reports from the pack stations. This total number was divided by two to reflect the total number of commercial pack station party days. Again, because of incomplete information, some assumptions of the use were made.

Next, the average amount of money these visitors spend during a visit was determined. The report *Spending Profiles of National Forest Visitors* provides estimates of the spending per party per day for forest visitors. According to this study, for example, an out-of-town overnight visitor spends an average of \$268 per day on goods and services while on a visit to the Inyo National Forest.

Using these inputs (the spending of pack station clients and the gross revenue of the pack stations), the economic impact of pack station use in the Ansel Adams and John Muir Wildernesses was estimated (see table). The table expresses the contribution analysis in terms of labor income generated from pack station activities.

Results

Table 3.16 Regional economic impact of pack station activities in the Ansel Adams/John Muir Wildernesses

Pack Station	Direct Labor Income	Indirect Labor Income	Induced Labor Income
East Side Pack Stations	\$942,639	\$163,598	\$489,662
West Side Pack Stations	\$679,762	\$189,671	\$661,385

Pack Station	Direct Employment	Indirect Employment	Induced Employment
East Side Pack Stations	74.7	7.5	17.0
West Side Pack Stations	39.5	6.7	20.2

Using the IMPLAN model, commercial pack station related activity generates approximately \$1,622,401 in direct labor income in the project area. This is labor income related to the direct spending of visitors on various goods and services such as food and beverage, gasoline, and lodging. This spending is expected to generate another \$353,269 in indirect labor income. This type of labor income is related to indirect industries needed to support the direct industries impacted by the initial round of visitor spending. Lastly, approximately \$1,151,047 in induced labor income is generated by the commercial pack station operations. This labor income is related to household spending resulting from the direct and indirect economic effects of the industry. Given assumptions and spending patterns put into the model, commercial pack station operations are currently generating approximately three million dollars in labor income for the project area.

Approximately 104 direct jobs are supported by current pack station operations, with approximately 14 indirect and 37 induced jobs supported by the activities of this industry.

The direct labor income numbers in this table do not represent the total spending or revenue related to pack station operations, but rather the labor income or economic impact to the local economy generated by the total spending or revenue as determined by the IMPLAN model. As with any system, the economies of Inyo, Mono, Madera, and Fresno Counties are not a closed entity: a substantial portion of spending on goods and services that occurs within the local economy results in revenue that does not stay within the local economy. These effects are accounted for in the IMPLAN model and the calculation of labor income.

Conclusions

When compared to the overall regional economy, the economic contribution of pack stations in terms of direct labor income and direct employment is relatively minor. For east side counties, the direct, indirect, and induced labor income generated by pack station operations is \$1,595,899, approximately 0.2% of the overall personal income in the two-county study area. Likewise, the direct, indirect, and induced jobs generated by pack stations total 99.2 jobs and represent 0.5% of the total jobs in Inyo and Mono Counties.

For west side counties, pack station operations represent an even smaller percentage of personal income and employment. The labor income generated by pack station operations is \$679,762 and this represents .008% of the total personal income in Fresno and Madera Counties and the jobs generated by this activity total 66.4 jobs, approximately .01% of the total number of jobs in the two counties.

It is important to note that this regional economic analysis is at the county scale. Labor income generated by commercial pack stations is compared to labor figures from counties in the project area. This is generally the appropriate scale for a regional economic analysis. Unquestionably, smaller communities within the project area feel the economic effects of an industry such as commercial pack station operations more than the county as a whole. Because of the limited or, in most cases, absence of economic data for smaller communities within the project area, it is not possible to provide a quantification of the economic impact of commercial pack station operations to smaller communities. Additional discussion on the localized economic impacts of pack stations can be found in Chapter 4.

3.2 Physical Environment

3.2.1 Soil

Soils within the project area are predominantly derived from granite. Other sources of parent material include volcanics such as andesite, basalt, rhyolite, tephra and pyroclastic deposits, and metasediments such as hornfels, marble and quartzite (USDA Forest Service, 1995b). Most of the high elevation meadows are rich in volcanic ash. Soils forming in volcanic materials tend to have finer textures, higher water holding capacities, and lower bulk densities than soils forming in other parent materials. Soils formed in tephra and ash tend to be light and fluffy when dry and when exposed can be exceptionally dusty.

Soil conditions were analyzed based on Soil Quality Standards from FSH 2509.18. They were also analyzed in terms of Best Management Practices (BMPs). Applicable BMPs are described in Forest Service's Best Management Practices Handbook (included in the project record), and include BMPs regarding pack stock-related campsites and trails (Practice 4-10), and protection of wetlands (Practice 7-3).

Soil quality and productivity depend on climate, inherent soil type, and current soil condition. Soil productivity is limited by the high elevation and low air and soil temperatures. At warmer lower elevations found in the western portion of the analysis area, soils have higher productivity.

Most soils in the analysis area are highly susceptible to erosion by water. Sheet and rill erosion are common on moderately steep to very steep, granitically derived, immature soils throughout most of the wilderness. These soils do not tend to compact well, making them particularly susceptible to erosion and dust formation on trails and in campsites.

In the Inyo National Forest portion of the AA/JM Wildernesses, it is estimated that disturbances from campsites and trails cover less than 0.5% percent of the land, using recent campsite and trail inventories. It is assumed that there is a similarly low percentage of disturbance on the Sierra portion of the project area. However, this is only an assumption because there is little quantitative data existing for the number and ground disturbance from campsites on the Sierra National Forest. Because the number of overnight users per area in the SNF and INF are roughly similar, it can be reasoned that campsite density and size should be similar. Given the localized nature of impacts, soil quality and long-term soil productivity are being maintained on a wilderness-wide scale. There are specific sites where there is not full compliance with standards. These sites tend to be in sensitive habitats, such as springs, moist soils around lakeshores, meadows, riparian areas, or in areas of concentrated visitor use and some grazing areas. Potential impacts to soil productivity include: 1) trampling and erosion related to grazing; 2) trail erosion, especially from user-created, unmaintained trails, incised and multi-trailing; and 3) campsites with loss of nutrients by removal of duff and litter through trampling and woody debris through firewood collection and direct trampling and vegetation removal. Many of these soil impacts can take decades to recover.

Meadows

Meadow soils are unique, because they are derived from alluvial deposits and glacial debris and tend to be very deep, well stratified, and relatively free of rock fragments. They are rich in decaying organic matter and often are in areas with a high water table, which makes them

relatively fertile. Meadow soils are more easily compacted than other soils. Although soils in some portions of wet meadows may be permanently saturated near the surface, most wet and moist meadows have seasonally high water tables, primarily in spring and early summer. Meadow soils that are moist are usually more susceptible to compaction than drier uplands or very wet soil (Warren et al., 1986, Hagberg, 1994). Compaction reduces water infiltration, concentrates water, and can lead to gully erosion.

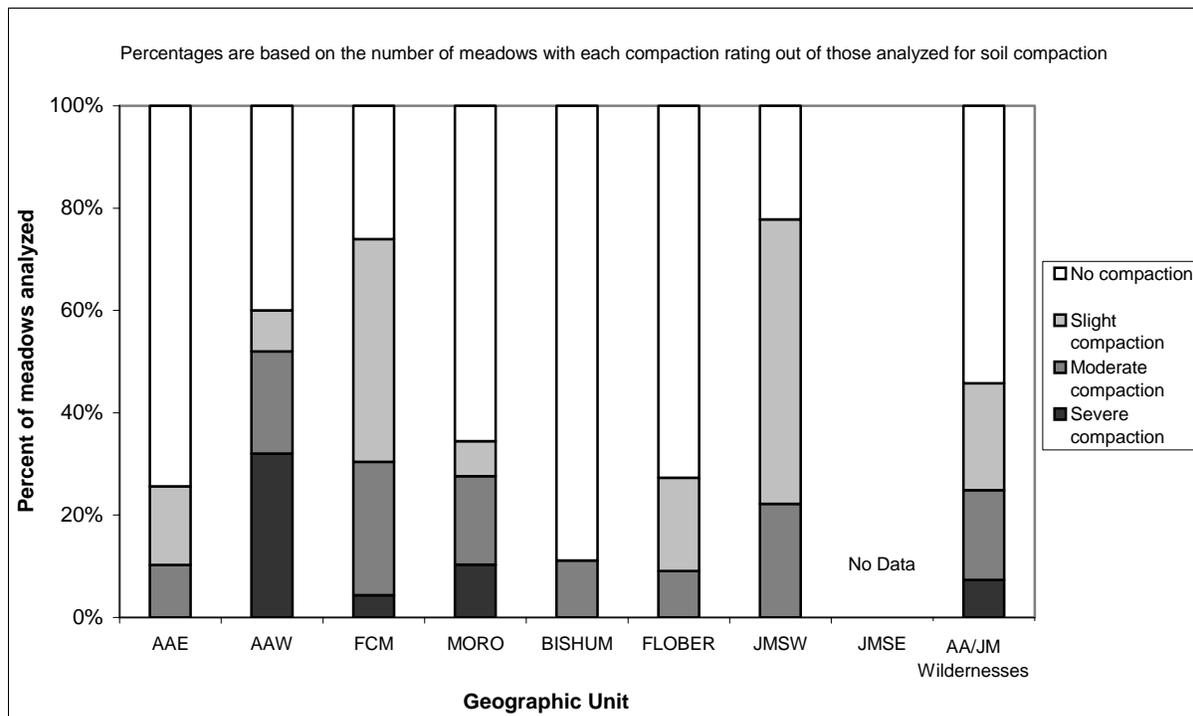
All moist and wet meadows were delineated on air photos to understand their extent in the project area. Although we did not delineate jurisdictional wetlands, we assume that all moist and wet meadows are wetlands, at least over most of their area. About 1,500 meadows/wetlands are known to exist within the project area, covering about 11,700 acres.

Methods for determining the extent and severity of soil and water resource conditions in meadows is explained in the document Meadow Inventory Criteria for Meadow Ratings in the project record. Ratings for each meadows' characteristics is in the *Meadow Table: Raw Data from Field Analysis* in the project record.

Soil compaction in meadows in the Ansel Adams and John Muir Wildernesses was generally found to be greater in severity and extent in areas with a higher density of recent commercial pack stock or cattle grazing. Of all the meadows in the project area, about 1,120 acres, or 14%, are known to have at least slight compaction. Campsites, trails and other use areas contribute to compacted area, and will be discussed in a later section. Of the 177 meadows evaluated for compaction, 54% have little or no soil compaction, 21% have low levels, 18% have moderate levels, and 7% have severe soil compaction. The percent of analyzed meadows with compaction in each Geographic Unit is shown in Figure 3.10.

Compaction was measured qualitatively using standard soil quality methods. Soil pits were dug in meadows in areas where grazers could access, and in areas that are not accessible to grazers, such as under shrubs or trees. The soil properties pertaining to compaction were then observed and rated based on the criteria described in Figure 3.10. For an explanation of the rating system and results for all meadow rapid evaluation criteria for soil, water, vegetation and wildlife current conditions, see the Study Plan in the project record.

Figure 3.10 Soil compaction in meadows, by geographic unit



Note: the following describes the criteria used for no, slight, moderate, and severe compaction:

None: No compaction

Slight Compaction: Weakly restrictive to water movement, root penetration and plant vigor, or more severe compaction over less than 5% of the meadow.

Moderate Compaction: Moderately restricts water movement, and root penetration. May be limited evidence of platy structure and mashed roots, "J" curved roots at the compacted layer may be present. Plant vigor appears to be affected. Compaction is not alleviated over the winter rest period.

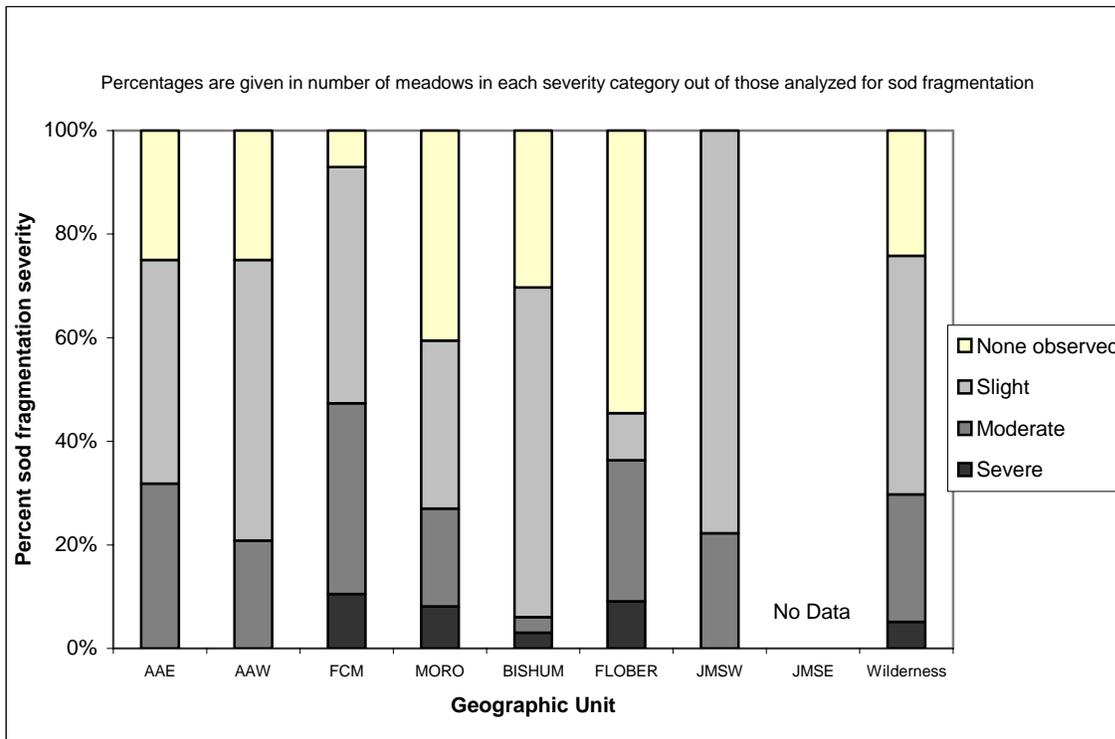
Severe Compaction: Greatly restricts water movement, root penetration. Evidence of platy structure and mashed roots. A "J" curve root at the compacted layer is common. May be evidence of water runoff. Plant vigor and cover is affected.

AAE = Ansel Adams East, AAW = Ansel Adams West, FCM = Fish Creek/Convict/McGee, MORO = Mono/Rock Creek, BISHUM = Bishop/Humphreys, FLOBER = Florence/Bear, JMSW = John Muir Southwest, JMSE = John Muir Southeast, AA/JM = Ansel Adams/John Muir

Sod fragmentation breaks up the continuity of the vegetative cover and increases the potential for erosion and soil loss. Sod fragmentation of meadows has a different spatial pattern than soil compaction. Soils that are easily compacted are not always easily fragmented. Of the 1513 meadows known to exist in the AA/JM Wilderness, 215 were evaluated for sod fragmentation. Over 75% of evaluated meadows in the AA/JM Wildernesses have some sod fragmentation. Slight sod fragmentation occurred in 46% of evaluated meadows, 25% had moderate sod fragmentation, and 5% had severe sod fragmentation (Figure 3.11).

The Fish Creek/Convict/McGee and John Muir Southwest Geographic Units have the highest percentage of meadows with at least slight sod fragmentation, at over 90% of meadows. However, the Florence/Bear, Mono Creek/Rock Creek, and Fish Creek/Convict/McGee Geographic Units have the highest proportion of meadows with severe sod fragmentation.

Figure 3.11 Sod fragmentation severity in meadows, by geographic unit



Note the following describes none, slight, moderate, or severe sod fragmentation:

None: No sod fragmentation observed, or trace amounts of fragmentation

Slight: Fragmentation up to 5% of the sod surface

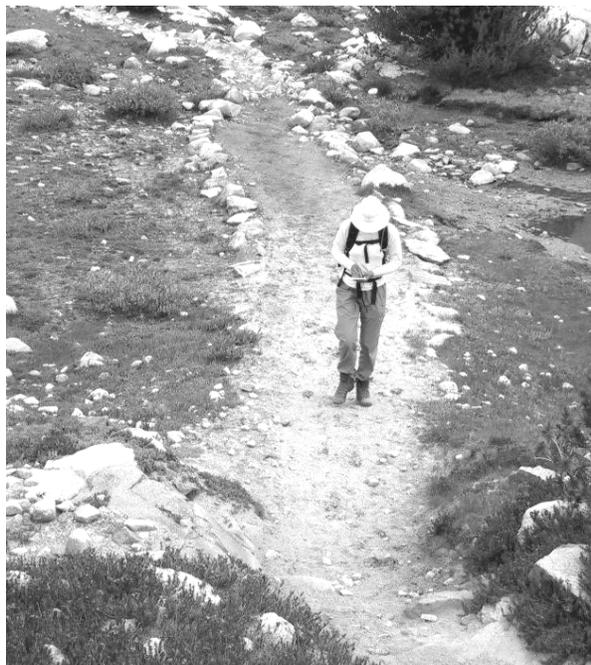
Moderate: Fragmentation from 6-15% of the sod surface

Severe: Fragmentation of over 15% of the sod surface

Trails

All trails compact soil within the trail tread, and most trails are incised below the surrounding landscape by at least a few inches. These impacts are considered to be a normal consequence of any recreational use in the wilderness, and are not considered to be altering soil or hydrologic processes unless effects are beyond minimal effects within the tread.

There are trail segments that have negative impacts on water and soil resources locally throughout the AA/JM Wildernesses, usually in localized areas and having localized effects. Deeply incised trails are diverting overland flow into the trail, causing it to act as a



Piute Pass Trail, near Loch Leven. This portion of the trail has normal trail depth and width for a high use trail, and is not causing soil or water resource degradation.

channel and further incise. In a few locations, trails are lowering the water table adjacent to the trail. Deeply incised and poorly placed trails have diverted water from streams and springs, in some cases dewatering the stream and altering its aquatic and riparian habitat. Almost 60% of trails are in Riparian Conservation Areas and, therefore, have the potential to affect water quality, flow and stream morphology. Trails can also become too wet or incised for comfortable travel, and multi-trailing can result as users walk or ride off-trail to bypass the difficult trail segment.

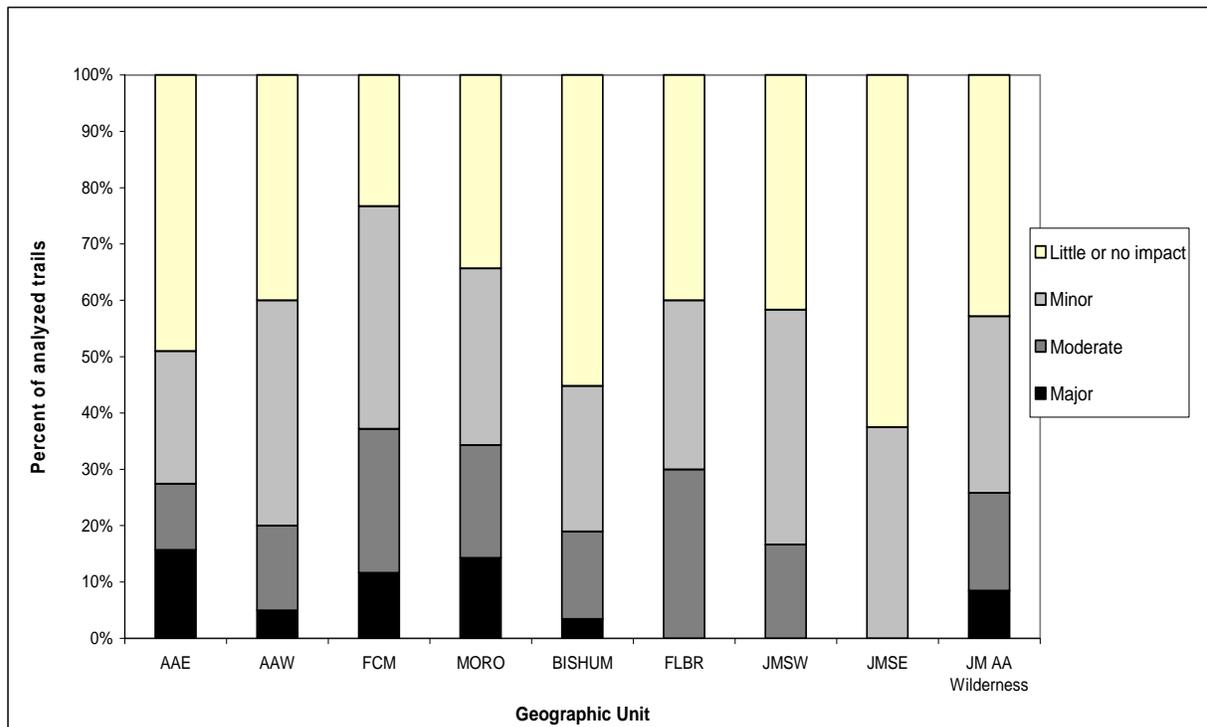


Pacific Crest Trail, south of Seldon Pass. Abandoned, impassable trail and newly developed trail. The old trail on the right captured water from the meadow and uptrail, causing the trail to incise and headcuts to propagate into meadow. The headcuts, shown on the right side of the photo caused loss of productive soil and likely locally lowered the meadow's water table.

Trails are present over a wide variety of geomorphic surfaces, terrains, and soil types. Areas with the greatest soil and hydrologic alteration are generally trail segments through meadows, adjacent to water bodies, on steep slopes or at stream crossings. While steep trails tend to erode and incise more easily, flat, wide open areas show more multi-trailing.

In the project area, 350 trails were evaluated for trail condition and effects on resources and 236 were analyzed for overall resource rating. Generally, resource impacts are site specific and do not include the entire trail. Of the 236 trails analyzed, 43% are causing little or no alteration to soil or hydrologic processes. Another 31% are causing minor alteration, 17% are causing moderate alteration, and 8% are causing major alteration of soil or hydrologic processes. Figure 3.12 shows the percent of analyzed trails in each Geographic Unit with each resource rating severity. The Ansel Adams East, Fish Creek/Convict/McGee, and Mono Creek/Rock Creek Geographic Units had the highest portion of analyzed trails causing severe resource degradation, while the others had few or no trails causing severe soil or water resource degradation.

Figure 3.12 Trails: water and soil resource alteration rating by geographic unit



Percent of analyzed trails with minor, moderate and severe impacts to resources, summarized by Geographic Unit and wilderness-wide. Resource ratings are based mainly on soil and water impacts. In the field, 236 trails were analyzed for their resource rating, and given a rating of 0-5, with 0 representing no resource impacts and 5 representing the most severe impacts. For this analysis, trails rated from 0-1 were considered to have little or no impacts, trails rated 2 were considered to have minor impacts, trails rated 3 were considered to have moderate impacts, and trails rated 4 or 5 were considered to have severe impacts.

The following describes minor, moderate, and major impact:

Minor: Headcuts, stream crossings, and water diversions confined to relatively small footprint. Generally stable with some slight risk of further degradation.

Moderate: Headcuts, incision, stream crossings, and water diversions may be somewhat unstable with some risk factors present, increasing the potential to become more serious, but not currently in a state of dynamic change. Soil or water resource effects occurring outside of the trail tread.

Major: trail incision, stream crossing widening, water diversions, or headcuts that are in a state of advanced instability with high risk to resources if not physically treated. Substantial risk factors exist that increase the instability and likely deterioration rate of the problem.

Campsites

At campsites, trampling causes loss of vegetation, abrasion or displacement of surface soil organic matter layers, and compaction of soils. Vegetation loss and soil compaction decrease water infiltration rate and can result in greater erosion and lower soil productivity. Some sites, especially those used regularly for overnight stock holding, we found to have a layer of loose, easily erodible soil on the surface, with a compacted layer below.

Campsites are expected to create bare soil and soil compaction that may persist from year to year (USDA Forest Service, 2001), and are a normal consequence of any camping. The effects become unacceptable when large volumes of soil are being lost or when eroded soil is entering surface water.

Many factors can affect how much change occurs on an individual campsite including the amount and frequency of use, type and behavior of the users, and the environmental conditions of the site itself. Campsites where pack stock are regularly held generally disturb a larger area than backpacker sites because additional area is used to tether animals (Cole, 1990).

Campfires cause significant changes in soil organic matter and chemistry but are limited in total surface area. Soil productivity is significantly lower in campfire areas and their presence or visibility will persist for many years. Removal of organic material used for firewood results in the removal of downed woody material that would otherwise serve as protective soil cover, recycle nutrients to the soil, and provide habitat for soil organisms and wildlife.

3.2.2 Hydrology

High quality water and aquatic habitat is necessary for ecosystems and human users within the AA/JM Wildernesses, and for developed areas downstream. East of the Sierra crest, water flows into the Mono Lake and Owens River drainages, which together provide over 50% of the water for the city of Los Angeles (Los Angeles Department of Water and Power, 2004). This water is used for domestic and commercial purposes in eastern sierra communities. West of the Sierra crest water flows into the San Joaquin and Kings River Drainages. These rivers are integral to California's Central Valley, with uses including agriculture, drinking water, hydropower and groundwater recharge (Central Valley Regional Water Quality Control Board, 1995).

Hydrologic response to snowmelt and rainfall tends to be rapid due to a large proportion of bedrock. Average total precipitation varies from 15 to 60 inches per year, with greater precipitation on the west side, and generally increases with elevation. The elevational increase in precipitation is more gradual on the west side than the east side of the Sierra Nevada crest. Beyond normal erosion processes associated with snowmelt and rainfall runoff, avalanches and rock slides occur in the steep terrain. These events can have major effects to hydrologic and geomorphic processes, but occur relatively rarely in any one area.

Stream geomorphology ranges from steep, straight bedrock channels in headwaters to meandering rivers in low gradient meadows. Many of the streams are either bedrock or boulder controlled, and are not vulnerable to alteration by human activities. Others, especially those in low gradient meadow areas, have channels dominated by fine sediment, and are susceptible to human alteration. Sediment loads in streams are variable, depending on the sediment source material, small-scale differences between snowmelt and rainfall patterns, and relative position in the watershed.

Most of the project area is underlain by granodiorite, a granitic rock type. Weathering of this bedrock typically creates a mantle of cobble to sand-size material over time. Because most of the project area was glaciated in the past 15,000 years, this weathered material is relatively thin compared to an unglaciated area. Consequently, sediment loading is generally low.

In the headwater streams, channels are normally boulder controlled and retain very little fine sediment. Where the headwaters run through meadow areas, the channel often has boulders along some of the channel length, with fine sediment build-up in other segments.

Fine sediment loads are higher in some areas, such as in the Margaret Lakes Basin, even though the source material is glaciated granodiorite, as it is in most of the project area. The difference is likely due to climate, perhaps with faster snowmelt causing higher velocity flows more capable

of moving sediment. In other areas, such as the Convict and McGee Analysis Units, sediment loads are higher than other areas because the source material is highly erosive metasedimentary rock.

Almost all major streams and rivers originating in the AA/JM wildernesses are impounded and diverted outside the wilderness near the wilderness boundary. Rush Creek, in the Ansel Adams East Geographic Unit, is impounded inside of the wilderness. These dams fundamentally alter the aquatic and riparian habitat, hydrology, water quality, and stream geomorphology downstream of the dams. While mining, recent and historical stock grazing, and recreational use have caused local hydrologic alteration within the wilderness areas, the effects are negligible downstream of the dams because the overriding effects of the dam.

Current Hydrologic Condition

Pack stock use is concentrated in and near riparian areas. Riparian Conservation Areas (RCAs)¹⁰ encompass only about 40% of the project area. However, 75% of requested commercial pack station campsites, 60% of system and user trail lengths, and almost all grazing areas are within RCAs.

Water Quality

There is very little quantitative water quality information available for the Ansel Adams and John Muir Wildernesses. Due to its remoteness and the few studies completed, water quality is assumed to be excellent except in very local areas¹¹ with very high, concentrated recreational use, where fecal matter and sediment may enter lakes and streams.

The little water quality data that exist within the AA/JM Wildernesses indicate that common human pathogens, such as *Giardia*, *Cryptosporidium* and other non-pathogenic indicators of fecal contamination, such as fecal coliform, exist in varying concentrations. However, no studies have collected water quality data at the same place more than twice throughout the year, or in subsequent years, and therefore the results cannot be used to determine general water quality or significant effects of recreational use on water quality.

Suk et al. (1987) found that out of fifteen 100 gallon water samples taken in the John Muir Wilderness in 1984, seven contained at least one *giardia* cyst. The highest concentration of cysts was 14 in 100 gallons of water. Although theoretically only one cyst is needed for human infection, the few studies completed on the topic suggest that about 10 *giardia* cysts at one time are required to be consumed for human contraction of giardiasis (Randtorff, 1954; Atwill, 1995). Because people tend to drink only a few liters of water per day, 14 cysts in 100 gallons of water may not be a large enough concentration to cause human illness. Suk et al. (1987) took two one-time water samples in areas used moderately to heavily by commercial pack stock. One, in North Fork Bishop Creek, adjacent to the heavily used Piute Pass Trail, found no *giardia* cysts. The other, at Long Lake on the South Fork of Bishop Creek, found 14 *giardia* cysts in 100 gallons of water. Gable Creek, which has had little to no pack stock use in the past, was found to have 6 cysts per 100 gallons. Other samples in high and low use areas within the John Muir Wilderness were found to have 0-5 cysts per sample.

¹⁰ Riparian Conservation Areas are areas adjacent to water bodies and wetlands and have specific standards and guidelines established in the Sierra Nevada Forest Plan Amendment.

¹¹ Here, “very local” is on the scale of tens of square feet.

Derlet et al. (2004) determined total coliform levels in 37 water quality samples at 31 sites in Sierra Nevada wilderness areas. Three of those sites were within the John Muir Wilderness. Two sites were in the Cottonwood Lakes area in the John Muir Southeast GU, where there is moderate commercial pack stock use (20 trips in 2003, when the water quality samples were taken) and heavy hiker use. The other site was on Taboose Creek, which receives light commercial pack stock use (one trip in 2003) and light to moderate hiker use. The two samples in the Cottonwood Lakes area had no coliform bacteria found, while the site on Taboose Creek had 150 colony forming units (CU)/100 ml. The water quality objectives in the Lahontan Basin Plan (LRWQCB, 1994) is less than 20 CU/100 ml of fecal coliform for a one-time sample. Derlet et al. did not determine fecal coliform levels, only total coliform, and therefore it is unknown whether the fecal coliform levels met standards. Out of the 37 water quality samples taken in Sierra Nevada Wilderness Areas in Derlet et al. (2004), 15 had levels over 20 CU/100 ml. Derlet et al. (2004) found that all samples taken below meadows used for sheep or cattle grazing contained coliform. However, there was no sampling downstream of meadows known to be grazed exclusively by pack stock (Robert Derlet, personal communication, July 11, 2005). The presence of coliform could be a result of contamination by humans, pack animals, cattle or sheep grazing, or from natural sources.

Studies outside of the AA/JM Wildernesses but in other Sierra Nevada wilderness areas, have found that *giardia* and coliform levels are generally higher in areas heavily used by backpackers, pack stock, or grazing livestock, but are sometimes high in areas with light use and sometimes low in areas with heavy use (Derlet and Carlson, 2004; Suk et al., 1987).

In streams originating in the Wilderness, water quality outside of the wilderness, at the site of use by municipal water districts is known to be good. According to Mammoth Community Water District (MCWD), naturally occurring arsenic is the only pollutant of concern for groundwater and surface water supplies originating on the Inyo N.F. (MCWD, 2002). The Los Angeles Department of Water and Power (LADWP) must treat their water obtained from the Owens Valley to reduce sediment levels, but they assume that most of that sediment originated from dirt canals in their conveyance system, far downstream of wilderness (LADWP, 2004). Total coliform bacteria levels always met standards of less than 5% of monthly samples positive for coliform in 2004.

There have been few studies about nutrients in Sierra Nevada lakes, and no studies were found that discussed terrestrial nutrient inputs. A few studies suggest that algae and phosphorous levels have increased in some Sierra Nevada lakes over a wide area in the past two decades (Sickman et al., 2003; Schindler et al., 2001), but these studies cite introduced fish and atmospheric deposition as causes. Sickman et al. (2003) suggested that the widespread nature of eutrophication suggests that nutrients entering lakes are airborne. Nutrient contributions from recreational activities are unknown, but could occur from human waste, soap used for washing, sunscreen washed off in lakes, or packstock or cattle manure.

Quantitative water quality data was not collected as part of this project, partially because beneficial uses, such as swimming, municipal drinking water, and fish spawning habitat, were not observed to be affected by water quality. Downstream water quality at the areas of municipal use is assumed to be an indication of wilderness water quality, because the water originates in the wilderness. However, municipal water quality is not completely indicative of wilderness water quality. Some wilderness values and beneficial uses within the wilderness, such as wildlife habitat or fish spawning habitat, may be more sensitive to water quality than municipal uses

downstream. Further, any pollutants becomes diluted downstream. Because it is assumed that the water quality currently meets or exceeds water quality standards from the Lahontan Water Quality Control Plan (standards can be found in Water Quality Standards document in the project record), the water is subject to the “nondegradation objective” (LRWQCB, 1994). This object requires, “continued maintenance of existing high quality waters” that exceed quantitative standards, with no degradation. There is no indication that water quality has degraded due to recreational uses, according to the small amount of quantitative data available. There are not enough quantitative data to determine whether that assumption is correct.

Although overall water quality is likely good, according to studies cited above, historical and recent mining, water diversions, livestock grazing and recreational use have altered hydrologic processes in some local areas of the Ansel Adams and John Muir Wildernesses. These activities, focused mainly in meadows, adjacent to lakes, and along trails, have altered surface water flow patterns, stream geomorphology, sediment loads, groundwater hydrologic connectivity, and riparian vegetation composition. Aquatic habitats sensitive to the above impacts include lakes, streams, wet meadows, and fen habitats and their associated plant and animal assemblages.

For this analysis, the affected environment by watershed as well as geographic units and analysis units will be discussed. The scale of watersheds discussed will be at the Hydrologic Unit Code (HUC) 5 scale, which are watersheds ranging in size from 50,000 to 250,000 acres. HUC 5 and HUC 6 watersheds contained within each Analysis Unit are listed in the project record. HUC 6 watersheds are smaller than HUC 5 watersheds, ranging from 10,000 to 50,000 acres.

The following features have the most consistent alterations of soil and water processes, and will be discussed separately:

- Meadows/Grazing: Compaction, bare soil, and stream alterations have an affect on soil hydrologic function, meadow hydrology, and vegetation composition
- Trails: Incised and/or multi-trailed system and user trails run through moist/wet meadow areas, springs, and stream crossings. In these environments, trails have altered surface flow patterns, dewatered small areas of meadows, and increased fine sedimentation into water bodies.
- Campsites: Large and/or multi campsites are often close to water bodies. The campsites are bare of vegetation and heavily compacted. Conditions lead to off-site erosion and sedimentation into adjacent water bodies.

Meadows

Less than 1.4% of the AA/JM Wilderness area is covered by meadows. Meadows are important for wildlife habitat, livestock and pack stock forage, water holding capacity, and for filtering sediments and protecting water quality. Because such a small fraction of the area is meadow, modification of meadows has a relatively greater impact than in other land types in the watershed.

Grazing impact assessments are focused on meadows because they are the areas most sensitive to grazing, with low gradient, alluvial areas that are sod covered and can be readily altered (Berg et al., 1996). Conversely, many of the stream reaches outside of meadows have bedrock or boulder channels that do not easily change, and uplands are often bedrock or sandy soil that cannot be compacted or chiseled.

Documentation suggests that extensive cattle and sheep grazing and pack stock use between the mid 1800s and the early 1900s denuded vegetation, compacted soils, and altered stream morphology within Sierra Nevada Wilderness areas (Muir, 1894; van Wagtendonk and Parsons, 1996). These changes likely contributed to headcuts, stream downcutting and lowering of the water table existing today in some of the meadows within the project area. These conditions are attributable to grazing because grazing animals chisel and compact soil, and remove the protective sod and productive topsoil. Stream incision and gully erosion can result. If gullies are deep enough, they can intercept and divert surface and groundwater. This can lower the water table and alter the meadow's hydrologic function as the meadow is effectively drained by the gully (Hagberg, 1995). Trails through meadows can become incised and have a similar dewatering effect on a meadow. While vegetation can recover relatively quickly on an overgrazed meadow with its water source unaltered, hydrologic function and geomorphic recovery can take decades longer (Kondolf, 1993).

Between 2001 and 2004, 227 meadows or meadow groups covering 3,000 acres were analyzed through a rapid assessment method. The analyzed meadows made up about 15%, by number, of the 1,513 existing meadows in the project area. By area, these 227 meadows cover 26% of the 11,700 meadow acres of the project area.

Meadow Hydrologic Function

The most comprehensive measure of meadow condition evaluated was meadow hydrologic function. This measure is required during range analysis under the Riparian Conservation Objectives (RCOs) from the SNFPA (see RCO Standards and Guidelines in the project record). Hydrologic function is defined as:

- The ability of the soil in a meadow to withstand intake, retain and transmit water (USDA Forest Service, 1995a),
- The ability of the meadow to dissipate energies associated with overland flow from adjacent sites and to improve flood water retention, and
- The ability of the meadow to maintain a water table capable of supporting its Potential Natural Vegetation (PNV). PNV is defined as the plant community that would become established if all successional sequences were completed without human interference under the present environmental and floristic conditions, including those created by man.

The degree of hydrologic function was determined by observation, including observation of soil compaction, vegetation cover and type, spring flow alteration, stream incision and headcutting, stream PFC rating, and evidence of lowered water table.

An example of a meadow with slight alteration of hydrologic function is Lower Spooky Meadow in the Rush Creek Analysis Unit. Here, extensive hoof punches of stream channels have caused headcuts that are advancing into the meadow, dewatering the portion of the meadow just adjacent to the headcut. An example of a meadow with moderate hydrologic function alteration is Hilgard Meadow in the Italy Analysis Unit, where the meadow's stream is incised, streambanks are sloughing, and soil is compacted, but the meadow still receives sufficient water to support its vegetation. An example of severe hydrologic function alteration is at Grassy Meadow in the Silver Divide Analysis Unit, where the stream is no longer able to access its floodplain due to incision and portions of the meadow appear to be drying out. The water table

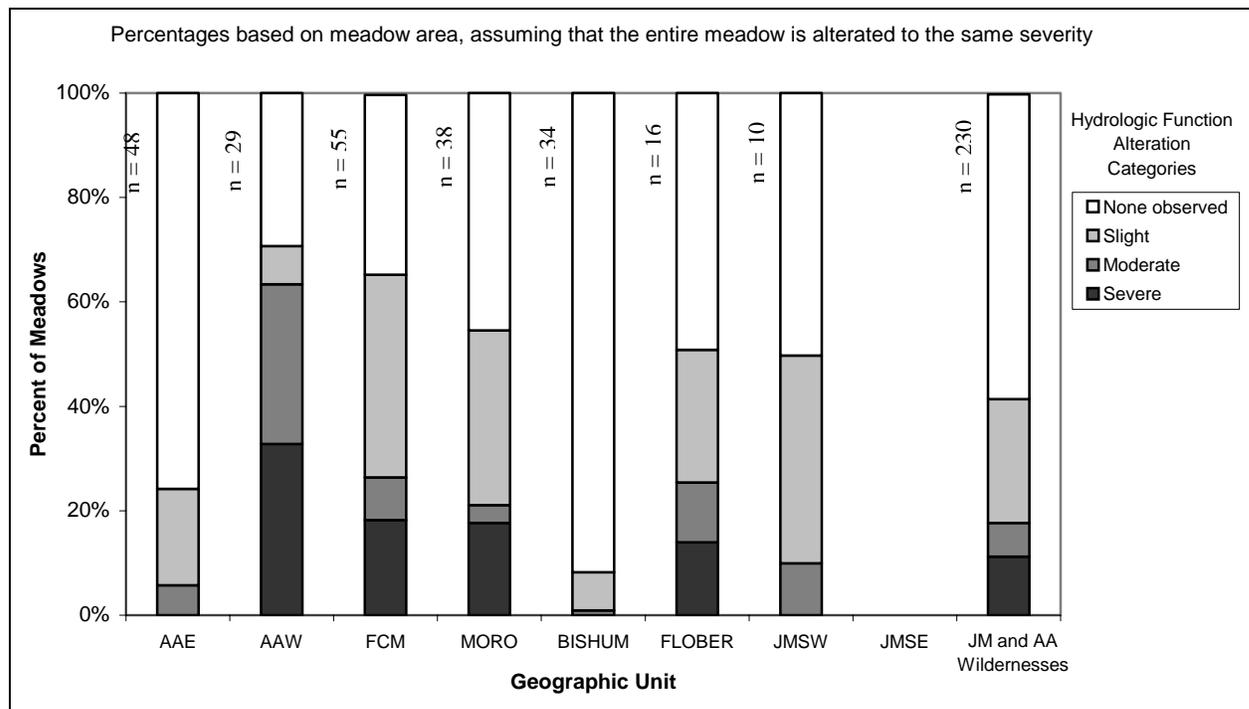
appears to be lowered to the point that the Potential Natural Vegetation of the meadow has been altered.



A headcut in Grassy Meadow. The headcut shows that surface flow is being diverted into this newly created tributary. The vegetation adjacent to the headcut appears to have been altered, suggesting that the headcut has altered vegetation composition and local hydrologic function. Features such as this headcut are also found in other locations in Grassy meadow. The stream in the upper left hand corner of the photo will be captured by the headcut if it continues to advance.

The degree of hydrologic function alteration for all 230 of the field visited meadows was determined. Figure 3.13 shows hydrologic function alteration results by Geographic Unit and wilderness-wide. Out of all the meadow area within the Ansel Adams and John Muir Wildernesses, about 11% (by area) has some known hydrologic function alteration, with 3% severe, 2% moderate, and 6% slight. Out of only the analyzed meadows, about 40% (by area) have some hydrologic function alteration, with 10% severe, 7% moderate, and 23% slight. A list of the individual meadows with hydrologic function alteration and their use, if known, is available in the project record.

Figure 3.13 Hydrologic function alteration of meadows by geographic unit



Note: The percent of meadows in each category is based on the percent out of all meadows visited in the field. It is assumed that if a meadow received a rating, the rating applied to the entire meadow. This was not always the case, but is an estimation for analysis purposes.

The following is a description of none, slight, moderate and severe hydrologic function:

None: No hydrologic function alteration

Slight: Some alteration of the stream channel or surface flow patterns, but water table levels are not altered and there is good recovery potential.

Moderate: Lowered water table, water source alteration, or altered stream functioning condition affecting meadow soil condition and vegetation. Potential to recover and therefore unaltered Potential Natural Vegetation.

Severe: Long-term alteration of Potential Natural Vegetation with a lowered water table or otherwise altered water source.

Meadows with severe and moderate hydrologic function alteration usually have a lowered water table, and do not meet current RCO standards (see project record for RCO standards).

The Ansel Adams West, Fish Creek/Convict/McGee, Mono Creek/Rock Creek, and Florence/Bear Geographic Units contained the highest percentage of meadows with at least slight hydrologic function alteration.

It is assumed that out of the meadows not analyzed in the field, a smaller percentage have altered hydrologic function than those that were visited. The IDT focused on meadows that were used or requested by commercial packers, and were more likely to have impacts from commercial pack stock grazing. The visited meadows were usually the larger meadows, and were more likely to have had production livestock (cattle and sheep) held in them during historical or recent times. The visited meadows were often along main trail corridors where hiker and private and commercial pack stock users normally travel. The visited meadows experience greater impacts from trails and campsites because of their proximity to trail corridors.

Alteration of meadow hydrologic function is not altering beneficial uses. Alteration of meadow hydrologic function has the potential to affect downstream beneficial uses. There is no evidence

that hydrologic function alteration of meadows in the AA and JM Wildernesses is at this time severe or extensive enough to alter beneficial uses outside of the Wilderness areas.

There is some correlation between recent cattle or pack stock grazing in meadows and hydrologic function alteration. Hydrologic function alteration is often a result of processes that take many years to occur and decades to heal. It is assumed that historical cattle, sheep and pack stock grazing occurred on almost all meadows in the project area, and impacts have accumulated over time.

Proper Functioning Condition of Streams

One component of meadow hydrologic function alteration is stream condition. A comprehensive evaluation of stream condition is Proper Functioning Condition (PFC). The USDA Forest Service, Bureau of Land Management and National Resource Conservation Service developed a PFC protocol (USDI, 1999; USDI, 1998) that was used for assessing stream condition in this project. The PFC protocol uses characteristics of streams to categorize the segment into one of five categories: Proper Functioning Condition (PFC); Functional at-risk with an upward trend (FAR upward); Functional at-risk with a non-apparent trend (FAR unknown); Functional at-risk with a downward trend (FAR downward); and Non-functional. Under the Wilderness Plan and the SNFPA RCOs, streams and other aquatic features should be, at a minimum, Proper Functioning Condition.

A stream that is functional at-risk or non-functional likely has at least slight adverse effects to beneficial uses. Beneficial uses that could be affected are cold freshwater habitat, wildlife habitat, spawning, reproduction and development, water quality enhancement, and flood peak attenuation/flood water storage. The effects include altered stream channel sediment loading, reduced riparian vegetation for wildlife use, altered stream geomorphology, and reduced ability for flood storage and groundwater storage.

PFC analyses were usually done on only one segment of a stream within a meadow, and are sometimes only indicative of a small portion of the stream. A PFC rating does not necessarily correlate with the condition of the overall meadow because it focuses only on the condition of the stream and the adjacent riparian area. Stream condition often correlates with meadow hydrologic function, but not always, as can be seen by a comparison between the results of hydrologic function and PFC evaluation in Figures 3.13 and 3.14.

Of the 230 meadows evaluated, PFC analysis was completed on the streams or ponds in 152 of them. Only one stream was found to be Non-functional during the original analysis. Subsequently, some members of the IDT returned to Martin's Meadow in the McGee AU in 2005, and rated the stream in the lower portion of the meadow to be non-functional. Of the streams where PFC analysis was completed, 59% are at PFC, 10% are FAR with an upward trend, 20% are FAR with a non-apparent trend, and 11% are FAR with a downward trend. Figure 3.14 shows the proportion of evaluated streams with each functional condition rating, by Geographic Unit and wilderness-wide.

Figure 3.14 Proper functioning condition analysis results by geographic unit

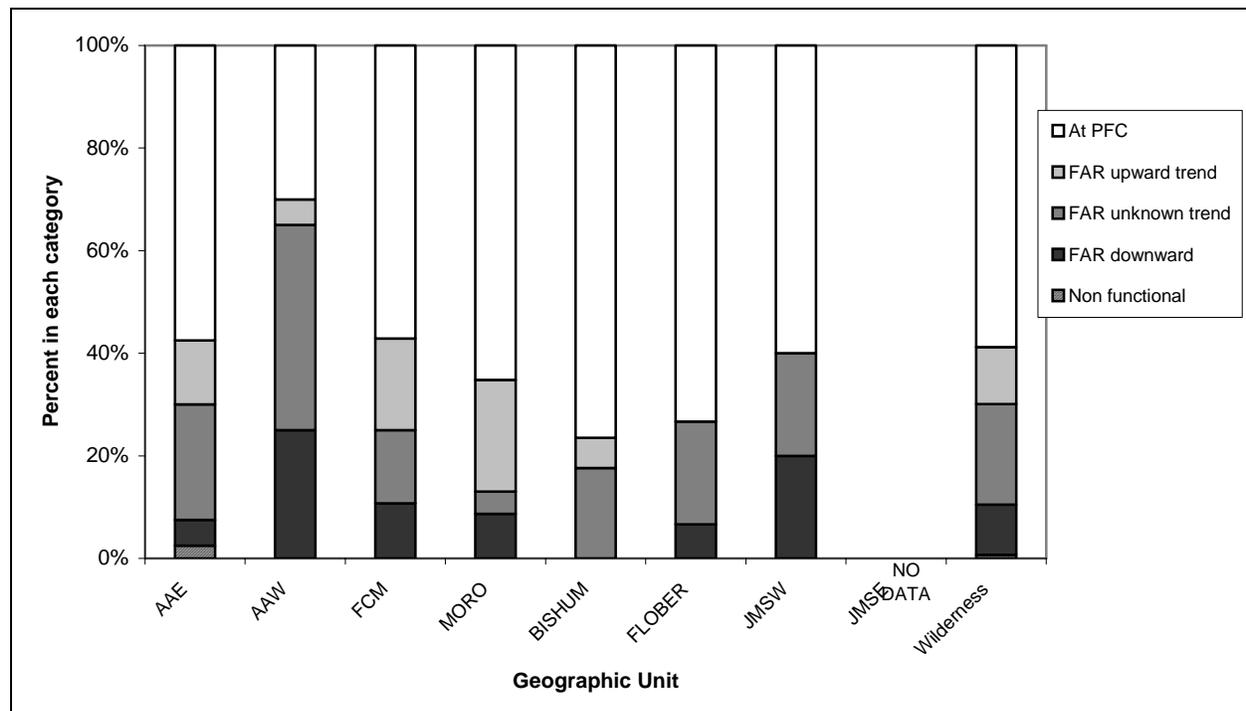


Figure 3.14 shows that the Ansel Adams West (AAWE) Geographic Unit has the highest percentage (75%) of stream reaches not at PFC. It is assumed that most of the stream impacts in Ansel Adams West have resulted from historical and recent cattle grazing and not commercial pack stock use because there is very little commercial pack stock use in the area and there has been recent cattle grazing.

Eric Berlow, PhD, Associate Research Scientist with the UC San Diego White Mountain Research Station in Bishop, California, completed statistical analysis of qualitative data collected by the IDT between 2001 and 2004. He found that there is a correlation between heavy reported commercial pack stock grazing and impacts to stream channels. There were 160 meadows where stream impacts were rated as none, minor, moderate or severe. In these meadows, it was calculated that the average reported commercial pack stock grazing was about 13 in meadows with no to minor stream impacts, and 46 in meadows with moderate to severe impacts. Further, 7 out of the 8 meadows with more than 120 average stock nights reported from 2001 to 2003 had moderate to severe impacts. These statistical analyses do not show causation, as no experiments or research has been done to show that the commercial pack stock grazing caused these stream impacts. However, there is statistically significant correlation between stock nights of commercial pack stock grazing and impacts to stream channels.

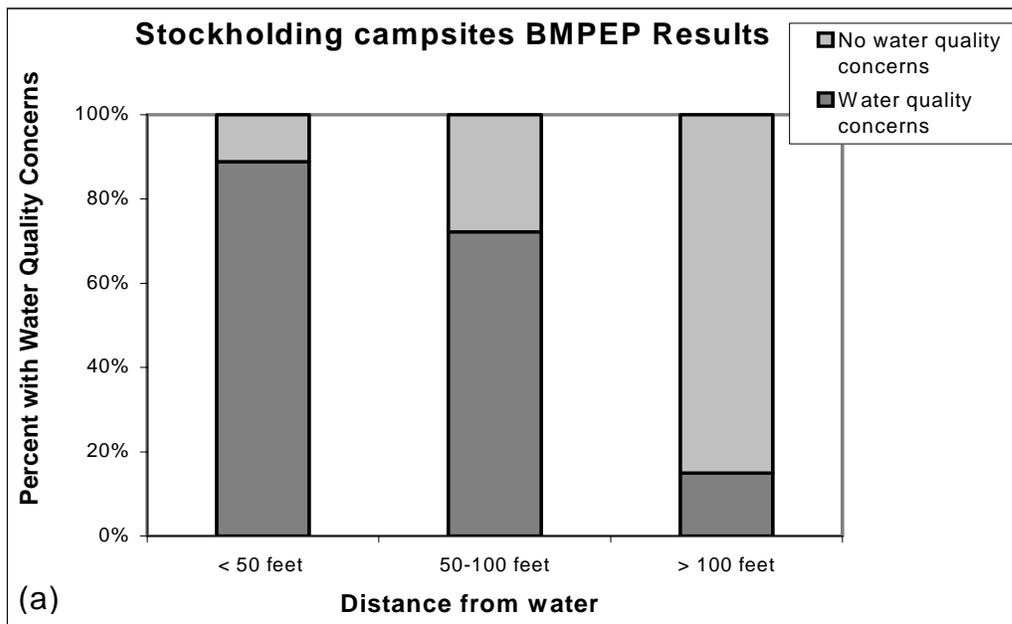
Campsites

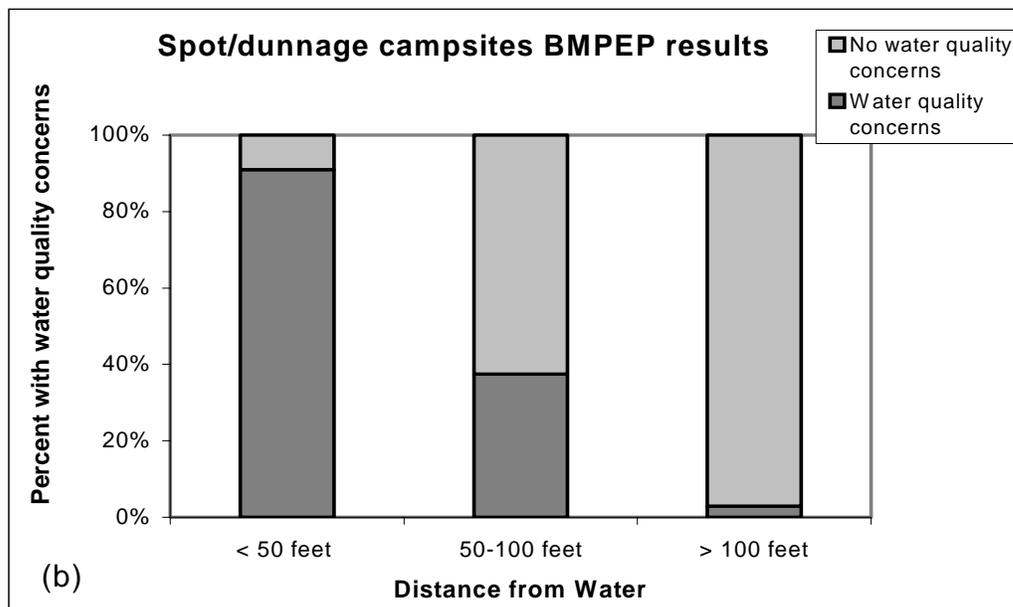
Campsites create an impervious surface of bare and compacted soil that increases runoff from the site. Campsites can erode and result in increased sedimentation into surface waters. Locally, manure and sediment is entering water from campsites, but it is uncertain whether local sedimentation is affecting the overall water quality of any lakes or streams.

Commercial packers identified approximately 1,617 campsites that they have used in the past or would like to use in the future, and of those, 163 sites were evaluated for water quality effects using the BMPEP protocol and other observations. The sites evaluated were all identified by commercial pack stock operators as sites they use or would like to use. However, some of the sites evaluated did not have any evidence of pack stock use. The Best Management Practice Evaluation Program (BMPEP) “Stock Facilities in Wilderness” protocol was used to evaluate the water quality at pack stock-related campsites (the BMPEP protocol is in the project record located in the Supervisor’s Office in Bishop, CA). BMPEPs document the distance from water and whether the site is contributing substances to water. Under the Wilderness Plan guidelines, all campsites should be located at least 100 feet from water if topography allows, and in no case should they be less than 50 feet from water. A summary of BMPEP campsite results by analysis units is available in the project record. For locations of all sites where BMPs were evaluated, see Maps of commercial pack-stock related campsites and results of BMP evaluations are in the project record.

Figure 3.15 displays the percent of sites with water quality concerns for stock holding and spot and dunnage campsites by the distance the site is from water. BMPEPs were not completed for non-stock related campsites as part of this project.

Figure 3.15 Percent of spot/dunnage and stock holding campsites with water quality concerns at different distances from water.





The four sites where stock use type is unknown are not shown in Figure 3.15. Of these sites that are less than 50 feet from water, 75% are contributing substances to water. Of the unknown type of sites 50-100 feet from water, roughly 60% are contributing substances to water, and of those over 100 feet from water, about 10% are contributing substances to water.

Most of the analyzed campsites within 50 feet of water, regardless of the site type, are contributing sediment and/or manure to surface water. Conversely, most of the analyzed sites over 100 feet from water are not contributing substances to surface water, regardless of site type. The few sites over 100 feet from water with water quality concerns usually were not contributing sediment to water themselves, but the sediment source was social trails associated with the sites. The difference between the water quality concerns of stock holding and spot/dunnage sites is in those sites 50-100 feet from water. In the stockholding sites, the majority (~70%) of sites 50-100 feet from water are causing substances to enter water, while in the spot/dunnage sites, the minority of sites (~35%) are causing substances to enter water. The difference is likely in the size of sites and the activities that occur at the sites. Stock holding campsites are usually larger than spot/dunnage sites because there are associated stock holding areas where pack strings are highlined. The larger sites have a larger area of easily erodible bare soil and therefore sediment is more available for transportation toward water. There is also more manure present at stock holding sites.

Although about 40% of all campsites in the wilderness are contributing sediment and/or manure into surface water, very few sites have enough volume of sediment or manure entering water to cause observable water quality degradation. Exceptions are large sites such as at Waterfall Camp in French Canyon, which comprises four acres of bare, loose soil, and Fish Camp in Mono Creek, where the large stockholding site is within 10 feet of water. There are no quantitative water quality data to determine the local or downstream water quality effects. Observations for sediment plumes leaving the site during rain, sediment deltas in lakes, and rills or other signs of erosion at the campsites suggest that sediment and manure volumes entering water are usually small.

There is little difference between the proportion of campsites causing sediment or manure to enter water in the different Geographic Units.

3.2.3 Air Quality

Air resources management in the Sierra Nevada is highly complex because the major sources of degradation are far from the summits of the Sierra ridgeline. The 1977 Clean Air Act amendments designated three air shed protection classes: I, II, and III. The AA/JM Wildernesses are Class I air sheds requiring the most stringent degree of protection. The majority of air quality degradation in these wildernesses is thought to occur from pollution and fires in the San Joaquin Valley and on the Western slope of the Sierra Nevada Mountains as the prevailing winds are from the west (University of California et al., 1996). However, there is very little information available about wilderness air quality.

Air quality impacts from recreational activities in the project area were not directly measured, but are estimated to be highly local and short in duration. It was observed that trails and campsites developed in volcanic ash were extremely dusty when dry, with both pack stock and hikers causing dust to enter the air. This affect is highly localized and of short duration as the dust quickly dissipates. Dust is a problem generally from late June through October. Although ash is present in most of the project area, soils are especially ashy in the Ansel Adams East Geographic area.

Geographic Unit Scale

Ansel Adams East

The northern portion of this geographic unit drains to the east of the Sierra Crest into Rush Creek and Mono Lake (Mono Lake West Shore and Mono Lake South Shore HUC 5 watersheds). The southern portion drains to the west into the Middle Fork of the San Joaquin River. A list of all analysis units in the project area and the corresponding watershed are available in the project record.

The Ansel Adams East Geographic Unit is the only unit within the AA and JM Wildernesses containing major dams within wilderness boundaries. Rush Creek is fundamentally altered at and below Waugh Lake Reservoir. Upstream from the dams, however, the eastern portion of the Ansel Adams East Geographic Unit is generally in good hydrologic condition.

The portion of the Ansel Adams East Geographic Unit that drains into the San Joaquin River is in poorer hydrologic condition than the north portion of the unit, although effects are localized. It contains some of the most severe and widespread trail impacts. Trails and campsites are locally altering flow patterns, causing sedimentation into water bodies, and altering riparian habitat. There is a high density of social and user trails in many stream corridors, causing loss of riparian vegetation and diversion of surface flow.

Ansel Adams East is the geographic unit with the highest proportion of analyzed trails causing severe soil or hydrologic process alteration. Generally, only portions of the trail are in degraded conditions.

Meadows

The Ansel Adams East Geographic Unit has about 140 meadows covering about 1,100 acres. These are almost all moist to wet meadows that are likely also wetlands. Of these meadows, 50 (630 acres) were analyzed in the field. There are a low proportion of meadows with severe soil compaction, sod fragmentation, or hydrologic function alteration. However, a high percentage of meadow streams were found to be functional at-risk.

Of the 44 meadows analyzed for sod fragmentation, about 25% have little to none, 45% have slight, 30% have moderate, and 0% have severe sod fragmentation. About 75% of meadows evaluated for compaction were found to have little to no compaction, while 15%, 10%, and 0% were found to have slight, moderate, and severe compaction, respectively. Of the 50 meadows evaluated for hydrologic function, 4 have moderate hydrologic function alteration and 12 have slight alteration (see the Table 3.37, the *Geographic Unit Meadow Table*)

The results of PFC evaluations show that this unit has the second highest incidence of streams that are functional-at-risk, and one of two streams that were rated non-functional in the project area (Figure 3.13). Therefore, it is assumed that while streams in this area have been impacted, the meadows adjacent to those streams are more resistant to hydrologic function alteration.

Trails

Ansel Adams East is the geographic unit with the highest proportion of analyzed trails causing severe soil or hydrologic process alteration. Of the 51 trails surveyed, 16% have severe resource impacts, 12% have moderate resource impacts, and 24% have slight resource impacts (see Table 3.17. for a list of trails known to have resource impacts). This geographic unit has soils with a layer of pumice or volcanic ash, which are highly susceptible to sheet, rill and gully erosion because of their low cohesive strength. This is especially problematic on moderately sloping to steep slopes. Generally, only portions of the trail are in degraded conditions. Many trails in this geographic unit have risk factors such as steep (>25%) slopes, highly erosive soils and have proximity and connectivity to riparian vegetation and water bodies.



A user trail crossing a stream at Superior Lake, in the King Creek Analysis Unit. There are three different headcut trails shown in the photo, each a slightly different path for campsite access.

Table 3.17 Trails within Ansel Adams East GU causing moderate to severe overall impacts to soil and water resources. A total of 51 trails were surveyed in the field, and these 13 caused at least moderate impacts.

Trail Name ST = system trail UT = user trail	Analysis Unit	Resource Rating	Specific soil/water concern (n/a indicates unknown values)						Risk Factors	
		1-5 (5 = Most severe impact)	Trail incision/ headcuts	Off-trail erosion	Multi-trailing	Sedimentation into water	Stream flow interception	Meadow hydrologic alteration	Steep Slopes	Proximity to water
Altha Lake ST (JMT – Laura Lk. only)	Thousand Island	4	Mod	n/a	n/a	Slight	Mod	Slight	Yes	Yes
Garnet to Emerald ST/UT	Thousand Island	4	Mod	Mod	Severe	Mo.	Severe	n/a	Yes	Yes
West side Thousand Island Lake UT	Thousand Island	4	Severe	Mod	n/a	n/a	n/a	n/a	No	Yes
Garnet grazing access UT	Thousand Island	4	Severe	n/a	Severe	Slight	n/a	Slight	Yes	Yes
Altha Lake from Garnet UT	Thousand Island	3	Severe	Slight	Mod	Slight	Slight	n/a	Yes	n/a
Thousand Island Spur ST	Thousand Island	3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ediza-Iceberg ST	Shadow-Ediza	5	Severe	Mod	Severe	Severe	Slight	Mod	No	Yes
Ediza Meadow UT	Shadow-Ediza	4	Severe	n/a	Severe	n/a	Mod	Slight	Yes	Yes
Iceberg to Cecile ST	Shadow-Ediza	3	n/a	n/a	Mod	n/a	Slight	n/a	Yes	Yes
Ediza Camps UTs	Shadow-Ediza	n/a	Mod	n/a	Mod	Slight	Slight	Slight	Yes	No
Emily Lake ST	Minaret	4	Mod	Mod	n/a	Slight	n/a	Slight	Yes	No
Holcomb Lake ST	King Creek	n/a	Mod	n/a	Mod	n/a	n/a	n/a	No	No

Campsites

The Ansel Adams East geographic area has a similar percentage of stock holding or spot/dunnage campsites causing water quality concerns as other geographic units (about 40%). A table showing summarized BMPEP results for all analysis units in each Geographic Unit is available in the project record.

Many pack stock related and non-packstock related campsites in Ansel Adams East are too close to water, and there is an especially high density of sites at Ediza Lake. Of the 18 stock holding or spot/dunnage sites surveyed for BMP compliance, 12 are within 100 feet of water and 3 are within 50 feet of water. One stockholding campsite, near the junction of Shadow Creek and Nydiver Creek (Shadow-Ediza AU), is notable for the degree of erosion and subsequent sedimentation from the site. The site has a stockholding area 30 feet from a stream and does not meet Best Management Practices (USDA Forest Service, 2001).

In the King Creek AU, three packstock-related campsites were evaluated for BMP compliance and all three are contributing sediment into water bodies, and are less than 100 feet from water.

At Superior Lake, a campsite on the northwest side of the lake is accessed by a trail with an incised and widened stream crossing that has the potential to capture stream flow. The site itself is not contributing to water quality or soil degradation.

Ansel Adams West

The entire Ansel Adams West Geographic Unit is within the San Joaquin River Watershed, with about 90% of the unit within two HUC 5 watersheds: the northern portion is in the San Joaquin River/Granite Creek Watershed and the southern portion is in the Lower South Fork San Joaquin River Watershed. These two watersheds are the only watersheds with a substantial area covered by the Ansel Adams West Geographic Unit. The rest of the unit is within the Mono Creek, Upper South Fork San Joaquin River, Mammoth Pool Reservoir, and Chiquito Creek HUC 5 watersheds. These watersheds contain such a small segment of the geographic unit that the overall watershed conditions cannot be attributed to geographic unit data.

This analysis unit has the most severe and widespread meadow soil and hydrology impacts of all geographic units, but has relatively few observed severe trail or campsite impacts.

Meadows/Wetlands

Ansel Adams West contains about 280 meadows covering about 1,600 acres. All of these are moist to wet meadows that are assumed to be at least partly wetland. Of those meadows, 25 (230 acres) were visited in the field to determine condition and suitability.

This geographic unit is distinguished by its extent of meadow compaction and hydrologic function alteration (Figure 3.13). About 30% of the analyzed meadows show severe hydrologic function alteration and about 30% show moderate hydrologic function alteration. Ansel Adams West also has the highest proportion of analyzed stream segments found to be functional at-risk and the highest proportion of meadows with severe soil compaction (see Figures 3.10 and 3.14 and Table 3.37, the *Geographic Unit Meadow Table*).

While most of the meadows visited in the northwestern portion had hydrologic function alteration, those meadows in the northeastern portion of the unit (Cargyle and Lake Catherine AUs) had very few impacts observed.

Moderate and severe hydrologic function alteration assumed to have some contribution from commercial pack stock was only found at meadows surrounding Sadler Lake and the meadow above Sadler Lake, between Sadler and McClure. The other 10 evaluated meadows with moderate or severe hydrologic function alteration did not show recent pack stock impacts, and it is assumed that most of the impacts are due to cattle grazing that continued in this area until the mid 1990s. The meadows near and above Sadler Lake also likely experienced cattle grazing until the mid-1990s, but continued pack stock use is likely prolonging recovery and causing new streambank trampling and chiseling impacts.

Although this unit has the highest proportion of hydrologic function alteration, the degree of current cumulative watershed impacts in the watersheds appear to be small. The meadows are spread over many streams, and those with severe hydrologic function alteration are generally not all lined up on one stream segment. Therefore, the impacts of meadow hydrologic function alteration may be buffered by areas between the meadows, and there is little evidence that meadow impacts have caused cumulative impacts to lower portions of the watershed.

In the Lillian and Cora AUs, three out of the four meadows analyzed have severe hydrologic function alteration, and the other has slight alteration. These AUs have the highest percent of meadows with severe hydrologic function alteration in the Ansel Adams West Geographic Unit.

Trails

Of the 19 trails analyzed for resource rating in Ansel Adams West, none were observed to be causing severe soil or hydrologic alteration. However, 16% were observed to have moderate impacts and 42% were observed to have minor impacts. Table 3.18 shows trails (system/user) that have a resource rating of moderate or severe and their specific soil/water concerns.

Table 3.18. Trails within Ansel Adams West GU causing moderate to severe overall impacts to soil and water resources. A total of 19 trails were surveyed in the field, and these 3 caused at least moderate impacts.

Trail Name ST = system trail UT = user trail	Analysis Unit	Resource Rating	Specific soil/water concern (n/a indicates unknown values)						Risk Factors	
		1-5 (5 = Most severe impact)	Trail incision/headcuts	Off-trail erosion	Multi-trailing	Sedimentation into water	Stream flow interception	Trail incision/headcuts	Steep Slopes	Proximity to water
Anne Lake ST	Triple Divide	3	Mod	n/a	n/a	n/a	n/a	Slight	Yes	No
McClure Lake ST	Sadler	3+	Mod	n/a	Mod	n/a	n/a	Slight	Yes	No
Timber Creek ST	Sadler	3+	Mod	n/a	Mod	n/a	Slight	n/a	Yes	Yes

Campsites

The Ansel Adams West geographic area has a similar but slightly lower proportion of analyzed stock campsites with water quality concerns than the other geographic units. About 30% of the analyzed sites were contributing substances to water (see summaries of BMPEP Protocol Campsite Results Table, available in the project record.). Three campsites are known to be out of compliance with wilderness plan requirements and RCOs, two in the Sadler and one in the Triple Divide AU.

In the Triple Divide AU, two stock related campsites were evaluated for BMP compliance and both were contributing sediment to surface water. A spot/dunnage site on the southeast shore of Rutherford Lake in the Triple Divide AU is within 25 feet of the lake and slanted toward the lake, with increased sedimentation observed in the lake below the site. The site could be contained to prevent future sedimentation.

Of the four campsites analyzed for compliance with BMPs in the Sadler AU, one is contributing sediment to water. A stock holding site on the south side of Sadler Lake is adjacent to an ephemeral stream, and small drainage ditches have been dug to remove water from the campsite and empty the drainage into the ephemeral stream. The ditches and the site itself contribute sediment directly to the ephemeral stream, and the stream was slightly incised, possibly due either to campsite impacts or grazing on the adjacent meadow. There is no room to contain the site in its current location to prevent sedimentation.

Fish Creek/Convict/McGee

The Fish Creek/Convict/McGee Geographic Unit drains partially to the San Joaquin River on the west side of the crest, and partially into the Owens River on the east side of the crest. Its western portion (Fish Creek) is entirely within the Fish Creek HUC5 watershed, and covers over 90% of that watershed. The portion of the Geographic Unit that drains to the East (the Convict/McGee portion) is within the Upper Owens River Watershed. The unit covers about 10% of the watershed, but in the headwaters. The conditions in the Convict/McGee area can be assumed to have some bearing on overall watershed condition.

The Fish Creek/Convict/McGee Geographic Unit has some of the most widespread hydrologic and soil alteration of all units, second only to Ansel Adams West. However, most effects are still local. The alterations are mainly due to trail and meadow impacts. The most heavily impacted AUs are in the Fish Creek area of the unit: the Upper Fish Creek, Silver Divide, Cascade Valley, and Purple Bench AUs. The Convict, McGee, Margaret and Crater Creek portions of the geographic unit do not have extensive or severe hydrologic impacts. The Cascade AU is discussed below to give an idea of the localized conditions in the geographic unit.

In the Cascade Valley AU, Fish Creek is incised throughout Cascade Valley in the segments that are not bedrock. According to historical accounts (Michael Morse, Forest Service, personal communication, 2004), the stream incised in 1982 during a very heavy hurricane-induced rainstorm. It is unknown whether meadow or trail impacts adjacent to the stream or upstream made any contribution to Fish Creek incision, or whether it was a natural process due to high flows and previous drought conditions that reduced vegetative cover. Its current incised state makes it less able to withstand high flows without further incision and widening. The creek continues to widen, and it is possible, although not verifiable, that meadow conditions contribute to lack of recovery. Meadow conditions could contribute to lack of recovery because the compacted surfaces with reduced vegetative cover reduce infiltration rates. Rainfall and snowmelt therefore runs off on the meadow surface at a higher velocity and at greater volumes than under natural conditions. The high flows enter streams and are transported downstream at higher velocities and higher discharge more capable of eroding stream banks. This process has contributed to incision of streams in Grassy and Jackson Meadows, but it is unknown whether it has contributed to incision of Fish Creek in Cascade Valley downstream.

The storm in September 1982 that resulted in Fish Creek downcutting created the second largest flow in recorded history (since 1922) in the San Joaquin River, just downstream of its confluence with Fish Creek (at the Miller's Crossing stream gauge). In December 1955, a larger flow was recorded, which did not incise Fish Creek. It is impossible to determine the combination of conditions required for incision, and whether human causes contributed. However, it is likely that there was some human contribution. Gully erosion may be triggered by any, "changes in the watershed or climate which result in more flow, less sediment, reduced vegetation cover, a downstream base-level change, and increased valley floor slope, or a change in subsurface process," (Hagberg, 1995). Both climate and grazing impacts can result in more flow and reduced vegetation cover, and therefore could contribute to stream incision. Many researchers have correlated gully erosion and stream incision with grazing impacts (Hagberg, 1995; Woods, 1975; Warren et al., 1986), although there remains uncertainty about the exact conditions and mechanisms that lead to gully erosion.

The Convict and McGee Analysis Units generally have good hydrologic and soil condition, although a few trails and meadows have severe erosion or other soil or water resource impacts. Much of the analysis unit, is highly erosive with very little soil development, and tends to have landslides and rock slides during heavy rainfall and snowmelt. The natural erosivity makes the area vulnerable to human uses. Although the factors that make the McGee and Convict areas erosive are partially natural, human uses combined with severe weather often trigger erosion. For example, in 2003, a local storm dropped very heavy rains within the McGee Creek watershed. During this storm, some meadows and trails with existing slight erosion or nickpoints rapidly eroded, causing large volumes of soil loss and sedimentation onto meadows and into streams. There were also natural landslides and stream migration unrelated to human uses.

Meadows

The Fish/Convict/McGee GU contains 141 meadows (assumed to be wetlands) covering about 1,100 acres. Fifty-four of those meadows (560 acres) were visited in the field.

Of the analyzed meadows in this geographic unit, 18% (by area) have severe hydrologic function alteration, and 8% have moderate hydrologic function alteration. Over 60% (by area) of analyzed meadows have some hydrologic impact (Figure 3.12). This unit has the highest percentage of meadows with at least slight compaction, and the second highest percentage of meadows with at least some sod fragmentation. The results of PFC evaluations show that this unit has a similar proportion of meadow with streams that are functional at-risk to the Ansel Adams East and Mono/Rock Creek Geographic Units.

Table 3.37, the *Geographic Unit Meadow Table* summarizes resource conditions of the meadows in this GU. This table includes meadows used or identified for use by commercial pack stations. The area with the most use is in the Fish Creek Watershed, including the Cascade, Purple Bench, Silver Divide, and Upper Fish Creek Analysis Units. Almost 70% of the evaluated meadows in these analysis units have some hydrologic function alteration. Of particular concern in these four analysis units is that they comprise the entire headwaters of Fish Creek, and the large meadows are along Fish Creek's main tributaries.

The Cascade Valley Analysis Unit runs most of the length of Fish Creek, and contains the portions of Fish Creek that are incised. Much of Fish Creek that is not bedrock is incised up to six feet between Second Crossing and the Minnow Creek junction. There are few meadows along the creek, but they have severely altered hydrologic function due to a flood event that incised the creek, resulting in a lowered water table.

In the McGee AU, the narrow canyon in the McGee Creek drainage often constrains travel to the creek and meadow areas. Baldwin Meadow was historically used by stock supporting mining activity, and there is a large trail and constructed pond, with continued associated disturbances, such as severe erosion from the trail and sediment deposition covering about 1/3 of the pre-existing meadow. There are trampling and sediment deposition impacts to Second Meadow and Chute Meadow.

When the IDT visited Martin's Meadow in summer 2001, there were some moderate-sized headcuts on a stream through the meadow, and some raw banks. When the meadow was revisited after the 2003 storm, the headcuts had advanced tens of feet, and deepened by a few feet (see photo below). When revisited after heavy snowmelt runoff in July 2005, the headcuts had advanced and deepened measurably. Currently, the headcuts in the lower portion of Martin's

meadow are some of the largest and most rapidly advancing of any headcut known within the AA/JM Wildernesses. It is unknown what triggered the nickpoints and incision. The trigger is likely one or a combination of trails that crossed the creek at the point of headcutting, recent pack stock grazing, historical livestock grazing, and naturally occurring severe weather and erosive soils. Martin's meadow has erosive, sandy soils with little organic matter below six inches. Round Meadow, the next meadow downstream of Martin's, has been partially covered by sediment eroded from Martin's meadow since 2003.



Headcut in the unnamed stream in Martin's Meadow after the 2003 storm. When the IDT visited the site in 2001, the stream had a few raw banks, and was about one foot wide and one foot deep. The headcut shown in the middle/top portion of this photo is about three feet high.

Trails

This Geographic Unit has the third highest portions of analyzed trails that are causing soil and water resource impacts. Of the 43 analyzed trails, 12% are causing severe, 26% are causing moderate, and 40% are causing minor alteration of soil or hydrologic processes. Table 3.19 shows trails (system/user) that have a resource rating of moderate or severe and their specific soil/water impacts.

Table 3.19 Trails within Fish Creek/Convict/McGee GU causing moderate to severe overall impacts to soil and water resources. A total of 43 trails were surveyed in the field, and these 14 caused at least moderate impacts.

Trail Name ST = system trail UT = user trail	Analysis Unit	Resource Rating	Specific soil/water concern (n/a indicates unknown values)						Risk Factors	
		1-5 (5 = Most severe impact)	Trail incision/ headcuts	Off-trail erosion	Multi-trailing	Sedimentation into water	Stream flow interception	Trail incision/ headcuts	Steep Slopes	Proximity to water
Baldwin Canyon	McGee	3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Baldwin Cutoff	McGee	3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Golden Lake ST	McGee	3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Emerald Lk to Skelton ST	Coldwater	3	n/a	Slight	Mod	n/a	n/a	n/a	Yes	n/a
Emerald Lake to Sky Meadow	Coldwater	4	Mod	n/a	Mod	n/a	Mod	n/a	Yes	Yes
Woods Lake ST	Coldwater	3-	Slight	Slight	n/a	Slight	n/a	Slight	Yes	Yes
Pika Lake UT	Purple Bench	3	Mod	Mod	n/a	Slight	Mod	Slight	Yes	Yes
Pika Lake ST	Purple Bench	3+	Mod	Slight	Mod	Slight	Slight	Slight	No	No
Purple to Ram (to purple camp) ST	Purple Bench	4	Mod	n/a	n/a	Slight	n/a	Mod	Yes	Yes
Tully Lake UT	Upper Fish Creek	3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Lee Creek to Lee Lake ST	Upper Fish Creek	5	Severe	Slight	n/a	Mod	Slight	Mod	No	Yes
Box Canyon above Grassy UT	Silver Divide	3	Mod	Slight	Slight	n/a	n/a	Slight	Yes	Yes
Peter Pande ST	Silver Divide	4	Severe	Mod	Mod	n/a	n/a	n/a	Yes	No
Silver Creek ST (from Baby jct. to Coyote lk)	Margaret	3.5	Mod	Mod	Severe	n/a	Slight	n/a	Yes	No

Campsites

The Fish Creek/Convict/McGee Geographic Unit has a slightly higher than average proportion of stock campsites causing water quality concerns, but is roughly the same as the other Geographic Units. Numerous campsites within this geographic unit are too close to water and contributing substances to surface water, especially near the Purple Lake Outlet and downstream on Purple Creek (see summaries of BMPEP Protocol Campsite Results Table, available in the project record.). Although the sites are known to not meet BMPs, the extent and severity of water quality impacts in the GU are unknown.

Campsites in the McGee Creek AU are generally not causing soil or water quality concerns. One stock holding campsite, however, called “Sheep Camp” on Lee Creek is located on a hill in a meadow, and the site is causing rilling that is depositing sediment into the adjacent stream. The site does not meet Best Management Practice requirements.

In the Coldwater AU, there are high densities of campsites around Skelton Lake and Barney Lake, but little erosion or sedimentation into the lakes was observed.

In the Purple Bench AU, there is a high density of campsites around Purple Lake, the outlet of Duck Lake, and at the Virginia Lake inlet. Many of these sites are within 100 feet from water and are not in compliance with BMPs. Three of the four pack stock holding sites evaluated for BMPs are causing sediment and/or manure to enter surface water. The access trail to Ram Camp, north of Purple Lake, is causing slight hydrologic function alteration of the very wet meadow near the camp. There is evidence of stock-related trampling at the meadow.

There is a high concentration of campsites along the Fish Creek corridor, particularly near Horse Heaven and Tully Hole. These sites are possibly contributing sediment to Fish Creek, but the severity and extent of water quality degradation is unknown.

There is a moderate density of campsites along Fish Creek in the Cascade Valley Analysis Unit. Although BMP evaluations were not completed at the sites at Iva Belle Hot Springs, there is a high density of campsites near the springs and wet meadows with many social and user trails, possibly affecting surface flow patterns in the wet meadows surrounding the springs. The camp used by commercial pack stock operators below Iva Belle hot spring does not meet BMP requirements.

Silver Divide AU has a large proportion of campsites that do not meet BMPs. Of the seven campsites evaluated for BMP compliance, six were not in compliance. These campsites were in Long Canyon, one site at Olive Lake, two sites at Grassy Lake, and a site each at Peter Pande Lake and along Sharktooth Creek.

Mono Creek/Rock Creek

The west portion of the Mono Creek/Rock Creek Geographic Unit drains to the San Joaquin River, and the eastern side drains toward the Owens River. Most of the unit is within the Mono Creek HUC 5 watershed, a tributary to the San Joaquin River. The west side of the Unit also covers a small portion of the Upper South Fork San Joaquin River watershed. The eastern portion of the Geographic Unit falls into two watersheds, the Owens River/McGee Creek watershed and the Upper Owens River watershed. It covers small portions of those watersheds, and conditions within the unit likely have little watershed-wide effect.

Within the main trail corridors along Hilton Creek, Little Lakes Valley, and Mono Creek and its tributaries, soil and hydrology conditions have been moderately altered by human use. The trails, campsites, and grazing within the main Mono Creek trail corridor and its tributary trail corridors have altered hydrologic function along Mono Creek. Within the Graveyard AU, at the western end of the Geographic Unit, hydrologic function and soil impacts occur outside the main trail corridor, because the area is an active cattle allotment and cattle do not necessarily remain on trails.

The Morgan Lakes AU is within a historical mining area, with an old road acting as the trail through the unit. Mining debris, culverts and other mining artifacts are scattered around the area. The road and culverts concentrate overland flow and cause minor erosion; mining debris disintegrating in and near water may contribute pollutants to water.

Meadows

The Mono Creek/Rock Creek GU contains 142 meadows covering about 1,400 acres. All of the mapped meadows are moist to wet meadows and are considered wetlands. Of those meadows, 43 (670 acres) were visited in the field.

Table 3.37, the *Geographic Unit Meadow Table* summarizes the known resource conditions for individual meadows in the Mono Creek/Rock Creek GU. 18% of the meadow acreage analyzed in this GU shows severe hydrologic function alteration, 3% shows moderate alteration, and 33% shows slight alteration. Of the three meadows with severe hydrologic function alteration, two are in the Graveyard AU and have been grazed by cattle within the past few years. One meadow, Silver Pass Meadow in the Silver Peak AU, has not been recently grazed by cattle and has had moderate to heavy recent pack stock grazing.

The results of PFC analyses show that the Mono Creek/Rock Creek Geographic Area has a slightly lower than average proportion of functional at-risk meadow streams (Figure 3.14).

In the Graveyard GU, only half of the eight evaluated meadows have hydrologic function alteration, but by area, Graveyard has the third highest percent of total meadow acreage with severe hydrologic function alteration of all analysis units in the project area. Further, four out of five meadows on the mainstem Cold Creek have some hydrologic function alteration. These meadows have been grazed by cattle within the past few years, and impacts can be attributed almost totally to cattle grazing and/or historical impacts. Because most of the meadows along Cold Creek and 40% of the total meadow area in the analysis unit is hydrologically altered, the watershed has a reduced ability to hold water and buffer high flows. Therefore, peak flows may occur more quickly than natural and have higher velocities in lower Cold Creek.

The main creek and tributaries in Lower Graveyard Meadow are incised, with unstable banks and with some historical attempts at restoration structures. The meadow is also severely compacted over much of its area. Middle and Upper Graveyard Meadows are affected by historical impacts, mostly trampling and trail related, with some active headcuts and incisement of historical trails.

The majority of meadows in the Little Lakes Valley Analysis Unit are wet to very wet, and are therefore susceptible to trampling impacts. Meadows have good soil and hydrologic function condition overall. However, some of the meadows surrounding lakes along the main Little Lakes Valley system trail are compacted adjacent to the trail due to hikers accessing the lakes from the trail. There is little or no overnight commercial stock use or grazing in Little Lakes Valley.

One meadow in the Silver Peak Analysis Unit has severe hydrologic function alteration and a functional at-risk stream. Silver Pass Meadow has not been recently grazed by cattle and has evidence of heavy recent pack stock grazing, and, therefore, the impacts can at least partially be explained by recent pack stock use.

Trails

The Mono Creek/Rock Creek Geographic Unit has the second highest proportion of field analyzed trails with severe soil and water resource impacts. A total of 27 different trail segments were walked and analyzed in the field. It was found that about 15% are causing severe impacts, 20% are causing moderate impacts, and 20% are causing minor impacts. Table 3.20 contains trails (system/user) that have a resource rating of moderate and severe and their specific

soil/water concerns. Each sub-drainage leading to Mono Creek has one or more trails with lengthy segments of moderate to high impacts and risk factors. The main Mono Creek trail has incision leading to surface water diversion during snowmelt and rainfall over much of its length. The trail also diverts spring and seep flow along its length. Trails in Third Recess, Pioneer Basin, Hopkins, and Hilton Creek are also causing soil and hydrologic impacts through incision, headcutting, diversion of surface water, and rilling. Severe trail impacts were not observed to be widespread over the geographic unit, but are mainly in the Pioneer and Fourth Recess AUs. The Mono Creek watershed drains into a man-made reservoir (Lake Thomas A. Edison), so any water quality degradation created in the upper watershed is buffered downstream of the dam.

Table 3.20 Trails within Mono Creek/Rock Creek GU causing moderate to severe overall impacts to soil and water resources. A total of 27 trails were surveyed in the field, and these 10 caused at least moderate impacts.

Trail Name ST = system trail UT = user trail	Analysis Unit	Resource Rating	Specific soil/water concern (blank box indicates unknown values)						Risk Factors	
		1-5 (5 = Most severe impact)	Trail incision/ headcuts	Off-trail erosion	Multi-trailing	Sedimentation into water	Stream flow interception	Meadow hydrologic alteration	Steep Slopes	Proximity to water
Gem Lake ST	Little Lakes Valley	3	Mod	n/a	Mod	n/a	n/a	Slight	n/a	Yes
Mono Creek ST	Fourth Recess	3.5	Mod-Severe	n/a	Mod	n/a	Slight	n/a	No	No
Golden Creek ST	Fourth Recess	4	Mod	n/a	Mod	n/a	Slight	n/a	Yes	n/a
Third Recess ST	Fourth Recess	4	Mod	n/a	n/a	n/a	Slight	n/a	Yes	Yes -springs
Mudd Lake cutoff to Mono Creek UT	Pioneer	3+	Mod	Slight	n/a	n/a	Mod	n/a	No	No
Mudd Lake to 10,862 ST	Pioneer	4	Mod	Mod	Mod	n/a	Mod	n/a	No	No
Use trail to lake 10,862	Pioneer	4	Severe	Slight	Mod	n/a	Severe	n/a	No	Yes
Mott Lake ST	Silver Peak	3	Mod	Mod	Mod	n/a	n/a	n/a	Yes	Yes
Graveyard Lakes ST	Graveyard	3	Slight	n/a	Mod	n/a	n/a	n/a	Yes	n/a
Goodale Pass ST (GRA/SIL)	Graveyard	3	Mod	Slight	n/a	n/a	Slight	n/a	Yes	n/a

Campsites

The Mono Creek/Rock Creek Geographic Unit has 40% of assessed pack stock related campsites causing substances to enter water. Summary BMPEP results are shown in the Summaries of BMPEP Protocol Campsite Results Table, available in the project record. In the Hilton AU, a high percentage (60%) of the campsites analyzed using the BMPEP protocol were causing substances to enter water. This AU has a high concentration of stock holding campsites, especially around the Davis Lakes, with the potential to cause local and possibly lake-wide water quality degradation. One site along Hilton Creek near Davis Lake covers about an acre of bare

soil capable of contributing substantial volumes of sediment into the creek. Although local erosion and sedimentation into lakes and streams was observed, it is unknown whether water quality effects persist beyond areas directly adjacent to campsites.

In the Little Lakes AU, there are high concentration of campsites at Ruby Lake, the south end of Long Lake, and Chickenfoot Lake. The Ruby Lake sites are the sites causing the greatest impacts. The meadow at the eastern end of the lake is moderately compacted. The compaction appears to be from campers walking to the lake from the campsite. Other sites are not causing major water quality or soil concerns.

In the Morgan Analysis Unit, the only concentration of campsites is at Lower Morgan Lakes. There are stock-holding campsites within 50 feet of the lake, with manure present at these sites. While there does not appear to be large amounts of stock use at Morgan Lakes, they are being held too close to water to meet BMPs.

Of the packstock related campsites evaluated for BMP compliance in the Fourth Recess AU, 40% are contributing sediment to water. One of these sites, at the confluence of Hopkins and Mono Creeks, is one of the campsites of highest concern in the project area. The stockholding site is within 10 feet of a stream, with substantial amounts of sediment were observed entering the stream from the site. Of the four pack stock holding or spot/dunnage sites along Mono Creek analyzed for compliance with BMPs, all are located less than 100 feet from the creek and can contribute sediment to the creek during rainfall or snowmelt. An unknown number of sites that are predominantly used by backpackers are also located within 100 feet of Mono Creek. Although many of these sites exist, they tend to be smaller and individually contribute less sediment into Mono Creek.

Campsites in the Pioneer Basin are concentrated around the three southernmost Pioneer Lakes. Multiple stock camps exist at these lakes, with Mudd Lake having the highest concentration. The campsites have caused soil compaction and the potential for soil erosion. While a number of camps are located less than 100 feet from water, some are hiker related and some are pack stock related. Three commercial pack stock-related spot/dunnage sites were evaluated, and two were found to be less than 100 feet from water. These sites appear to be contributing minor volumes of sediment into surface water, but campsites are generally not causing water quality problems or excessive soil productivity degradation. There is a high density of campsites around Lower Hopkins Lake, and a low density in most other portions of the Hopkins AU. Of 6 sites evaluated for BMP compliance at the lake, 2 are causing sediment to enter water, and 1 of those sites, on the east side of the lake, is 20 feet from water.

There is a relatively low density of campsites within the Graveyard AU except at Lower Graveyard Lake, which is a backpacker and spot/dunnage destination. Most sites at Lower Graveyard Lake are over 100 feet from water and they do not appear to be altering the lake's water quality or causing off-site soil erosion.

Bishop/Humphreys

The Bishop/Humphreys Geographic Unit is within three different HUC 5 watersheds and drains both east and west of the Sierra Nevada Mountain crest. About 1/3 of the area of the Upper South Fork San Joaquin River watershed is covered by the western side of the Bishop/Humphreys Unit. The eastern side comprises a small portion of both the Owens River/McGee Creek and Owens River/Bishop Creek watersheds.

The portion of the unit in the Owens River/McGee Creek watershed (Gable, Horton, Pine Creek and Granite Park AUs) has few recreation related hydrologic concerns, but mining in the area has altered stream morphology and groundwater flow, and, therefore, may have fundamentally altered Pine Creek. Recreational impacts are local and slight and restricted to the main trail corridors.

The portion of the unit in the Owens River/Bishop Creek watershed (Piute, Lamarck, Sabrina, Tyee, Treasure and Bishop Creek AUs) has few widespread hydrologic function impacts, but the many trails in the area are causing local hydrologic alteration with stream diversions, diversion of overland flows, and spring impacts.

The portion of the Bishop/Humphreys Geographic Unit in the Upper South Fork San Joaquin River watershed (French Canyon, North Piute, Glacier Divide and Humphreys Basin) has some of the most widespread incidence of deeply eroded trails causing diversion of springs and stream, capture of overland flow, and multiple trail creation. Impacts are most severe near Golden Trout Lake in the Glacier AU and near the junction of the French Canyon and Elba/Moon Lake trails in the French Canyon AU.

Grazing and campsites are generally not causing soil and water degradation, with a few exceptions that will be discussed below.

The Gable Analysis Unit has little soil or hydrologic degradation related to recreational use. Mining occurred in and near this area until the 1950s, affecting water quality, groundwater flow patterns, and surface flow patterns. Mining debris is in streams in some areas, particularly just below Gable Lakes, and if chemicals, petroleum products, or other pollutants are in the debris, it may be degrading water quality in Gable Creek.

Pine Creek generally has little soil or hydrologic degradation related to recreational use. However, mining occurred throughout the area, and mining-related activities such as road building, dam building, and mine shafts have affected water quality, groundwater flow patterns, and surface flow patterns.

Meadows

The Bishop/Humphreys GU contains 130 known meadows/wetlands covering about 1,200 acres. Of those meadows, 34 (650 acres) were visited and analyzed in the field, and 42 were requested for grazing by commercial pack station operators.

Table 3.37, the *Geographic Unit Meadow Table* summarizes the resource conditions for meadows in the Bishop/Humphreys GU. This geographic unit has the lowest proportion of meadows with hydrologic function alteration of all geographic units visited, and the second lowest proportion of streams in meadows that are rated functional at-risk. It is the only unit visited in the project area with no streams rated functional at-risk with a downward trend. Although the entire French Canyon corridor has reported grazing, concentrated impacts were noted only at Hutchinson Meadow, which is regularly grazed by commercial pack stock. A few areas, such as the fen just downstream of waterfall camp in French Canyon, and the meadow at the inlet of Upper Pine Lake, have severe trampling impacts, but the effects are concentrated near the trail or campsite, and are not necessarily associated with grazing.

In the Pine Creek AU, there are small meadow complexes adjacent to the lakes in the watershed. Existing conditions include local hoof punching and widening of the stream channels at

crossings at Upper Pine Lake. The majority of this AU does not appear to reach range readiness in a normal year. There are scattered dry meadows on slopes and benches. These drier sites are low in productivity, with substantial bare areas, easily fragmented sod, and highly erosive soils. Both the dry and wet sites are fragile, with thin soils and low resiliency.

In the Granite Park AU, alpine and sub-alpine meadows are in good condition.

In the Piute AU, there are very few small meadows in the area, and range from dry to wetland. No meadows in the analysis unit were requested or identified for grazing. The trails run through some of the meadows, but there are few off-trail impacts beyond one headcut in to a meadow near the East end of Piute Lake.

The Lamarck Analysis Unit has very few meadows, with a total of less than 13 acres covered by meadow vegetation. The one major meadow, at Grass Lake, is almost all wetland with standing water year-round. It has no visible impacts. No meadows were requested or identified for commercial grazing.

Trails

Trails impacts are altering hydrologic function of adjacent meadows, streams and springs. However, the impacts in most cases are not severe. Of the 58 trails analyzed for soil and hydrologic impacts, 3% are causing severe impacts, 16% are causing moderate impacts, and 26% are causing slight impacts. Table 3.21 shows trails (system and user) with a resource rating of moderate or severe and their specific soil/water concerns.

Table 3.21 Trails within the Bishop/Humphreys GU causing moderate to severe overall impacts to soil and water resources. A total of 58 trails were surveyed in the field, and these 10 caused at least moderate impacts.

Trail Name UT = user trail ST = system trail	Analysis Unit	Resource Rating	Specific soil/water concern (blank box indicates unknown information)						Risk Factors		
		1-5 (5 = Most severe impact)	Trail incision/headcuts	Off-trail erosion	Multi-trailing	Sedimentation into water	Stream flow interception	Meadow hydrologic alteration	Steep Slopes	Proximity to water	
Italy Pass (E) (Also in Pine Creek AU) - ST	Granite Park	3	Mod				Mod	Slight		Yes	No
Golden Trout Lks UT	Glacier Divide	4	Severe			Severe			Mod	No	No
Moon Lake cutoff ST	French Canyon	3	Mod			Mod		Mod		No	No
Elba to Alsace UT	French Canyon	3	Mod	Slight	n/a	n/a			Slight	Yes	No
Merriam Creek N. UT	French Canyon	3	Slight				Slight			No	Yes
L Lake-French Canyon ST	French Canyon	4	Severe			Mod	Slight	Mod	Slight	No	No
Lamarck Col UT	Lamarck	3	Mod			Slight	Slight		Slight	Yes	No
Blue Lake Inlet Camp UT	Sabrina	3	Mod	Slight						Yes	Yes

Trail Name UT = user trail ST = system trail	Analysis Unit	Resource Rating	Specific soil/water concern (blank box indicates unknown information)						Risk Factors	
		1-5 (5 = Most severe impact)	Trail incision/headcuts	Off-trail erosion	Multi-trailing	Sedimentation into water	Stream flow interception	Meadow hydrologic alteration	Steep Slopes	Proximity to water
Moonlight Falls UT	Sabrina	3	Slight		Mod			Slight	No	No
Chocolate-Ruwau ST	Bishop Crk	3	Mod		Slight		Slight		No	Yes

The L Lake-French Canyon Trail has one of the most deeply incised segments of trail within the project area, with about two feet of incision. The trail segment diverted a stream, apparently years ago, and created a new stream channel that leaves the trail about 200 feet down trail. This trail segment is about 200 feet long, as is pictured here at the right.



Trail incision on the L-Lake Trail

Campsites

The Bishop/Humphreys Geographic Unit has a similar proportion of stock related campsites found to be causing substances to enter water as the other units, at about 35%. For a summary of campsite BMPEP results by AU, see the Summaries of BMPEP Protocol

Campsite Results Table, available in the project record.

The campsite causing the most severe soil and water impacts is Waterfall Camp in French Canyon, in the Glacier Divide Analysis Unit, shown in the photo below.

Campsites are generally not contributing to soil and water quality degradation in the Bishop Creek Analysis Unit. There are moderate soil compaction impacts related to one spot/dunnage site at the north end of Ruwau Lake. While the site itself is not causing an unusually large area of compaction, campers are walking to the lake from the site, compacting the lakeshore meadow.

In the Pine Creek AU, campsite density is high at Upper Pine Lake and Honeymoon Lake. Most sites are over 100 feet from water, and no sites are major water quality concerns.

Granite Park has a low density of campsites, and campsites are not contributing to overall soil or hydrologic resource degradation.

There is a high concentration of campsites in the Piute AU, some within 100 feet of the lake. The sites have substantial access trails that, along with the campsites, have compacted soils and reduced infiltration rates on the east side of the lake. None of the campsites are stock holding sites, but some are used for spot and dunnage.



Waterfall Camp, in the French Canyon AU. This is a small portion of the camp, which covers about 4 acres. The camp is within 10 feet of an ephemeral stream, and manure and sediment from the site can easily enter water

There is a high density of campsites around Lower and Upper Lamarck Lakes, but campsites are not contributing to soil and hydrologic resource degradation overall.

In the Sabrina AU, there are a few campsites that are too close to water, but other than Dingleberry Crossing and Blue Lake, the hydrology concerns are slight to moderate. At both locations, the sites are within 20 feet of water. They are currently contributing only small amounts of sediment into water, but have the potential to erode during heavy runoff directly into surface water.

In the Treasure AU, campsites are concentrated around Lower Treasure Lake, and are not contributing to soil or water quality degradation.

The Glacier Divide Analysis Unit has a high concentration of sites near Hutchinson Meadow and near Golden Trout Lake. At both of these sites, many campsites are large, with a large area of compacted soil, and are less than 100 feet from water. In the Hutchinson Meadow area, few of the sites appear to be used for holding stock. Just downstream from Hutchinson Meadow, many campsites are directly adjacent to Piute Creek, and people accessing the creek from the sites has denuded the banks of vegetation. Therefore, the riparian vegetation is not being maintained and it is possible that the creek could more easily erode its banks now that they have less vegetation to hold the banks together.

Near Golden Trout Lake, there are numerous campsites along Piute creek, some with access through wetlands. One spot/dunnage campsite, about ½ mile west of Golden Trout Lake, is

accessed only through a very wet meadow/wetland. As a result of this access by pack stock, there is hoof punching and chiseling covering about 15% of the meadow's area, resulting in bare soil where the sod has been removed. This ½ acre meadow is unstable due to the very wet soil and easily fragmented sod. There are small headcuts throughout the meadow, likely due to sod fragmentation and hoof punching. The degree of sod fragmentation and headcutting suggests that surface water flow may be altered. However, there is no evidence of upland species invading or water table lowering.

The campsite at Waterfall Camp in French Canyon is one of the largest known campsites within the entire project area. The site encompasses approximately four acres of bare, loose soil, and it is adjacent to at least two ephemeral streams. The loose bare soil at this site can easily flow into the ephemeral streams during snowmelt and rainfall, and manure at the site was found in and near streams, posing a water quality concern. Although there is at least a slight water quality impact at this site, the impact of highest concern is the stock trampling of the adjacent fen. This hoof punching appears to have led to creation of small channels within the fen, diverting shallow groundwater into the channels. Currently, there is no evidence that the hoof punching and channeling is dewatering the fen, but the loss of sod could allow further erosion during heavy rainfall or snowmelt, and has the potential to dewater the fen or alter its chemical process. The campsite itself is not necessarily causing alteration to fen hydrologic function, but the stock running loose downstream from the site is the cause of the threat.

Florence/Bear

The Florence/Bear Geographic Unit drains entirely into the San Joaquin River. About 90% of the unit is the Upper South Fork San Joaquin River HUC 5 watershed and the western 10% is within the Big Creek watershed. The Big Creek watershed has little influence from its small proportion of Florence/Bear Geographic Unit, but the Upper South Fork San Joaquin River watershed could be influenced by conditions in the unit because the unit covers about 1/3 of the watershed area.

The Sallie Keyes, Seldon, Bear, and Italy Analysis Units generally have good soil and hydrologic condition, although a few meadows have been grazed heavily enough to cause hoof punching, slight to moderate hydrologic function alteration, streambank damage, and soil compaction. There are some trails in the area that are causing headcuts to propagate off the trail, diverting surface water, or altering groundwater flow in meadows, but they are generally only causing local impacts.

Meadows

The Florence/Bear GU is known to have at least 209 meadows/wetlands covering about 1,620 acres. Of those, 11 (130 acres) were visited in the field and analyzed for current condition and grazing suitability.

Table 3.37, the *Geographic Unit Meadow Table* summarizes the resource conditions for meadows in the Florence/Bear GU. Of the 17 meadows analyzed for hydrologic function, about 13% have severe hydrologic function alteration, 13% have moderate hydrologic function alteration, and about 24% have slight hydrologic function alteration.

This GU has a relatively low percentage of streams that are functional at-risk. Of the 15 meadow streams analyzed for Proper Functioning Condition, three are functional at-risk with a non-apparent trend, one is functional at-risk with an upward trend, and the rest are at PFC.

The meadows with moderate and severe hydrologic function alteration and functional at-risk streams are mostly pastures within the Hooper and East Florence Analysis Units. In these pastures, use is not associated with a commercial pack stock trip but grazing between trips. Two of the pastures, Jackass Meadow and Hell Hole Meadow, are downstream of Florence Reservoir, and their hydrologic function alteration is due mainly to the effects of flow alteration from reservoir operations.

The only non-pasture with hydrologic function alteration and a functional at-risk stream is Hilgard Meadow in the Italy Analysis Unit. Commercial pack stock use at this meadow is moderate, and has likely been heavier in the past.

Trails

Only three out of ten trails studied were identified to be causing any overall soil or hydrologic conditions more than slight in severity. Trails are generally not leading to water and soil impacts in the Florence/Bear Geographic Unit. Table 3.22 shows trails (system and user) that have a resource rating of moderate or severe and their specific soil/water concerns.

Table 3.22 Trails within the Florence/Bear GU causing moderate to severe overall impacts to soil and water resources. A total of 10 trails were surveyed in the field, and only one is causing at least moderate impacts.

Trail Name UT = user trail ST = system trail	Analysis Unit	Resource Rating	Specific soil/water concern (blank box indicates unknown information)						Risk Factors	
		1-5 (5 = Most severe impact)	Trail incision/headcuts	Off-trail erosion	Multi-trailing	Sedimentation into water	Stream flow interception	Meadow hydrologic alteration	Steep Slopes	Proximity to water
Italy Lake (West) ST	Italy	3+	Mod		Mod				Yes	No

Campsites

Almost 35% of the nine stock-related campsites evaluated have some evidence of small volumes of substances entering water. However, none of the campsites evaluated are causing major water quality concerns or have potential for major water quality concerns.

While one campsite evaluated for BMP compliance in the Italy AU was found to be contributing minor amounts of sediment into Hilgard Creek, campsites are generally not contributing to water or soil resource degradation.

In the Sallie Keyes AU, two campsites were found to be contributing small amounts of sediment into surface water. This small volume of sediment is likely not contributing to soil or water resource degradation beyond a very local area. The evidence that sediment had entered surface water in the past was related to user trails, not the campsite itself. The user trails were not used by stock, but by campers.

John Muir Southeast

The entire Geographic Unit drains to the Owens River, and is within four different HUC 5 watersheds: Owens River/Tinemaha, Middle Owens River, Lower Owens River, and Owens Lake West Shore.

The John Muir Southeast GU receives less precipitation, on average, than the other units, because it is the farthest south and is entirely on the eastern side of the Sierra Crest. Average annual precipitation ranges from about 35 inches in the upper elevations in the north portion of the Unit, to 15 inches at the southern end of the unit. Precipitation decreases rapidly with elevation loss in this unit.

Little of this GU was evaluated in the field as part of this project. Other than Cottonwood Lakes and North Fork Big Pine Creek, there is little commercial pack stock use beyond through travel on well-developed system trails. Therefore, soil and water resource impacts related to commercial pack stock use and other recreational use are assumed to be focused on trails.

Meadows

This GU contains 100 known meadows/wetlands covering about 1,500 acres. One meadow was grazed for nine stock nights between 2001 and 2003, and no meadows were analyzed in the field.

Most of the meadows in this GU are located along steep stream channels on the eastern Sierra escarpment. These meadows are often dominated and protected from disturbance by boulders and riparian woody vegetation such as willow (*Salix* spp), Alder (*Alnus* spp), and Water Birch (*Betula* spp.). Some meadows have also formed where bedrock or moraines have constricted water flow.

There is one large glaciated basin commonly accessed by pack stock at Cottonwood Lakes with multiple large wet meadow wetland complexes. According to Del Hubbs, Inyo National Forest Range Conservationist, a small proportion of meadows have hydrologic and sod impacts. Most impacts appear to be historical, possibly related to cattle and sheep grazing.

Trails

Trails are generally in good condition throughout this GU and not causing major hydrologic or soil impacts. Trails in this GU were not visited as part of this project, but past information from Marty Hornick, Trails Specialist with the Inyo National Forest, indicates that there are minimal impacts to water quality or soil productivity outside of the trail tread.

Campsites

There were only 31 campsites requested by commercial pack station operators in the entire GU. The John Muir Southeast GU has a requested campsite density of 0.3 sites per 1,000 acres, the lowest of any GU. The highest density was about 4 sites per 1,000 acres.

In the Cottonwood Analysis Unit, there is a high concentration of campsites at Muir Lake and 3rd Lake, possibly slightly contributing to water quality degradation in those lakes. However, we do not have enough information to determine water quality effects. Cottonwood Lake Number 1 and Cottonwood Creek were sampled one time for coliform bacteria in summer 2003. There are commercial pack stock spot/dunnage sites at the lake, but no stock holding sites. No coliform was found in either sample, suggesting that the human and pack stock use was not contributing

fecal contamination into the lake or stream at the precise time and location of sampling. More widespread water quality effects are unknown.

John Muir Southwest

The John Muir Southwest GU drains entirely into the Kings Creek Watershed, and is within two HUC 5 watersheds, North Fork Kings River and Middle Fork Kings River.

John Muir Southwest is used lightly by commercial pack stock operators and other recreational users, and has few impacts associated with recent recreational use. However, a relatively high proportion of evaluated meadows have slight to moderate impacts, and many impacts appear historical. Impacts are assumed to be historical because there is no evidence of recent meadow use, such as hoof punching, vegetation utilization or compaction. The long-term effects remaining are incised streams, vegetation composition effects, and hummocks. Trails are generally in poor condition, and, in a few instances, poorly located in riparian-wetland habitats.

Meadows/wetlands

The John Muir Southwest GU contains 371 known meadows covering about 2,200 acres. Thirteen of these meadows had grazing reported from 2001-2003, and 10 were evaluated in the field.

Table 3.37, the *Geographic Unit Meadow Table* summarizes the resource conditions for meadows in the John Muir Southwest Geographic Unit. While John Muir Southwest has a higher than average proportion of field analyzed meadows with hydrologic function alteration and soil impacts, most of the impacts are slight and none are severe. It has one of the lowest proportions of meadow streams rated functional at-risk out of all the geographic units, but the highest proportion of meadows with sod fragmentation and soil compaction. Because most of the GU not visited in the field is not part of an active grazing allotment, and receives little commercial pack stock or other recreational use, it is assumed that effects are minor and local. Most of the areas not visited in the field were also not requested for commercial pack stock use, and therefore the lack of information about conditions in the unvisited areas does not affect the decision to be made.

Trails

Trails in the John Muir Southwest Area are generally in need of maintenance, with slight to moderate hydrologic and soil impacts including soil erosion, multi-trailing, headcutting, and some capture of spring flow. As in other geographic units, trails in some instances are located directly adjacent to streams in riparian areas, and are therefore reducing the extent of riparian vegetation. None of the 12 analyzed trails in this Geographic Unit were observed to be causing severe soil or hydrologic resource impacts, though 17% showed moderate impacts and 42% showed slight impacts. Table 3.23 shows trails (system and user) that have a resource rating of moderate or severe and their specific soil/water concerns.

Table 3.23 Trails within the John Muir Southwest GU causing moderate to severe overall impacts to soil and water resources. A total of 12 trails were surveyed in the field, and two are causing at least moderate impacts.

Trail Name UT = user trail ST = system trail	Analysis Unit	Resource Rating	Specific soil/water concern (blank box indicates unknown information)						Risk Factors	
		1-5 (5 = Most severe impact)	Trail incision/ headcuts	Off-trail erosion	Multi-trailing	Sedimentation into water	Stream flow interception	Meadow hydrologic alteration	Steep Slopes	Proximity to water
Bench Valley ST	Bench	3	Severe		Slight				Yes	Yes
Meadow Brook Lake ST	Bench	3	Severe		Slight				Yes	Yes

Campsites

John Muir Southwest has a slightly higher than average proportion of campsites evaluated using the BMPEP protocol that are contributing substances to surface water. Of the 12 stock-related sites evaluated, five (42%) did not meet BMPs. None of those sites are causing major water quality concerns because either a small source of sediment exists or is able to enter surface water. BMPEP stock-related campsite results are shown by AU in Summaries of BMPEP Protocol Campsite Results Table, available in the project record.

3.3 Biological Environment

3.3.1 Wildlife

Wilderness Scale

This sections covers Federally listed threatened, endangered, and proposed species, Forest Service Region 5 sensitive species (TES), and the Inyo and Sierra National Forest Land Management Plans Management Indicator Species (MIS). The species are discussed below if they have suitable habitat, or recorded observations in the AA/JM Wildernesses. Additional discussion of the species can be found in Chapter 4, as well as in the Biological Assessment and Evaluation on file in the Planning Record. Other species in these groups that will not be analyzed in this EIS because they do not have suitable habitat or recorded observations within the analysis area are listed below, and in the Biological Assessment and Evaluation.

Additional information on wildlife species populations and habitats that occur within the AA/JM Wildernesses can be found in the Status of the Sierra Nevada, Assessment and Scientific Basis for Management Options (1996), Volumes II and III. Chapters 3 and 4 of the Sierra Nevada Forest Plan Amendment FEIS and FSEIS provide in depth discussion and analysis of Threatened, Endangered, and Sensitive (TES) species, and focal Management Indicator Species (MIS) and their habitats that occur on a Sierra-wide perspective including the AA/JM wildernesses. Information can also be found in the Inyo and Sierra National Forest Land and Resource Management Plans (LRMP) and their accompanying environmental impact statements.

Habitat Conditions

The following are the principal wildlife habitat plant community types in the AA/JM wildernesses that provide wildlife habitats and overlap with commercial pack stock use authorization areas.

Montane forests: The Sierra Nevada Ecosystems Report (1996) lists the following forested types commonly found in the AA/JM Wildernesses: sierran mixed conifer, jeffrey pine, red fir-western white pine, jeffrey pine-fir, red fir, and lodgepole pine. These forests occupy low to mid elevations of the two wildernesses.

In general, these forested wildlife habitats are in mid to late seral condition, and are in excellent ecological condition. They provide the high quality “Old growth” wildlife habitats for sensitive species such as marten, goshawk, great gray owl, and California spotted owl as well other non-sensitive MIS species such as mule deer, blue grouse, and snag dependent cavity nesting birds, and species associated with downed logs and woody debris such as many small mammals.

Subalpine forests: These higher elevation forested habitat types include lodgepole pine, white bark pine, and mountain hemlock. Subalpine forests provide habitat for numerous birds and mammals, however, they are usually above the key nesting and denning forested habitats used by the sensitive wildlife species listed above in the montane forests. The wolverine may find suitable denning habitat within this zone.

Alpine Zone: The alpine habitats are dominated by relatively sparse, low vegetative productivity landscapes of low growing grasses and grass-like plants such as sedges and rushes, and dwarf trees and shrubs. Vast areas of talus slopes, cliffs and boulder fields dominate this

zone. There is a smaller group of wildlife species such as ground and shrub nesting birds, and small mammals such as the pika that find suitable habitat for nesting and denning. This zone is the major summer range of the endangered Sierra Nevada bighorn sheep. The white-tailed ptarmigan that has been introduced into the Sierra Nevada inhabits this zone.

Riparian Habitats: These types comprise a few percent of the land area and are key habitats for a number of sensitive and MIS wildlife species such as the Yosemite toad, mountain yellow legged frog, willow flycatcher, mule deer, yellow warbler, and riparian and meadow edge bird guilds that utilize these habitats for some or all of their habitat requirements. Wildlife habitats include a highly variable mosaic of riparian and wetland types, that include springs and seeps, ephemeral pools, wet meadows, fens, moist meadows, dry meadow types, and willow, aspen and cottonwood habitats found primarily around lake perimeters, and stream and river corridors.

Threatened and Endangered Species

Species considered were reviewed from web lists published on U. S. Fish and Wildlife Service Ventura and Sacramento Field Office web sites that have jurisdiction over the AA/JM Wildernesses in Inyo, Mono, Fresno and Madera Counties.

The following Federally listed threatened and endangered species and their habitats are not present within the AA/JM Wilderness analysis area on the Inyo and Sierra National Forests. No additional analysis is required.

- California red-legged frog (T), *Rana aurora draytonii*
- California tiger salamander (T), *Ambystoma californiense*
- Central valley and South Central California steelhead (T), *Oncorhynchus mykiss*
- Delta smelt (T), *Hypomesus transpacificus*
- Giant garter snake (T), *Thamnophis gigas*
- Lahontan cutthroat trout (T & MIS), *Oncorhynchus (=Salmo) clarki henshawi*
- Owens tui chubb (E), *Gila bicolor snyderi*

The proposed critical vernal pool invertebrate habitats proposed for the Sierra National Forest also do not occur within the analysis area boundaries. There are no other critical habitat designations within the Sierra and Inyo National Forests.

The following Federally listed threatened and endangered species occur within the analysis area or have suitable habitat. Effects of the alternatives on these species and their habitats will be analyzed as part of this EIS. No other threatened, endangered or proposed species occur within the analysis area.

Bald Eagle: The bald eagle is a federally listed threatened species that the U. S. Fish and Wildlife Service has proposed to remove from the threatened species list (delist). The species overall numbers of nesting pairs, nest success and survival of young and adults has substantially improved since listing to the point where a number of population recovery goals have been met.

Bald eagles can occasionally be observed roosting in trees or foraging for fish or waterfowl at montane lakes on both Forests in the AA/JM Wildernesses during the summer months. There are no bald eagle nest territories known to occur within the AA/JM Wilderness boundaries. The only known adjacent nesting territory is outside of wilderness on the Sierra National Forest along the north shore of Lake Edison approximately ¼ mile west of the wilderness boundary. It is highly likely bald eagles in that territory utilize perch trees along the Reservoir shoreline and

adjacent uplands that are inside the wilderness boundary. The eagles could also shift the location of the nest or build alternate nests within suitable forested habitat within the wilderness.

There were incidental observations of the bald eagle nest with two observed fledglings at Lake Edison in 2001. Two fledglings were reared at the nest site in 2002. In 2003, the nest failed. A solitary adult was observed in July 2004.

Sierra Nevada Bighorn Sheep: The species has been federally listed as endangered since 2000 after the population underwent a substantial decline from over 300 sheep to a low of approximately 100 animals (USDI Fish and Wildlife Service 2000). The primary factor that led to the precipitous decline was increased mortality of sheep as a result of mountain lion predation, as well as movement of bighorn sheep away from preferred winter range habitats in response to lion presence on these preferred ranges. Since listing and implementation of a mountain lion monitoring and limited control program, the bighorn population has rebounded to over 300 animals. The sheep have re-occupied portions of their lower elevation winter ranges as well.

The majority of the species summer range habitat occurs within the AA/JM Wildernesses including adjacent areas of Yosemite National Park west of Mt Gibbs and Mt Dana, and Sequoia-Kings National Park west of Kearsarge Pass. A draft recovery plan is currently in the review stage by the U. S. Fish and Wildlife Service. No critical habitat designation has occurred. Five herds: Mt. Langley, Mt. Williamson, Mt. Baxter, Wheeler Ridge, and the Mt. Dana herd inhabit the AA/JM Wildernesses.

Bighorn generally move to the high alpine zones of these wildernesses during the summer months, usually well out of range of typical pack stock use areas, and system trails. Bighorn can come into relatively close proximity to wilderness recreation users such as commercial pack strings at passes such as at New Army, Shepherd, or Baxter Passes where thoroughfare trail systems cross over the sierra crest and access Kings Canyon and Sequoia National Park trails and camping areas. A fifth herd from Mt. Dana south to Mt. Woods country at the north end of the AA Wilderness has virtually no habitat overlap with commercial pack stock operating areas except at Mono Pass and Parker Pass areas where the system trails cross into Yosemite National Park.

Paiute Cutthroat Trout: This species is listed as threatened on the Federal Endangered Species List and limited to two locations within the planning area: Sharktooth Creek in the John Muir Wilderness, and Stairway Creek, in the Ansel Adams Wilderness both within the Sierra National Forest. Both creeks are designated Critical Aquatic Refuges in the SNFPA. The trout were introduced into these areas in 1968 and 1972 respectively. Sierra NF personnel surveyed Sharktooth Creek in 1999 and 2004 (Strand and Eddinger, 2000) and Stairway Creek in 1996 and 2000 for population status and stream condition. The total length of occupied stream channel is estimated at about five miles. The overall habitat condition of these streams is good, with no deficiencies noted in bank and channel stability, water temperature, or water quality (Strand and Eddinger, 2000). The access to both creeks is relatively difficult via Level 1 trails that are not signed, intermittent, overgrown, and do not appear on most maps.

Forest Service Sensitive Species

The Biological Evaluation prepared for this EIS (on file in the planning record) has determined the following sensitive wildlife species may occur or have habitat on the two national forests involved, but they are not affected directly, indirectly, or cumulatively by this proposed project.

The rationale for this determination is that there would be no effect from the commercial pack station activities or trail systems since the species do not occur within the two wilderness areas due to lack of habitat, or the wilderness areas are outside the natural range of the species. No further evaluation is required.

- Sage grouse (*Centrocercus urophasianus*)
- Volcano Creek golden trout (*Oncorhynchus mykiss aguabonita*)
- Owen's Valley springsnail (*Pyrgulopsis owensensis*)
- Northern leopard frog (*Rana pipiens*)
- Panamint alligator lizard (*Elgaria panamintina*)
- Kern Plateau slender salamander (*Batrachoseps robustus*)
- Inyo slender salamander (*Batrachoseps campi*)
- Relictual slender salamander (*Batrachoseps relictus*)
- Limestone salamander (*Hydromantus brunus*)
- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)
- Swainson's hawk (*Buteo swainsoni*)
- Foothill yellow-legged frog (*Rana boylei*)
- Hardhead (*Mylopharodon conocephalus*)
- Northwestern pond turtle (*Clemmys marmorata marmorata*)
- Southwestern pond turtle (*Clemmys marmorata pallida*)
- Western red bat (*Lasiurus blossevillii*)
- Wong's springsnail (*Pyrgulopsis wongii*)

The Biological Evaluation has determined the following sensitive wildlife species are known to occur or have habitat present in the Ansel Adams and John Muir Wildernesses. Species status and habitat availability and condition in the two wildernesses are discussed below. Effects of the alternatives on these species and their habitats will be analyzed as part of this EIS.

- Yosemite toad (*Bufo canorus*)
- Mountain yellow-legged frog (*Rana muscosa*)
- Willow flycatcher (*Empidonax trillii*)
- Northern Goshawk (*Accipiter gentilis*)
- Great Gray Owl (*Strix nebulosa*)
- Pacific fisher (*Martes pennanti*)
- California Wolverine (*Gulo gulo luteus*)
- Sierra Nevada Red Fox (*Vulpes vulpes necator*)
- American marten (*Martes americana*)
- California Spotted Owl (*Strix occidentalis occidentalis*)
- Peregrine Falcon (*Falco peregrinus anatum*)
- Pallid bat (*Antrozous pallidus*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)

Species Accounts

Yosemite toad: The Yosemite toad is endemic to the Sierra Nevada mountains at mid to high elevations extending northward from the North Fork of Bishop Creek, east of the Sierra Crest, and west of the crest six miles south of Wishon Reservoir, and north to the Toiyabe and

Stanislaus National Forests near Ebbetts Pass at the north end of the range. The U. S. Fish and Wildlife Service determined the moving forward with a listing process to determine if should be listed as threatened or endangered was warranted; however, the species was placed on the “Candidate” list because of higher listing priorities. Since that time the Service also determined the species ranked in its lowest priority category for going forward with the listing process.

Suitable habitat for breeding is found throughout the AA/JM Wildernesses in wet meadows that contain shallow water zones such as are found in topographically flooded depressions such as fens, non-fen wetlands, spring channels, slow-moving side channels of streams, and to a much lesser degree shallow marsh-like lakeshores. Yosemite toad breeding meadows can be found from the mixed conifer zone up into the subalpine zone. Known populations range from approximately 7,950 feet on the western slope of the Sierra to over 11,350 feet in elevation.

The adults congregate at breeding sites in meadows from late May through early July depending on the snow year, and the spring melt-off rate. Female toads deposit their eggs in the shallow water sections of the meadows that are generally less than two inches in water depth. The eggs hatch after approximately 7 to 14 days into tadpoles. Tadpoles stay in the shallow water pools and complete metamorphosis into juvenile toads (metamorphs) anywhere from 48 to 63 days after egg laying (Karlstrom, 1962; Sherman, 1980). The metamorphs are approximately 3/8 inch long and spend the remainder of the summer in or adjacent to the pool from which they emerged. Adult toads disperse after breeding and can be found in meadows or uplands. Some move into the uplands in areas such as rodent burrows, and rock crevices, while others remain in the wet meadows in rodent burrows and willow areas. The species hibernates for more than eight months a year in places such as rodent burrows.

The status and locations of the toad on National Forest lands was poorly understood before 2001. Since then, the Sierra Nevada Forest Plan Amendment directed surveys to be undertaken range-wide on National Forests. The SNFPA FSEIS stated there were 292 historical sites identified throughout the historical range of the species with 229 of these sites confirmed since 1990 to the time of publication of the FSEIS. There have been additional sites found since then, but the exact tally for Sierra Nevada is not available at this time. Within the AA/JM wildernesses there are 267 meadow areas where surveys have detected Yosemite toad breeding populations. Of these meadow areas, approximately eighty one breeding sites overlap with identified commercial pack stock operations, primarily the meadow grazing aspect of the operations, and trail and camp use to a much lesser extent.

Mountain yellow-legged frog: A species that historically occupied ponds, tarns, lakes and streams from 4,500 to over 12,000 feet and was once the most common amphibians in high elevation aquatic ecosystems of the Sierra Nevada. Most populations occur today at higher elevations in National Park and Forest Service Wilderness Areas. Large groups of populations in the northern Sierra Nevada and local populations elsewhere have since become extinct and have disappeared from 70-90% of its historic range. The U. S. Fish and Wildlife Service determined the species warranted moving forward with a listing process to determine if the species should be listed as threatened or endangered; however, the species was placed on the “Candidate” list because of higher listing priorities.

Approximately 86 breeding sites have been identified within the AA/JM Wildernesses where adults and tadpoles were found. The largest concentration of frog populations have been found in the Mono Creek watershed (28 sites) at Second, Third, and Fourth Recesses (Mono Creek/Rock

Creek Geographic Unit), the high lakes on the east side of the Ritter Range (17 sites) from Ashley Lake north to Donahue Pass (AA East Geographic unit), Gables Lakes, Humphrey Basin, Treasure Lakes (26 sites, Bishop Humphreys Geographic Unit), and the upper North Fork of Big Pine Creek (John Muir Southeast Geographic Unit) within the AA/JM Wildernesses. Bear Ridge has a disjunct isolated population within the Mono Creek/Rock Creek Unit. Overall the metapopulation has become highly fragmented with a number of isolated populations. This fragmentation has occurred since the introduction of fish began into the high Sierra lakes, and the subsequent extirpation of numerous frog populations from the effects of fish predation.

Most frog populations breed in small lakes, and occupy inlet and outlet stream channels that are for the most part unaffected by pack stock operations. Adult and juvenile frogs have also been found in streams and spring channels where they have been observed utilizing undercut and vegetated banks for cover. Two stream habitat locations in the AA/JM Wildernesses were found to have overlap with pack stock operations at Mono Creek near Mono Rock in the Mono Creek/Rock Creek Geographic Unit, and at Upper Rush Creek at Donahue Camp in the AA East Geographic Unit.

Willow flycatcher: The willow flycatcher subspecies *Empidonax traillii brewsteri* occurs predominantly west of the sierra crest, while the Great Basin subspecies *E. t. adastus* occurs on the east side of the mountain range. Both subspecies likely pass through the AA/JM wildernesses on spring and fall migration and may have nested historically in the lower portions of the wildernesses with the highest likelihood west of the sierra crest below 8,000 feet.

There are no records of the species nesting in the wildernesses. Parker Meadow on the Inyo NF in the Ansel Adams East GU, and Poison Meadow on the Sierra NF in the Florence Bear GU have had historical observations of willow flycatcher dating back to 1936, and 1985 respectively. Protocol surveys to detect willow flycatchers at both meadows since 2001 have failed to detect the species. Observational fieldwork during interdisciplinary team field trips across the AA/JM Wildernesses from 2001 through 2004 also did not detect the species presence.

Suitable habitat has been identified for the Sierra and Inyo National Forests as part of the Sierra Nevada Forest Plan Amendment (SNFPA) effort. Habitat has been divided into two occupied categories: “Occupied site” defined as a meadow that has been occupied during the established breeding season per SNFPA direction by a territorial willow flycatcher or nesting pair since 1982; and “Historically occupied site” defined as a meadow that has had a historical nesting record, or a territorial male, or nesting attempts prior to 1982. The SNFPA also established the “Emphasis habitat” category. This category is defined as wet meadows larger than 15 acres with at least some riparian deciduous shrubs (woody vegetation). The category was established to define larger suitable habitat meadows since the majority of known willow flycatcher breeding occupancy meadows have been shown to be greater than 19.8 acres (Sierra Nevada Forest Plan Amendment, Final EIS). Willow flycatchers have, however, been documented to nest in meadows less than one acre in size. The SNFPA defined “Potential habitat” as emphasis meadows, and in addition all “small wet meadows” less than or equal to 15 acres that have shrubby vegetation.

It should be noted that the Willow Flycatcher Conservation Assessment prepared by Green et al. (2003) noted that 88% of all meadows used by breeding willow flycatchers in the Sierra Nevada are below 8,000 feet. Such areas in the AA/JM Wildernesses are typically within a short distance of trailheads, and include lower elevation commercial pack station pastures on the Sierra

National Forest, however, it also excludes the majority of higher elevation destinations where the majority of commercial pack station camping and associated grazing activities take place.

An “Occupied site” as defined in the SNFPA does not mean the site currently has willow flycatchers using it, in fact the vast majority of over 90% of the occupied meadow sites identified in the SNFPA on the Sierra and Inyo National Forests have no willow flycatchers detected in them from recently completed multiple year protocol survey efforts since 2001. The species appears to be declining across its range and cannot even be detected at many of the occupied sites it was observed to be territorial, or confirmed to nest at in the past.

There are no SNFPA designated occupied sites within the two wildernesses. Parker Lake Meadow and Poison Meadow discussed above are “Historically Occupied Sites” per SNFPA direction.

Table 3.24 identifies the meadows 8,000 feet and lower in elevation that would be the highest probability zone of willow flycatcher potential occupancy (Potential habitat). These meadows have been identified from preliminary analysis of satellite imagery as well as limited field reconnaissance within all analysis units. There are 13 emphasis meadows larger than 15 acres below 8,000 feet. Five meadows are within identified pack stock grazing areas. Also within this zone are thirteen small meadows two of which are identified as stock grazing areas.

Table 3.24: Willow flycatcher unoccupied emphasis and small meadow habitat 8,000 feet and below in the Ansel Adams and John Muir Wildernesses and reported grazing use by commercial pack stock

Geo unit	Analysis unit	Meadow name	Id #	Elevation	Actual *Use 01/02/03	Habitat Category
AA West	Cargyle	Corral	Car10	7811	0	emphasis
		77 Corral	Car12	7971	18/0/22	emphasis
	Junction		Jun5	7974		small
			Jun6	7925		small
			Jun12	5574		small
			Jun13	5591		small
	Onion		Ons13	8026	0	small
	Cold Creek		Coc3	7956	0	emphasis
	Cassidy		Csd1	5473	0	small
	Arch	Rube	Arc1	7993	0	small
			Arc10	8048	0	small
	Lower		Lom4	6822	0	emphasis
			Lom6	6735	0	emphasis
	Hot Springs		Hos2	6677	0	emphasis
Fish Creek/ Convict/ McGee	Cascade Valley	Second Crossing	Cas1	7987	207/0/0	small
		Island	Cas6	6328	40/159/87	small
Florence/ Bear	East Florence	Double	Eaf2	7831	Variable 700-1000	emphasis

Geo unit	Analysis unit	Meadow name	Id #	Elevation	Actual *Use 01/02/03	Habitat Category
		Jackass	Eaf1	7193	10% of meadow in Wilderness estimated 400	emphasis
	Sallie Keyes	Lower Blayney	Sak17	7619	50% private land 60/0/0	emphasis
		Blayney	Sak18	7631	80% private land 0/0/23	emphasis
	Hooper	Poison	Hoo1	6783	Estimated 200	emphasis
		Hell Hole	Hoo2	6794	Estimated 200	emphasis
JMSW	Spanish		Spa5	7964	0	small
			Spa6	7983	0	small
	Rodgers		Rod5	7982	0	small
		Crown	Rod6	7884	0	emphasis

* Reported Use in Stock Nights from 2001 through 2003

The second zone of lower suitability habitat is between 8,000 feet and 9,500 feet identified by Green et al. in the 2003 Willow Flycatcher Conservation Assessment. Table 3.25 displays 43 emphasis and small meadows up to 9,000 feet in elevation and the reported commercial pack stock grazing from 2001 through 2003.

Table 3.25: Willow flycatcher unoccupied emphasis and small meadow habitat above 8,000 feet to 9,000 feet in the John Muir and Ansel Adams Wildernesses and reported commercial pack stock grazing.

Geo unit	Analysis unit	Meadow name	Id #	Elevation	Actual*Use 01/02/03	Habitat Category
AA West	Cora	Chetwood Cabin	Cor4	8256	0	small
		Cora Lakes 1	Cor1	8399	0	small
		Cora Lakes 14	Cor14	8389	0	small
		Knoblock	Cor15	8498	0	small
		Detachment	Cor6	8499	0	small
	Onion Springs	Lower Twin	Ons8	8314	0	small
		Upper Twin	Ons7	8337	0	small
	Cold Creek		Coc2	8509	0	small
			Coc1	8765	0	small
	Triple Divide		Trd14	8370	0	small
Fish/Convict/McGee	Cascade Valley	Between Cascade and Second Crossing	Cas3	8109	0/166/36	small
		Cascade Valley	Cas2	8354	closed	small
Mono/Rock Creek	Second	First Recess	Sec1	8329	0/26/0	emphasis

Geo unit	Analysis unit	Meadow name	Id #	Elevation	Actual*Use 01/02/03	Habitat Category
	Recess					
		Mono Creek at Second Recess	Sec15	8541	21/0/61	small
	Graveyard	Graveyard	Gra9	8865	0/32/0	small
Fish Creek/Convict/McGee	Margaret	String	Mar26	8454	0	emphasis
			Mar38	8569	0	small
Florence/Bear	Ershim		Ers7	9017	0	emphasis
			Ers8	8986	0	emphasis
	Bolsillo		Bol1	8312	0	small
JMSW	Spanish	Stathem	Spa10	8111	0	emphasis
		Cow	Spa7	8343	0	small
		Stathem	Spa12	8426	0	small
		Spanish	Spa37	8427	0	emphasis
			Spa8	8532	0	emphasis
		Willow Meadow	Spa14	8704	0	emphasis
			Spa2	8872	0	small
	Big Maxson	Big Maxson	Bim7	8469	0	emphasis
	Crown Basin		Crb7	8753	0	small
			Crb15	8896	0	small
			Crb14	8935	0	small
	Crown Lake		Cr113	8937	0	small
			Cr120	8595	0	small
			Rod1	8699	0	small
			Rod4	8925	0	small
			Fin24	8959	0	emphasis
		Chain Lakes	Fin6	8973	0	emphasis
			Fin23	8859	0	small
	Hobler	Chamberlain	Hob26	8308	0	small
		Long Second	Hob14	8553	0	emphasis
		Long Meadow 1	Hob15	8588	0	small
	South Woodchuck		Sow23	8898	0	emphasis
	Post Corral	Post Corral	Poc17	8254	0	small

*Reported Use in Stock Nights

The meadows above 9,000 feet that were observed in the AA/JM Wildernesses begin to lose suitable tall willow habitat structure and, therefore, are not considered as potential habitat for this analysis.

It must be noted that many of the sierra meadows identified in Tables 3.24 and 3.25 have had no field validation of the suitability determinations made from satellite imagery analyses. Field validation would be useful to ultimately determine the meadow suitability, since, in general, there is considerable inaccuracy in satellite imagery habitat analyses.

There is a very low probability that the species may ultimately be found nesting in the lower elevation meadows of the AA/JM wildernesses on both sides of the Sierra. The majority of the potential habitat meadows are considerably isolated and disjunct from known willow flycatcher nesting areas. If the species experiences a population recovery in the future the most likely areas where the species would be encountered first are in historical non-wilderness breeding habitats that are of higher suitability. The species appears to be declining across its range and cannot even be detected at the majority of the sites it was observed to be territorial or confirmed to nest in the past.

Northern Goshawk: One active goshawk nest territory is known within the AA/JM Wilderness areas at North Lake in the Lamarck Analysis Unit, Bishop-Humphreys Geographic Unit. Six other territories are found within the Wildernesses; one on the Inyo National Forest, and five on the Sierra National Forest along the western portions of the AA/JM Wildernesses displayed in the following table.

Table 3.26 Goshawk territories – Inyo and Sierra National Forests

Geo Unit	Analysis Unit	Site Name	Forest Number	Status
Mono Rock Creek	Hilton Creek	Davis Lake	n/a	Old nesting territory now abandoned at known nest sites. Recent surveys cannot detect birds
Bishop Humphreys	Lamarck	North Lake	n/a	Active nest territory
John Muir Southwest	Dusy	Maxon Dome	SieGH4	Sightings and habitat, but no known nest site
John Muir Southwest	South Woodchuck	Chimney Lake	SieGH9	Sightings and habitat, but no known nest site
John Muir Southwest	Finger	Hoffman Mountain	SieGH15	Historic, exact location of nest unknown
John Muir Southwest	Rodgers	Crown Valley	SieGH17	Sightings and habitat, but no known nest site
John Muir Southwest	Cassidy	Granite Creek	SieGH36	Sightings and habitat, but no known nest site

Four of the five goshawk territories on the Sierra NF in the Ansel Adams and John Muir Wildernesses were surveyed from 2002 through 2004. The goshawk network guidelines for the Sierra NF defines a goshawk territory as a contiguous area composed of 50 acres around the nest site, 50 acres of post-fledgling area, and 75 acres of foraging habitat. There are no known existing nest sites for the five territories shown in the table above. The territories were surveyed according to the May 2002, Survey Protocol for the Northern Goshawk in the Pacific Southwest

Region. Four territories (SieGH4, SieGH9, SieGH17 and SieGH36) are based on incidental sightings and/or suitable habitat. One territory (SieGH15) is based on historical nest information.

Maxson Dome (SieGH4) territory was surveyed in 2002 and 2003. In 2002 there was a visual observation, no vocal response. In 2003 there was no response. The territory may be occupied with the nest(s) location(s) unknown.

Chimney Lake (SieGH9) territory has incidental sightings from the 1990s. The territory was surveyed to protocol in 2004 and determined to be unoccupied that year. No birds were heard or seen.

Hoffman Mountain (SieGH15) territory is based on a sighting in 1991 and several years of historic nesting; however, exact location of nest is unknown. The territory was surveyed to protocol in 2004 and determined to be unoccupied that year. No birds were heard or seen.

Crown Valley (SieGH17) territory is based on center of approximate sighting location. In the historical sighting records and database it is noted as one adult with one young. The territory was surveyed to protocol in 2004 and determined to be unoccupied that year. No birds were heard or seen.

Granite Creek (SieGH36) territory is based on sightings from 1994. No surveys have been conducted since that time.

A limited one year survey was also conducted along the South Fork of the Kings River in the Florence Bear Geographic Unit in suitable habitat along Meadowbrook Creek in the Big Maxson Analysis Unit.

Visual surveys to locate territorial goshawk or their nests were conducted on the Inyo National Forest from 2001 through 2004 while traveling in suitable habitat along trail system corridors, and around destinations and camps. No birds or nests were found. Individual goshawk were observed on a few occasions moving rapidly through forests along system trails during field trips. The trail observations were well away from destinations or camps where a goshawk nesting territory could be adversely affected by human uses of these areas. As a result it was determined that the sightings do not warrant protocol surveys.

All other suitable potentially occupied habitats within the wilderness have not been surveyed to protocol survey standards since the majority of goshawk habitat around trails, camps and destinations where commercial pack stock operations occur has been observed to be in excellent condition from a structural habitat suitability standpoint.

The table below displays the estimated acres of suitable goshawk habitat below 10,000 feet, the highest elevation for a nest site recorded on the Inyo National Forest.

Table 3.27: Distribution of suitable goshawk nesting habitat below 10,000 feet on the Inyo and Sierra National Forests within the John Muir, Ansel Adams and Dinkey Lakes Wildernesses

Geographic Unit	Suitable Acres Sierra NF	Suitable acres Inyo NF	Total Acres
Ansel Adams East	0	13,475	13,475
Ansel Adams West	14,315	852	15,167
Fish Convict Mcgee	7,879	2,759	10,638

Geographic Unit	Suitable Acres Sierra NF	Suitable acres Inyo NF	Total Acres
Mono Creek/Rock Creek	5,194	361	5,555
Bishop/Humphreys	314	257	571
Florence/Bear	11,534	0	11,534
John Muir Southwest	16,325	0	16,325
John Muir Southeast	0	1,335	1,335
Total Acres Suitable Habitat	55,561	19,039	74,600

Great gray owl (*Strix nebulosa*): According to Beck and Winter (2000) the great gray owl prefers to nest in the broken-off tops of snags at least 24 inches in diameter within mid to late successional conifer forests that are within 300 yards of montane meadows at elevations up to 8,000 feet. The birds may nest as high as 9,000 feet and also utilize the nests of other raptors such as goshawk. Montane meadows greater than 25 acres in size provide preferred foraging habitat adjacent to the nest site. Owls hunt predominantly in the meadows for voles and pocket gophers that comprise 90% of the owl's diet. Owls arrive in late March to early April in high elevation sites to begin their breeding activities. Nesting including egg laying at higher elevations usually occurs in late April to mid May. Young typically fledge approximately 56 to 58 days after egg laying which would likely put it at late June to early July in montane forests of the Wildernesses.

Preferred suitable nesting habitat exists in the AA/JM Wildernesses in old growth mixed conifer, red fir and lodgepole pine forests adjacent to the meadows identified in Table 3.28 predominantly on the Sierra NF, west side of the Sierra Nevada crest. Habitat may extend up to 9,000 in the red fir zone (Beck and Winter, 2000). There are no records of nesting great gray owls, and only one historical record of an observed bird. That sighting occurred in the Ansel Adams Wilderness on the Sierra NF near Grassy Lake in the Silver Divide Analysis Unit in Fish Creek/Convict/McGee Geographic Unit. The sighting was considered reliable. No follow-up surveys were conducted. The owl was observed at 9,500 feet; well above the generally recognized preferred habitat upper elevation limit so there is a low probability that it was a nesting bird.

The only known nesting population centers around Yosemite Valley in Yosemite National Park, and at Clover Meadow on the Sierra National Forest a few miles west of the Ansel Adams West Geographic Unit outside of wilderness. Table 3.28 identifies suitable nesting habitat areas within the two Wildernesses.

Table 3.28. Great gray owl suitable habitat identified within the AA/JM Wildernesses

Geo Unit	Analysis Unit	Meadow area with adjacent Forested Suitable Nesting Habitat	Elevation	*Minimum Acres Suitable Habitat Estimated
AA East	Minaret	Johnston Meadow, Min 11	8,128	500
AA West	Cargyle	77 Corral, Corral, Cargyle, Car 8, 10, 12	7,400 to 8,200	300
	Junction	Junction Bluffs, Rattle Snake Lake, Jun 5, 6, 12, 13	5574	145

Geo Unit	Analysis Unit	Meadow area with adjacent Forested Suitable Nesting Habitat	Elevation	*Minimum Acres Suitable Habitat Estimated
	Arch	Bear Meadow, Arc 16, 18, 19, 20	7359	380
	Onion Springs	Lower Twin, Ons 8, 13	8026	
	Cold Creek	Coc 2, 3	7956	355
Florence Bear	East Florence/Sallie Keyes	Double, Lower and Upper Blayney Eaf 2, Sak 17, 18	7831	203
		Jackass, eaf1 Hellhole, hoo2 Poison, hoo1	7193 6794 6183	80
JMSW	Finger	Fin 9,13, 14, 15 ,16, 17, 18, 19	7370	420
	Spanish	Spa 6		160
	Rodgers	Crown, Rod 5, 6, 31	7982	855

*GIS Satellite imagery analysis minimum habitat suitability acreage estimate. It is likely field analysis would determine substantially more suitable habitat.

The Inyo and Sierra National Forest Plans as amended by the Sierra Nevada Forest Plan Amendment S&G 35 directs forest managers to conduct additional surveys to established protocols to follow up reliable great gray owl sightings. No recent reliable sightings have occurred in the AA/JM Wildernesses that would initiate a protocol survey effort and one is not warranted at this time until a sighting occurs.

A non-protocol survey by the Sierra NF was conducted in August 2003 in Double and Blayney Meadow. No great gray owls or their sign were detected. The survey would have had a very low probability of detection of hooting owls since it was outside of the protocol period. Wilderness interdisciplinary field trips from 2001 through 2004 also did not detect any great gray owl sign.

Pacific fisher (*Martes pennanti pacifica*): The SNFPA FEIS (2001) notes the fisher is not known to occur on the Inyo National Forest. Numerous years of camera detection sampling efforts have failed to document fisher presence on the Forest. The SNFPA Final Supplemental EIS (2004) noted that the recent monitoring for the two years before publication indicated the fisher was well distributed on the Sierra National Forest as part of the Southern Sierra fisher population subregion. According to the SNFPA FEIS fishers use large areas of coniferous forests with fairly dense canopies and large trees, snags and downed logs. The California Wildlife Habitat Relationships (CWHR) types of importance to fisher include structure classes 4M, 4D, 5M, 5D, and 6 (stands with trees 11 inches diameter at breast height (DBH) or greater and greater than 40% canopy cover (Zeiner et al., 1990). Forest types in the CWHR model include ponderosa pine, mixed conifer, montane riparian, aspen, red fir, Jeffrey pine, lodgepole pine, subalpine conifer, and eastside pine.

The species is most likely to occur within the Sierra NF portion of the AA/JM Wildernesses at lower elevations below 8,000 feet in ponderosa pine, and pine associated mixed conifer forests on the west slope of the Sierra Nevada, and especially in the Kings River watershed. Intensive

survey efforts to understand the species range in these wildernesses has not been conducted. The 2003 Sierra Nevada Forest Plan Implementation Monitoring Accomplishment Report indicates that fisher has been detected in 60 sample units in the southern Sierra Nevada on the west slope, outside of wilderness based on a two year regional survey effort. No detections of fisher occurred within limited sample areas of the AA/JM Wildernesses. The species range is most likely to overlap with commercial pack stock operations along the lower portions of system and user trails and low elevation camps and destinations in the John Muir Southwest, Florence-Bear, and Ansel Adams Geographic Units.

California wolverine (*Gulo gulo luteus*) and the Sierra Nevada red fox (*Vulpes vulpes necator*) have not been verified to occur in the Sierra Nevada for over 60 years (Zielinsky, 2004). Their status in the wilderness is unknown. A survey effort would not be productive at this time since a widespread multi-year survey effort of 334 sample units from 1996 through 2002 as part of the Sierra Nevada Ecosystem Project did not detect the two species in sampled areas of the Sierra Nevada in and outside wilderness areas.

Marten (*Martes americana*) are widespread and likely common throughout the wildernesses primarily utilizing old growth mixed conifer, red fir, and lodgepole pine forests for denning and foraging habitats. They have been found in all forest types as well as the high elevation subalpine and alpine zones.

California Spotted Owl: There are 15 Protected Activity Centers (PACs) for the California spotted owl that are located in the two wildernesses for the Sierra National Forest. The table below shows the status of those PACs. Of the 15 PACs, three have nesting status.

Table 3.29 Status of California spotted owl Protected Activity Centers

Analysis Unit/Protected Activity Center #	Status	Year surveyed
Junction AU		
MA033	Unknown	1989
Arch AU		
FR037	Pair	1989
FR046	Pair	1986
FR072	Pair	1990
FR073	Pair	1990
FR074	Pair	1990
Hot Springs AU		
FR048	Pair	1987
FR057	Unknown	1988
Bear Ridge AU		
FR070	Unknown	1989
FR075	Unknown	1990
Rodgers AU		
FR068	Unknown	1989

Analysis Unit/Protected Activity Center #	Status	Year surveyed
FR086	Unknown	1990
Bridge Crossing AU		
MA036	Pair with young	1989
Fuller Buttes AU		
MA041	Pair with young	1992
MA082	Pair with young	1990

Peregrine Falcon (*Falco peregrinus anatum*) There are two known peregrine aeries within the planning area on the Sierra NF. Three more on the Sierra NF are located in areas in close enough proximity where the falcons may be foraging within the planning area. No known active, or historic peregrine aeries are located on the Inyo NF portion of the planning area.

The **Townsend's big-eared bat** (*Corynorhinus townsendii*) roosts primarily in caves and cave analogues such as lave tubes, and abandoned underground mine adits. It forages across a wide-range of forested and shrub habitats, particularly along riparian corridors. The species utilizes caves and abandoned mines to give birth to young in maternity roosts, and also hibernates in these habitats during the winter months. There are no known maternity or hibernation sites within the Ansel Adams and John Muir Wildernesses, however, hibernation sites in old mines may exist in the mid elevation zones up to 10,000 feet if the mine openings remain open during the winter months.

No information is available to know whether the **western red bat** (*Lasiurus blossevillii*), or the **pallid bat** (*Antrozous pallidus*) occur within the wilderness boundary. The pallid bat occurs in non-wilderness on the Inyo National Forest primarily in shrub foothill habitats and in the ponderosa pine belt on the Sierra National Forest, mostly below 6,000 feet in elevation. It likely forages in the lower elevations of the wildernesses.

Management Indicator Species

Mule Deer: The Inyo and Sierra National Forest Land Management Plans and the California Department of Fish and Game Deer Herd Plans (CDFG, various dates) provide descriptions of the deer herds that utilize the AA/JM Wildernesses. Field trip observations showed deer presence or sign occurring in the majority of montane and subalpine forest and riparian habitats visited. Most montane meadows in the lodgepole pine zones showed considerable deer sign. Meadows with shrub and tree cover provide important mule deer fawning, and fawn rearing habitat, though this species also utilizes upland shrub and dense tree thickets for fawning. The changes to meadows from historical and existing pack stock use that were observed and reflected in the meadow analyses showed highly variable levels of modification of mule deer habitat in terms of changes in plant species composition to lower seral stages, or a reduction of wetland, and wet meadow areas in the meadows where the water tables have been affected. These effects were not observed to substantially change habitat suitability of the meadows for mule deer since cover and forage availability was relatively unaffected, as well as the fact that any given watershed has a substantial area of undisturbed habitat that deer can utilize. Riparian habitats where pack stock use occurs were observed to contain good mosaics of shrubs for cover and

forage species availability. Pack stock use was observed to have only minor effects to the willow shrub component of a meadow under light to moderate grazing utilization levels.

Field observations for this analysis indicated that the majority of high country montane and lower subalpine meadow riparian zones and the immediate surrounding forests are important deer habitats. These key habitats provide suitable deer fawning, and fawn rearing habitat, are the most limited habitats, and are probably the most valuable habitats on deer summer range. Commercial packer campsites, destinations, and grazing areas that overlap with riparian habitats were observed to be the principal areas where flight reaction and displacement disturbance effects to deer, especially does with fawns were occurring during the period of commercial pack stock operations. It was also observed that substantial riparian habitat was available in wilderness away from trails and campsites where deer could recover from disturbance events.

Commercial pack stock activities were sporadic in an area for varying time periods, and highly variable from year to year. There is available habitat and periods when pack stock activities are not occurring that may provide mule deer with the ability to shift their locations during disturbance overlap periods to other less disturbed or undisturbed riparian habitat areas.

Riparian bird guild/meadow edge bird guild/yellow warbler/blue grouse

The MIS riparian dependent/associated bird species and species groups for the Inyo and Sierra National Forests are considered together since the assessment of riparian conditions related to structural habitat conditions affects some aspect of the nesting/brood rearing, and foraging habitat requirements of all these species. Late seral riparian conditions provide high quality habitat for these wilderness riparian dependent or associated species. Montane and subalpine riparian and meadow edge bird guild MIS species have not been identified in the Sierra NF Land Management Plan. The yellow warbler (Management Indicator Species, Inyo NF) was observed primarily at lower elevation meadows dominated by a tall bushy willow shrub component at elevations below 9,500 feet. As a result it was observed to be a poor management indicator species for most upper montane/subalpine meadow habitats. Bird species commonly observed in these habitats during field surveys included white-crowned sparrow, dark-eyed junco, dusky flycatcher, fox sparrow, and American robin. Less common species that nest and that were observed at montane elevations of the wilderness were the Wilsons warbler, McGillivrays warbler, song sparrow, black-headed grosbeak, warbling vireo, and northern oriole; the latter three species more commonly found in lower elevation cottonwood and aspen areas. Blue grouse were found where riparian areas were mixed with montane mixed conifer forests containing fir trees, generally below 9,500 feet. Blue grouse broods utilize riparian habitats, as well as upland shrub and forest for cover and foraging for insects.

No studies or monitoring are available for these species or guilds to adequately assess their population status in wilderness. Field observations of pack stock operation effects on habitat were not observed to have materially changed use of riparian habitats by these species. What was observed was increased vulnerability to disturbance with some riparian bird guilds species such as the dark eyed junco and white crowned sparrow that either nest on the ground or in low shrub habitat.

Wilderness habitats provide some of the least disturbed habitat conditions for these species compared with non-wilderness landscapes, even with the recognition that historical disturbances have substantially changed the structural habitat conditions on some of the more heavily used

areas such as Jackson, Grassy, and Silver Pass Meadows. Five meadows that overlapped with identified pack stock grazing areas were observed to have lost water table with a probable gross loss of wetland/wet meadow habitats. Another 19 meadows (see Table 3.30) identified as grazed by pack stock showed several aspects of meadow habitat structure substantially modified or at risk such as wetland habitat availability, stream channel profile, and spring habitat. It is unclear how these changes have affected riparian bird guilds and blue grouse use of these meadows.

Wildlife Habitat Ratings

A general wildlife habitat rating was determined for a sample of meadows visited in the wilderness and identified as pack stock grazing areas. This rating looked at departure of habitat conditions away from good ecological, late seral condition. The rating is an index of habitat condition that assesses meadows from a multi-species perspective with the assumption that a late seral meadow condition provides the most favorable structural habitat conditions for focal wildlife species such as amphibians and riparian songbird guilds, as well as other species such as deer, blue grouse, waterfowl, and obscure species such as meadow voles. A departure substantially away from late seral stages is assumed to correlate with less favorable habitat conditions for riparian associated and dependent wildlife species. At the same time it is also recognized that habitat changes away from late seral favor some wildlife species. These changes, however, are rarely beneficial for the focal wildlife species mentioned above.

A rating of zero indicated a late seral meadow showing no signs of recent grazing. A one rating indicated a minor departure from late seral condition and also an observed pack stock grazing area; a rating of two indicated that the meadow had localized changes from late seral conditions that were degrading riparian habitat, and also overlapped with observed pack stock grazing; and finally a rating of three indicated that there were substantial habitat changes away from later seral conditions such as meadow loss of hydrological function in parts or all of the meadow enough to substantially affect wet meadow and wetland riparian habitat availability for wildlife, and change the potential natural vegetation (PNV) of the site. The meadows also had observed pack stock grazing.

One hundred eighty five meadows were analyzed and given a wildlife habitat rating during field work from 2001 through 2004. Nineteen meadows were rated as a category 3 or modified from late seral meadow conditions from loss of hydrologic functioning where wet meadow and wetland wildlife habitat was substantially lost or in the process of being lost through active headcut spring and stream channel erosion. Five of these meadows had existing commercial pack stock grazing.

Table 3.30 Category 3 meadows

Meadow Name
McClure to Sadler Lake Meadow
West of Joe Crane Meadow
Fernandez Meadow
Fernandez Creek Meadow
Knoblock Meadow
Detachment Meadow

Meadow Name
Grassy Meadow
Jackson Meadow
Box Canyon above Jackson Meadow
Below Lee Lake at Tarn
Chetwood Cabin Meadow
Graveyard Meadow
Upper Graveyard Meadow
Cascade Valley
Lee/McGee Trail Junction
Silver Pass Meadow
Big Maxson Meadow
Below Lee Lake at Tarn
Baldwin Scheelore

Fifty-nine meadows were given a “2” rating, 33 of which were observed to have commercial pack stock grazing use where some aspect of meadow habitat condition was inconsistent with management direction such as, widened stream and spring channels, sod fragmentation, headcuts, or heavily trampled and chiseled wetland and wet meadow areas including spring and stream channels. Another 88 meadows were given a “1” rating to indicate pack stock grazing was not observed to have any substantive effects on the maintenance of key wildlife habitat features and the meadows were in good ecological condition. Nineteen meadows received a “0” rating.

Geographic Unit Scale

Ansel Adams East

Overall AA East provides high quality wildlife habitats in all ecological zones. Montane-forested habitats are, for the most part, in an old growth condition and are primarily in the red fir-mixed conifer-lodgepole pine zones.

Forty-one meadows were rated for wildlife habitat conditions. No meadows rated in category 3, the most degraded meadow condition; eleven meadows rated in category 2 noting localized areas of meadows that have some level of impacts to key habitat features. Twenty-nine meadows rated in category 1 (meadows with no substantive changes away from late seral conditions). One meadow was in the zero category.

Riparian habitat impacts from pack stock use of trails were observed in wet meadow areas such as the system and user trails to Emily Lake, Upper Ediza and Iceberg Lakes, Laura Lake, and a new stock user trail to Rodgers Lake grazing area from Davis Lake. The impacts were small portions of the meadow where the trail tread was either substantially incised or trampled and widened.

Breeding populations of Yosemite toads were found in 29 meadow areas of which 13 were observed or identified as pack stock grazing areas.

There are 11 known populations of mountain yellow-legged frog in this geographic area primarily inhabiting small lakes and stream channels adjacent to the high lakes at the base of the Ritter Range peaks. Seven populations have habitat that are within identified pack stock grazing areas. Five of these areas showed no evidence of pack stock use and appeared unaffected.

The old growth fir and lodgepole forests below 9,600 feet provide excellent goshawk nesting habitat. There is abundant suitable habitat for goshawks to select nest sites without adverse effects associated with existing pack stock use of the trails and destinations.

Riparian habitat for MIS species was, for the most part, in high quality condition. Localized riparian habitat degradation was associated with trails at Ediza Lake, Emily Lake, Laura Lake, Rodgers Lake stock use trail, and Upper Crater Meadow where trails were incised or coursed through a meadow affecting small portions of the meadows suitability for use by the above species.

Overall wildlife habitat for nesting songbird guilds and mule deer habitat was observed to be in good condition with localized areas of lower condition habitat along stream channels and some springs such as at upper and lower Spooky Meadows and the meadows mentioned above. Destination camps and trails showed low impacts to wildlife habitats.

The upper and lower River Analysis Units that encompass the Middle Fork of the San Joaquin are high use deer areas particularly in fall when deer utilize the aspen sagebrush types as a fall holding area. The two units also provide high quality fawning habitat especially on the eastern slopes where lush spring fed aspen and willow stands intermix with open sagebrush parks. The High Trail courses through this area and is used as a main pack stock day ride trail and thoroughfare to Thousand Island Lake. Stock is not present when deer congregate in the fall months.

In the Parker AU, Parker Meadow just below Parker Lake at 8,300 feet is a designated historically occupied willow flycatcher site based on an observation in 1936. No willow flycatchers have been detected in any surveys since that time. It is the only site inside the wildernesses with a record of willow flycatcher occupancy. The site is not an identified pack stock grazing area.

Upper Alger Creek Meadow and Lower Alger Creek terraces are both occupied Yosemite toad habitats (three breeding sites) within identified pack stock grazing areas. Both meadows were monitored in 2003 and 2004 and observed to have light stock trampling and chiseling impacts that overlapped with occupied Yosemite toad breeding pool habitats. Small headcuts were found in both meadows but are currently not adversely affecting toad habitat. Four other breeding sites outside identified pack stock grazing areas occur in the analysis unit, all in excellent condition. Upper and Lower Spooky Meadow have pack stock related habitat impacts such as trampled and chiseled spring and stream channel areas (wildlife habitat rating 2) that may be having minor habitat suitability impacts for ground and low shrub nesting birds.

Rodgers Lake Meadow was observed to have localized moderate pack stock trampling and chiseling impacts in Yosemite toad breeding habitat in 2003 and light impacts in 2004. Davis Lake Meadow had no impacts in 2003 (when it was occupied by toads) and moderate impacts in 2004 (when it was occupied by toads). Marie Meadow had light pack stock impacts that overlapped with occupied Yosemite toad breeding habitat.

Donahue Camp meadow has an eroded creek trail crossing. The creek crossing leading to a packer campsite is adversely affecting a localized section of streambank where adult mountain yellow-legged frogs utilize the undercut bank. The crossing is resulting in collapse of undercut bank habitat and a loss of a small portion of available cover.

The western meadows of Thousand Island Lake showed light to moderate trampling and chiseling impacts to toad habitat both in 2003 and 2004 that overlapped with occupied Yosemite toad breeding habitat. Mountain yellow-legged frogs were also observed in one of the small stream channels in these meadows with no apparent impacts from pack stock grazing. The system trail along the northern perimeter of the lake has small areas of heavily trampled and widened riparian stringers at three trail crossings.

The user trail along the inlet of Ediza Lake and the system trail to Iceberg Lake were incised and eroded, resulting in a minor loss of riparian wildlife habitat. There appears to be meadow habitat loss and changes in the identified grazing area above Shadow Lake.

Wildlife habitat is in excellent condition in the River Corridor and River High AUs. The old growth lodgepole pine forest mixed with aspen and red fir is high quality nesting habitat for goshawks where the system trail courses through. No birds, however, were observed. The River High AU is also high quality mule deer fawning habitat.

Overall, the Minaret AU provides high quality wildlife forested and riparian habitats. Minaret Creek was rated a wildlife habitat rating of two because of an incised channel as it courses through Johnston Meadow. The stream appears to no longer access its floodplain and as a result there may be some loss of wet meadow/wetland habitat. There appears to be substantial wet meadow/wetland habitat at the southern end in spite of the stream incision, probably because of tributaries and springs that feed water into the meadow. Light evidence of pack stock trailing was observed though it was an identified grazing area. The South Fork of Minaret Creek has several ponds with mountain yellow-legged frogs that are not affected by pack stock operations.

In the King Creek AU, the trail to Superior Lake Meadow has five parallel ruts that are affecting mesic meadow habitat.

The Crater Creek/Deer Creek watershed is a designated Critical Aquatic Refuge for Yosemite toads from the SNFPA. No adverse pack stock grazing impacts were observed to the eight meadow areas where breeding populations of Yosemite toads were found. Pack stock use in that watershed appears light. Upper Crater Meadow has occupied toad-breeding habitat that is situated within 25 feet of the system trail. A severe trampling and chiseling event from what appeared to be recreational pack stock occurred in a small 400 square foot meadow patch along the stream. The grazing event resulted in denuded areas of bare soil where the vegetation had been chiseled, including streambank loss and erosion gully formation. It did not overlap with the critical toad habitat in the meadow.

Ansel Adams West

The northern half of this geographic area has four analysis units that show low use with no identified grazing areas: Chiquito, Jackass, and Iron Creek. Similarly low pack stock use in Cargyle, Bridge Crossing, Iron Creek, Lake Catherine, Chiquito, and Jackass AUs suggests that there are no substantive impacts to wildlife habitats occurring.

Cora, Lillian, and Sadler AUs have eight meadows where impaired hydrologic functioning of these meadows from historical uses has led to probable loss of wet meadow and wetland habitats for wildlife. Another six meadows were observed to have moderately impaired hydrologic function.

The southern half of Ansel Adams West has eight known Yosemite toad locations and one mountain yellow-legged frog population identified in the eight analysis units named above. There appears to be no overlap with any pack stock operations that would affect these populations.

Fish Creek/Convict/McGee

In this geographic area, nine meadows were assigned a wildlife habitat rating of three, or the most severe degradation rating: Baldwin-Sheelore, Martins, Round, Grassy, Jackson, Box Canyon above Jackson Meadow, Cascade Valley, Lee McGee trail junction, and Below Lee Lake at Tarn. They were observed to have degraded hydrologic function that has resulted in historical loss of areas of probable wet meadow/wetland habitat. These meadows also have a substantial threat to continued loss of habitat.

Where localized degradation of areas of meadows was observed to be altering habitat, or threatening localized areas of the meadow, such as critical areas, a “two” rating was assigned to 19 meadows.

Overall, forested wildlife habitats were observed to be in excellent condition. Suitable goshawk nesting habitat is present in lower Fish and McGee Creeks in the old growth lodgepole, red fir, and aspen types where system trails course through the stands.

There are no mountain yellow-legged frog populations in the geographic area.

The Convict and McGee watersheds were designated a Critical Aquatic Refuge in the SNFPA because of numerous breeding populations of Yosemite toads. There are 12 populations in McGee Creek and 10 in Convict Creek. There are also Yosemite toads in the Genevieve Meadow, but there are no hydrologic function concerns. With the exceptions of the situations mentioned below—Baldwin-Sceehlore Meadow, Martin’s Meadow, Round Meadow, and Edith Lake Meadow—the breeding habitats are, for the most part, in excellent condition.

In Edith Lake Meadow inlet, pack stock trampling and chiseling in the meadow are overlapping with a Yosemite toad breeding area, as well as at Martins Meadow inlet where a trail was recently located out of the breeding pool.

In the McGee AU, one visit was made to the McGee Creek drainage during the 2004 Toad/pack stock monitoring effort with eight meadows and ten sites visited. Four of these meadows had signs of pack stock impact including chisels and manure, all of which appeared to be related to trail or camp use as no grazing was observed. Light impacts were observed in Round Meadow where an end of season inspection of the meadow showed light grazing, trampling and chiseling that probably occurred after Yosemite toads had metamorphosed and dispersed from the dried out breeding pool areas.

Martin’s Meadow and Steelhead Lake Meadows also showed light pack stock trailing impacts in Yosemite toad breeding habitat. Martin’s Meadow has severe sediment loading, poor trail location, and trail incision at the low end of the meadow that threatens the long-term viability of the lower wetland portion of the meadow. The system trail through the breeding area in Martins

Meadow was re-routed out of the breeding area in August of 2004 to keep pack stock and hikers from passing directly through the wet meadow breeding pool where tadpoles and metamorphosing toads occur.

In addition the incision is causing stream down-cutting, bank collapse, and substantial sediment deposition downstream in Round Meadow in an existing Yosemite toad breeding pool.

The second meadow above Martins was observed to have moderate stock trailing trampling and chiseling impacts in a Yosemite toad breeding area in both 2003 and 2004.

Baldwin-Scheelore Meadow is occupied Yosemite toad breeding habitat that is being severely degraded by the system trail (old mining road) above its perimeter. A 2003 rainstorm incised the road and deposited a massive sediment flow into the meadow that has covered part of one toad breeding pool and threatens the long-term viability of the breeding habitat.

The McGee AU is naturally very erosive because it is a steep drainage with a large portion of metasedimentary rocks. The natural erosivity makes the area vulnerable to human impacts such as trails and grazing because there is a low threshold for triggering major erosion events.

In the Purple Bench AU, there is one known Yosemite toad breeding population discovered in 2004 that also overlaps with an identified grazing area at the north end of Duck Lake.

In the Upper Fish Creek AU, three Yosemite toad breeding populations have been identified around Tully Lake and Red Slate Meadow, all of which are in identified grazing areas. There were no observed pack stock impacts in 2001 or 2003.

Silver Divide AU has eight known Yosemite toad breeding populations. Seven are in identified grazing areas. The 2004 monitoring study found Grassy Meadow and Stringers West of Squaw Lake to have substantial evidence of pack stock grazing, chiseling, trampling, and manure that overlapped with Yosemite toad breeding areas where toad metamorphs were present. The Stringers West of Squaw Lake was not identified as a grazing area, yet it contained heavy impacts from grazing and chiseling in the wettest portions of the meadow, located along the Pacific Crest Trail. In the meadow between Lake of the Lone Indian and Grassy Lake, moderate impacts including grazing and chiseling were found at the breeding site where metamorphs were present along the outlet of Wilbur May Lake. In Squaw Lake Meadow, the most northwest site contained new pack stock signs including chiseling, trampling, and manure; these signs were observed in areas directly occupied by metamorphs.

The Margaret AU has a population of Paiute cutthroat trout in Sharktooth Creek already discussed in the Wilderness Scale section. There are sixteen Yosemite toad breeding areas in the analysis unit. Frog Lake Meadow and North of Frog Lake Meadow are identified grazing areas with toad populations, neither of which showed any grazing impacts to the toad populations.

Mono Creek/Rock Creek

Forested habitats are in excellent mature and old growth condition. The most substantial impact observed from camps was at a main stock camp at Third Recess along Creek Meadow area in a lodgepole forest where about two acres of severely compacted denuded understory occurs in a lodgepole stand.

Wildlife habitat was evaluated in a sample of 21 meadows that were identified as grazing areas. Three meadows rated a “3” in the Graveyard Analysis Unit: Silver Pass Meadow, Upper

Graveyard, and Graveyard. They are substantially degraded from stream incision events that have resulted in probable loss of wetland-wet meadow habitats.

Another eight meadows rated a “2” with localized problems similar to other meadows in the wilderness where sod fragmentation, headcuts, stream channel widening, and trampling and chiseling impacts to wet meadow/wetland, spring channels, and streambanks were observed to have adverse effects to meadow habitat structure. The remaining meadows are rated either “0” or “1”.

The system trail in Hopkins Analysis Unit has substantial trail incision as it courses through the Hopkins Creek meadow complex. It is unknown what this incision is doing to the meadow wildlife habitat.

Mountain yellow-legged frog populations occur in a number of areas of the geographic area. The largest concentration occurs in Fourth Recess and Second Recess AUs. One other frog population was identified in the Bear Ridge AU (BER9) and in Evon Meadow in the Silver Pass Analysis Unit. Neither meadow has been identified as a grazing area.

Seventeen meadow complexes were found to have twenty-two Yosemite toad breeding sites identified in Devils, Graveyard, Silver Pass, Laurel, Pioneer, Volcanic, Morgan and Little Lakes Valley Analysis Units. Twelve meadow breeding sites overlap with identified pack stock grazing areas. There was no grazing reported in any of these meadows over the last three years, nor were any impacts observed from pack stock grazing. The Pioneer Basin has been closed to pack stock grazing for a number of years.

In the Hilton AU, one goshawk nest territory is present in the Hilton Creek Analysis Unit around the eastern shore of Davis Lake. Anecdotal reports suggest packer camps and stock holding areas may have been located in close proximity to the nesting area. Goshawk can habituate to human presence if it is non-threatening, and it is possible they may have habituated at Davis Lake. The territory has been on record since 1982; however, it has been inactive for several years. It is unknown why the birds are currently absent from the territory. Abundant suitable nesting habitat is available throughout the watershed that is well away from human use areas so the birds may have shifted their nest location, although searches in many of these areas have failed to turn up any sign of goshawk.

In the Little Lakes AU, meadows above Long Lake and SW of Long Lake have breeding populations of Yosemite toads that overlaps with an identified grazing area. The population is vulnerable to extirpation since very few toads or egg masses appear at the breeding pools.

In the Tamarack AU, wildlife habitat is in excellent condition. The old growth lodgepole forests near Dorothy Lake appear to be highly suitable goshawk nesting habitat.

In the Morgan Lakes AU, wildlife habitat is in excellent condition. Occasionally Sierra Nevada bighorn sheep descend off the mountain slopes of Mt. Morgan close to the old mining operations and trail area.

Five populations of mountain yellow-legged frogs were found in Fourth Recess with one in an identified grazing area North of Mono Rock. One frog was found in the meadow in a spring channel. The channel did not appear to be adversely affected by grazing. A nearby sedge wet meadow 100 feet away was substantially trampled and chiseled from a recent grazing event. A small spring headcut was observed.

All of the Pioneer Basin Meadow has been closed to grazing for years to allow for meadow restoration. Camp Meadow, Mudd Lake, and East of Mudd Lake have breeding populations of Yosemite toads that overlap with an identified grazing area. Camp Meadow complex has trail incisement problems in the meadows but it does not appear to be adversely affecting toad breeding sites.

The Laurel AU has relatively undisturbed wildlife habitat conditions. Laurel Creek Complex and North Laurel Lake Complex have breeding populations of Yosemite toads that overlap with an identified grazing area.

In the Second Recess AU, a significant population of mountain yellow-legged frogs can be found in the upper lakes basin. Six populations were identified in Second Recess with two overlapping an identified grazing area.

In the Silver Peak AU, Silver Pass Meadow has a breeding population of Yosemite toads that overlaps with an identified grazing area.

Volcanic Knob Meadow and the meadow past of Volcanic Knob (in the Volcanic AU) have breeding populations of Yosemite toads that overlap with an identified grazing area.

Devils Bathtub (in the Devils AU) has a breeding population of Yosemite toads that overlaps with an identified grazing area.

Bishop/Humphreys

Forested wildlife habitats were observed to be in excellent mature and old growth landscape conditions.

The vast majority of meadow habitats are in excellent condition throughout the Geographic Unit. Six meadows discussed below were rated a “2” with identified problems primarily associated with incised system trails, or pack stock grazing areas.

Treasure, Gable and Humphrey Basin AUs have populations of mountain yellow-legged frogs associated with high alpine lake basins. No substantive amount of pack stock use occurs around these populations since they are in very high subalpine/alpine lake basins difficult to access by pack stock except possibly for dunnage trips to drop off gear for hikers. California Department of Fish and Game has been removing fish for several years in an attempt to restore Gables Lakes and Treasure Lakes frog habitats.

Yosemite toad breeding populations were found in 24 meadow complexes at 39 breeding sites in Granite Park, Pine Creek, French Canyon, Glacier Divide, and Piute Analysis Units. Seventeen meadow-breeding sites overlap with identified pack stock grazing areas. There was no grazing reported in any of the meadows over the last 3 years except for Merriam Lake Meadow where 15 stock nights were reported in 2003

Yosemite toad breeding sites that overlap with identified pack stock grazing areas are: West of Honeymoon Lake, Honeymoon Lake Meadows, Upper Pine Lake, Pine Creek Stringers, and East of Pine Creek Pass. The Upper Pine Lake site had moderate trampling and chiseling impacts in 2003 that overlapped with metamorph Yosemite toad presence. Pack stock users appear to veer off the system trail in this area and trail through the breeding area. A similar situation was identified above Honeymoon Lake that was rectified by relocating the trail away from the breeding area.

The Pine Creek Yosemite toad/Pack Stock Monitoring Study visited the Pine Creek drainage in late July 2004. Eleven meadows were assessed containing 14 breeding sites. Yosemite toads were observed in an additional five meadows with no pack stock sign observed.

In the Granite Park AU, six Yosemite toad breeding sites were found in the Upper Chalfant Lakes Basin. No pack stock use was observed in the area. Two breeding sites have been found in Granite Park. One site is close to the system trail where five metamorphs were observed trampled in the trail tread from hiker traffic.

In the Horton AU, habitat is in excellent condition throughout the analysis unit.

In the Piute AU, the system trail up the North Fork of Bishop Creek is within 20 feet of the perimeter of a Yosemite toad breeding pool in the Loch Leven Lake area. This trail is the main route for pack stock up to Piute Pass. Trail use and toad breeding success are being monitored to determine if the trail is having any effect in toad use of the habitat. Preliminary observations are that while the trail is in an undesirable location, Yosemite toads continue to occupy the site with no discernable impacts to their breeding success.

In the Lamarck AU, there is an active goshawk territory in the Grass Lake area of the north fork of Bishop Creek. It has been active since 1982. Nest territories have also been known in the South Lake and Sabrina Lake areas from the early 1980s although surveys throughout the 1990s have failed to detect nests or birds present. The Grass Lake birds have constructed nests starts along the system trail in wilderness but have placed their active nest away from the trail area and appear to utilize the habitat in spite of the heavy human use centered on the trailhead and North Lake Campground just outside the boundary of the wilderness.

In the Treasure AU, a population of mountain yellow-legged frogs was found in the Upper Treasure Lakes area. No commercial pack stock use was observed. Wildlife habitats are in excellent condition throughout the analysis unit.

Wildlife habitats are in excellent condition throughout the Bishop Creek AU.

In the Glacier Divide AU, there are six meadow breeding sites that overlap with identified pack stock grazing areas.

In Bishop/Humphreys AU, there is one occupied Yosemite toad breeding site in the West of Lower Desolation meadow.

In the French Canyon AU, Merriam Lake Meadows, Waterfall Camp to Merriam Creek, and West Elba Lake Meadow all had small, localized areas of meadow sod fragmentation evident from pack stock trailing. The system trail through Waterfall Camp to 10760 Meadow was deeply incised with parallel ruts. The most severe meadow degradation was in the meadow adjacent to Waterfall Camp. There were numerous small erosion gullies fragmented fen sod observed from recent pack stock hoof chiseling impacts in 2002. Five or six meadow breeding sites overlap with identified pack stock grazing areas.

Florence/Bear

Forested wildlife habitats were observed to be in excellent mature and old growth landscape conditions.

The vast majority of meadow habitats are in excellent condition throughout the geographic unit. Five meadow complexes were rated a two with identified problems primarily associated with

incised system trails, or pack stock grazing areas. Rosemarie and Hilgard Meadow were observed to have problems with stream incision and possible lowered water table, along with vegetation species composition shifts, and headcuts from historical grazing use. Old Trail, Boot Meadow, and Shooting Star Meadows had localized areas of sod fragmentation, and vegetative species composition changes. It is unknown how these meadow impacts are currently affecting wildlife populations.

Yosemite toad breeding populations were found in 45 meadow complexes at 51 breeding sites in Italy, Bear Lakes, Apollo, Seldon, Bolsillo, Ershim, and Dutch Analysis Units. The latter three units about the Dinkey Lakes Wilderness and adjacent non-wilderness where another forty plus Yosemite toad breeding populations have been identified. Along with John Muir Southwest (discussed below with 55 breeding sites) that makes this area and adjacent southern populations the most abundant and highest density portion of the metapopulation of the species in and adjacent to the AA/JM Wildernesses.

Eight meadow breeding sites overlap with identified pack stock grazing areas.

In the Dutch AU, DUT3 Meadow has a population of Yosemite toads that overlaps with an identified grazing area.

In the Ershim AU, Lake Camp Meadow has a breeding population of Yosemite toads that overlaps with an identified pack stock grazing area.

In the Apollo AU, Marcella Lake Meadow is an occupied Yosemite toad breeding site that overlaps with an identified pack stock grazing area.

In the Bear Lakes AU, the upper lakes basin has a population of mountain yellow-legged frogs, and two sites where breeding populations of Yosemite toads have been found.

In the Seldon AU, Lou Beverly, Low Meadow Terrace NE of Marie Lake, Marie Lake Meadows, and Rose Lake Meadows all have breeding populations of Yosemite toads that overlap with identified pack stock grazing areas. No pack stock sign or impacts were noted in the 2003 interdisciplinary team survey of the Lou Beverly and Marie Lakes Meadows grazing areas.

John Muir Southeast

The Unit has excellent wildlife habitat conditions throughout. No substantive amount of pack stock grazing occurs in any of the analysis units.

In the NF Big Pine, a population of mountain yellow frogs was found at Sam Mack Meadow.

The Sawmill and Baxter AUs are part of the range of the Mt. Baxter bighorn sheep herd. The herd primarily utilizes the high alpine habitats during the summer months. Winter snows usually drive the herd onto the lower slopes of Sand Mountain and Sawmill Canyon. Sawmill Meadow occasionally has bighorn sheep moved down into it for foraging. There is little overlap with commercial pack stock operations except where pack stock travel over Sawmill Pass.

In the Kearsarge AU, Mountain yellow-legged frogs occur in Matlock, Slim and Bench Lakes. California Department of Fish and Game has an active restoration program in this basin.

The Mt. Williamson area in the Shepherd AU has a population of Sierra Nevada bighorn sheep. Their range does not appear to overlap commercial pack station use of the Shepherd Pass trail area.

The Mt. Langley area in the Cottonwood AU has a population of Sierra Nevada bighorn sheep. Their range does not appear to overlap commercial pack station use of the trail system over New Army Pass area.

The old growth lodgepole forests appear to be suitable goshawk nesting habitat.

John Muir Southwest

Forested wildlife habitats were observed to be in excellent mature and old growth landscape condition in Post Corral, Fleming Mountain, Red Mountain, Bench, Basin, and Big Maxon Analysis Units.

The vast majority of meadow habitats are in excellent condition throughout the Geographic Unit. Above Fleming Lake Meadow was assigned a wildlife habitat rating of “2” as a result of observed streambank collapse, stream widening and incisement, and meadow hummocking. Big Maxson Meadow was assigned a “3” rating since it appears to have lost portions of its water table to historical downcutting events on the South Fork of the Kings River.

The lower elevation mixed conifer and old growth lodgepole forests appear to be excellent habitat for goshawk nesting. No commercial pack stock use issues were observed in these habitats that would affect goshawk use of the habitat.

No mountain yellow-legged frog populations were found in this unit.

Yosemite toad breeding populations were found in 53 meadow complexes at 55 breeding sites in Hobler, Dusy, Post Corral, Fleming Mountain, Red Mountain Basin, Bench, Big Maxson, Crown Basin, Rodgers, Crown Lake, Spanish, Finger, and South Woodchuck Analysis Units.

Eleven meadow breeding sites that overlap with identified pack stock grazing areas are: Burnt Corral Meadow, Upper Meadowbrook Creek, Middle Meadowbrook Creek, McGuire Lakes Meadows, Colt Lake Meadow, Horsehead Lake Meadows, Filly Lake Meadows, Roman 4 Meadows, Scepter Meadow, unnamed meadow (FIN1), and Round Corral. No grazing stock nights were reported for these meadows; however, a number of these meadows have been grazed during the 2001 through 2003 period. The meadows visited in Post Corral, Fleming, Red Mountain, Bench, and Big Maxson showed little evidence of stock use where it overlapped with Yosemite toad habitat except at Upper McGuire Lake Meadows.

3.3.2 Vegetation

Wilderness Scale

Introduction

The Ansel Adams and John Muir Wildernesses span the range of east and west side Sierra Nevada habitats. Elevations range from as low as 3,500 feet in the foothills on the west side to 14,495 feet at Mt. Whitney.

Along the western edge of the wildernesses, there are small areas of foothill grassland, but most of the lower slope, up to roughly 10,500 feet in the southern Sierra and 10,000 feet in the central Sierra, is covered with montane forest, montane scrub, or rock outcrop. Low to mid elevation forest associations are primarily composed of jeffrey pine, red fir, lodgepole pine, western white pine, sierra juniper, white fir, ponderosa pine, and mountain hemlock. Tree species occur in highly variable assemblages depending on elevation, slope, and aspect. At lower elevations, drier slopes contain higher percentages of sierra juniper and jeffrey pine, while slopes with cooler, moister microclimates such as north and east exposures, and in drainage bottoms have higher percentages of firs. Lodgepole pine occurs across the spectrum in varying densities, usually at higher elevations with more open forests on drier sites. Some canyon live oak and black oak is present in the southwestern Ansel Adams. Willow, lodgepole, and aspen are common in the riparian areas.

In the subalpine zone, forests are characterized by shorter tree heights and lower density. The Sierra Nevada Ecosystem Project (USFS, 1996) lists the following types: whitebark pine-mountain hemlock, whitebark-lodgepole, foxtail pine, whitebark pine. There is an existing closure to campfires and associated downed wood gathering above elevation 10,000 feet in the north and 10,400 feet in the south.

This closure is designed to protect the sparse subalpine vegetation, primarily whitebark pine, and the elevational limits were based on the known distribution of whitebark pine-dominated vegetation. An estimate of the percentage of campsites above the closure in each geographic unit was made, using campsite locations mapped by the packers.

On the east side, lodgepole and Jeffrey pine stands dominate the montane zone, grading into the sagebrush scrub and pinyon-juniper zones of the eastern escarpment. Riparian corridors are dominated by lodgepole, willow, and aspen, with some cottonwood and water birch at lower elevations.

The Vegetation Types by Geographic Unit table (available in the project record) shows approximate acreage for vegetation types in the Geographic Units, based on available digital vegetation maps of the Sierra and Inyo National Forests.

Riparian Vegetation

Distributed throughout the analysis area in and along the drainages are riparian communities, including meadows, aspen stands, and willow stringers. They are typically in valley bottoms, especially above constrictive rock outcrops or moraines, and are most commonly associated with lakes or streams. Historically and currently, human activities in the analysis area, including

livestock grazing, backpacking, and pack stock use, have been concentrated in or near these riparian areas.

Riparian areas are important habitat and foraging locations for wildlife as well as being important for human recreation and pack stock use. A highly complex, and variable mosaic of riparian areas are found throughout the wildernesses, accounting for 1 to 6 percent of the total acreage in the identified geographic areas. Because of their importance there is management direction, particularly in the SNFPA to protect and maintain streams and “special aquatic features,” including meadows, lakes, and fens (RCO #2, 5) and the Wilderness Plan requires a suitability for grazing determination by an interdisciplinary team (IDT).

This analysis implements the process described in the Wilderness Pack Stock Management Guide, Appendix G, page 11, (Wilderness Plan, 2001) to determine suitability for grazing at specific locations. The IDT surveyed and evaluated approximately 227 meadows for several factors relating to suitability for grazing, including vegetation composition changes away from PNV, range readiness characteristics, presence of fens, and the hydrologic factors described in the Hydrology section 3.2.2. The analysis is focused on identified representative (key) or important areas of special concern (critical) areas within a larger proposed grazing area. The use of key and critical areas is further defined in Chapter 3 of the Rangeland Analysis and Planning Guide, (USDA Forest Service, Pacific Southwest Region, 1997).



High-seral meadow in the Lodgepole Pine forest understory

Meadow Condition Indicators

Vegetative Composition: This analysis is not intended to be a comprehensive wilderness-wide assessment of vegetative conditions. The intent of this analysis is for an interdisciplinary team to collect and document the site-specific information needed to implement grazing as described in the Wilderness Plan Appendix G, Pack Stock Management Guide (Wilderness Plan, 2001) in those locations where a need for grazing has been identified.

A wilderness-wide assessment of vegetative conditions was done and is documented in the Final Environmental Impact Statement for the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses and a detailed assessment of vegetative conditions relative to the grazing resources is found in the Wilderness Plan Appendix F, Ecological State and Transition of Rangelands, (Wilderness Plan, 2001). The vegetative composition of meadows is generally in satisfactory condition with an upward trend as defined by and described in the Final Environmental Impact Statement (Wilderness Plan, 2001, Chapter 3, page 27 and Appendix F). There have been several studies of meadows with heavy use in the AA/JM Wildernesses. In 1982, areas used by Frontier Pack Station were studied and soil and vegetation conditions trends were determined. The trends were stable or upward except at Gem Pass Meadow, where soil condition was judged to be in a downward trend. Utilization rates ranged from 25-42%. A 1987 analysis showed good to excellent conditions at Long Canyon, and Fish Camp, but only fair conditions at Grassy, 2nd-3rd Recess, and Pioneer Basin. Pioneer Basin conditions had deteriorated from good to fair between 1963 and 1986. A 1990 report, using condition/trend and residual forage assessment methods, found good to excellent conditions at Purple, Horse Heaven, Red Meadow, Spooky, and Alger, fair conditions at Minnow Creek Meadow (=Cascade Meadows in this analysis), and poor conditions at White Meadow (=Martin's Meadow). The "poor" rating for White Meadow is based on the dominance of a rhizomatous native sedge that is apparently unpalatable to stock, but is a normal component of high elevation meadows. These studies established permanent 1 m square plots at several meadows, but these small plots provide only limited information. Between 2000 and 2003, permanent monitoring plots were set up in several wilderness meadows as part of the USFS Region 5 Range Monitoring Project (USDA Forest Service, 2004). These plots have established baseline conditions and will be re-read every five years to determine meadow condition trend.

The conclusion of this analysis is that while most meadows are in satisfactory condition as defined and described by the Wilderness Plan, there are some local changes to the vegetative composition of meadows, and of locations within meadows, away from the desirable, late-seral vegetation (see Table 3.31). The seral status of the vegetation within the identified key areas determine the utilization levels for grazing under the Wilderness Management Plan (Wilderness Plan, 2001, pages 23- 26).

Table 3.31 Vegetative composition change (percentage of number of meadows assessed)

Geographic Unit	Little or No Change	Some, Isolated over <1/3 of Meadow	Well Defined: over >1/3 of Meadow
Ansel Adams East	50	43	7
Ansel Adams West	20	28	52
Fish Creek/Convict McGee	59	35	6

Geographic Unit	Little or No Change	Some, Isolated over <1/3 of Meadow	Well Defined: over >1/3 of Meadow
Mono Creek/Rock Creek	40	47	13
Bishop/Humphreys	53	42	5
Florence/Bear	54	18	28
Total	47	36	17



Although most meadows are in satisfactory condition, there are changes to the vegetative composition of some meadows. This photo shows Purple Meadow near a packer camp with observable altered vegetative composition due to stock use. Changes away from desired conditions include increased forbs, decreased grasses and grass-like plants, and increased bare soil. The two large bare areas were created by stock rolling after the packsaddles were removed.

Range Readiness

In addition to being useful to implement the Wilderness Plan direction to establish grazing start dates range readiness is an important component of the suitability evaluations. Our surveys indicate that significant numbers of meadows or substantial portions of meadows assessed in the project area never become dry enough to support the weight and impacts of grazing livestock without permanent damage to the vegetation or soil, that is, they never reach range readiness (see

Table 3.32). If a meadow does not reach range readiness it cannot be counted as part of the available forage from that area.

Table 3.32 Percent of number of meadows assessed by rating of range readiness

Geographic Unit	<5%	5% to 25%	26% to 75%	> 76%
Ansel Adams East	0	16	59	25
Ansel Adams West	0	12	68	20
Fish Creek/Convict McGee	0	19	55	26
Mono Creek/Rock Creek	0	40	33	27
Bishop/Humphreys	0	9	30	61
Florence/Bear	0	9	54	37
John Muir/Southwest	0	40	50	10
Total	0	20	51	29



A meadow which never reaches range readiness due to season-long wet conditions

Grazing Resources

The meadows throughout the project area were used by livestock including pack stock, sheep, and cattle, beginning in the middle to late nineteenth century and continuing through the present

time (Sierra and Inyo N.F. 2200 files; Sierra N.F. Land and Resource Management Plan FEIS, 1991; Inyo N.F. Land and Resource Management Plan FEIS, 1988; Ratliff, 1982 and 1985). Historical writings, such as *My First Summer in the Mountains* by John Muir (1911) and *History of the Sierra Nevada* by F.P. Farquhar (1965), indicate that undocumented historical sheep grazing, from the late 1800s to the early 1900s, likely exceeded the numbers and geographical reach of the cattle grazing that occurred from the early 1900s to the present time. Historical grazing, including sheep and cattle as well as pack stock, was likely many times greater in numbers (stock nights), for a longer season of use, and more widespread than is permitted today (Sierra N.F., 2200 Files; Inyo N. F., 2200 Files, various dates).

Sheep and cattle grazing has been regulated in response to acknowledged resource concerns, and continually reduced, in both numbers and geographic extent, since the early 1900s. There is currently no permitted sheep grazing in this project area. Total currently permitted grazing use by cattle throughout the entire project area is 1,549 animal months (46,470 stock nights) with most of this use occurring in the Ansel Adams West geographic area and some of this use occurring in those portions of the Dinkey Lakes and John Muir Wilderness areas adjacent to the Ansel Adams Wilderness area (Wilderness Plan FEIS, Chapter 3, pages 26-33).

Historical pack stock use in support of sheep and cattle grazing, mining operations, logging operations, and for recreation purposes likely greatly exceeded the numbers and geographic extent of today's use. Table 3.36 at the end of the chapter contains a summary by geographic unit of the reported commercial pack stock grazing nights at meadows throughout the project area.

Fens

Fens are areas where peat (undecomposed plant material) accumulates in groundwater-fed, perennially saturated areas. They are “special aquatic features” (SNFPA), often developing around spring heads, and can be degraded by loss of vegetation, soil disturbances that expose peat to the atmosphere, or small-scale changes in hydrologic condition (Cooper et al., 2004). Fens are partially defined in the SNFPA by the presence of plant species *Sphagnum* spp., *Meesia* spp., or sundew (*Drosera rotundifolia*). A more complete definition, that will be used for this analysis, includes saturated organic soil at least 40 cm deep (USDA Forest Service, 1999), groundwater supported hydrology, and fen plant species. There is no known historical information about the extent and condition of fens in these wildernesses but survey and mapping efforts are ongoing as well as research on fen function and resiliency. Under present management, there are grazing restrictions at only 16 of the more than 1700 meadows, so any existing fens are vulnerable to trampling and hoofpunching by pack stock.

Based on deep organic soil depths and saturated soil, fens were identified in 26 meadows of the 227 visited. There were 34 more meadows with fen characteristics such as saturated organic soil, where further measurements are needed. These will be considered fens for this analysis. *Sphagnum* sp. was found in an additional 31 meadows that would qualify as fens under the definition in the SNFPA, but are probably not fens under the expanded definition and will not be analyzed as fens.

Because fens depend on groundwater and form around springs, the IDT assessment of spring impacts and changes to hydrologic function are used to determine “at risk” fens (Table 3.33).

Table 3.33 Meadows where fens or areas with fen characteristics are at risk due to spring impacts or changes in hydrologic function identified by an IDT.

Geographic/ Analysis Unit	NAME	Spring Impacts	Hydrologic Function Changes	Reported Commercial Pack Stock Use (2001-2003)
RUS	Lower Alger Creek	Moderate	None	High of 296 Stock Nights
RUS	Upper Spooky Mdw	Severe	Slight	High of 44 Stock Nights
CCD	Upper Crater Meadow	Severe	Slight	No restrictions, no reported use
CCD	Deer Creek Meadows	Severe	Slight	95 in the grazing zone
CCD	Upper Deer Creek	Moderate	Slight	95 in the grazing zone
CCD	Deer Lakes Meadows	Moderate	None	95 in the grazing zone
SAD	McClure to Sadler	Severe	Severe	High of 127 Stock Nights
CAR	Between Stairway and Cargyle	Moderate	Moderate	No restrictions, no reported use
CAR	Middle East Fork Mdw	Moderate	None	No restrictions, no reported use
CAR	Cargyle North	Moderate	None	No restrictions, no reported use
CAS	Second Crossing	Severe	Slight	High of 207 Stock Nights, currently closed
CAS	Third Crossing	None	Moderate	High of 91 Stock Nights
PPB	Ram Meadow	Moderate	Slight	High of 164 Stock Nights
UFC	Tully Hole	Moderate	Moderate	High of 105 Stock Nights
MAR	Coyote Grazing Area	Moderate	Slight	High of 84 Stock Nights
GRA	Upper Cold Creek Complex	Moderate	Slight	No restrictions, no reported use, part of cattle allotment
FOR	North of Mono Rock	Moderate	None	High of 174 Stock Nights
FOR	Third Recess along Creek	Moderate	None	At least 174 Stock Nights
FRE	Adjacent to Waterfall Camp	Severe	Slight	62 Stock Nights in the general area

Sensitive Plants

No plants on the federal threatened or endangered species list are known to occur within the planning area. There is a documented population of slender moonwort, *Botrychium lineare*, a candidate species that has been determined to warrant listing (US Fish & Wildlife Service, Federal Register, 2004), but this listing has been deferred because of higher priority listing actions. Father Crowley's lupine (*Lupinus padre-crowleyi*), endemic to a limited area of the Eastern Sierra, is listed as rare by the State of California.

General or intuitive controlled surveys were conducted at meadows, campsites and trails in the areas with most packstock use, but there is much unsurveyed habitat, especially in little used areas. The information used in this analysis is based on these surveys, historical records and field reports from various agency and private botanists. Known populations of sensitive plants tend to be near trails or campsites, which reflects the areas that have been searched. Because

there is so much unsurveyed suitable habitat, potential habitat was determined based on the elevation and habitat types (rock outcrop, upland, or riparian) for each sensitive species.

Seventeen Forest Service sensitive plants are known to occur in the Ansel Adams and John Muir Wildernesses and potential habitat exists for fifteen others. Refer to the Biological Evaluation for this project for more complete analysis for the sensitive species, particularly those of rock outcrop and upland habitats. Region 5 is in the process of updating its sensitive plant list and three additional species that are proposed as sensitive species in this update occur in the analysis area and will be included in this analysis. There are 10 known “watch list” plants in the analysis area, and another just outside in a meadow that is partly in the wilderness. The project records contains a list all these Sensitive, Proposed Sensitive, and Watch List species with the habitat designation(s) (rock outcrop, riparian, and/or upland). Brief descriptions of the proposed sensitive and watch list plant species and the riparian habitat sensitive species that are present in the AA/JM wildernesses are included below. More site specific information about occurrences of all rare species is discussed at the Geographic Unit scale.

Rock Outcrop and Upland Habitat Rare Plants

Species of rocky habitats may occur in crevices, tucked in among rocks on talus slopes, or in shallow pockets of soil on rocky ledges, often on steep slopes. Nineteen of these sensitive, proposed sensitive, and watch list plants of rock outcrop occur or have potential habitat in the two wildernesses and comprise the majority of the known rare plant populations. Most of the known populations are near trails, reflecting where most surveying has occurred. Since more than a third of the wilderness area is rock outcrop, there is extensive unsurveyed habitat for all of these species in the AA/JM Wildernesses, most in areas without commercial packstock use.

Species of upland habitat generally occupy non-riparian openings or shaded areas with low to moderate gradient that are not dominated by rock outcrops. There are seven species of sensitive plants that occur in upland habitats, but no known occurrences or habitat of proposed sensitive or watch list plants of this habitat type.

For additional information on the 22 sensitive plants of rock outcrop and upland habitat, see the Biological Evaluation.

Proposed sensitive species of rock outcrop habitat

Marble rock mat (*Petrophyton caespitosum* var. *acuminatum*) The habitat of this species is carbonate or granitic rock (cliffs) in montane coniferous forests. It is known from three occurrences in Tulare, Fresno, and Inyo Counties, one near the boundary of the John Muir Wilderness on a cliff across a stream from a trail.

Dedecker’s clover (*Trifolium dedeckeriae*) This clover grows in granitic soils among rocks and boulders or in rock crevices, and potential habitat is widespread. It is known from 12 occurrences on the east slope of the Sierra Nevada, the Kern Plateau, and the White Mountains, several of more than 1000 individuals. Three of these occurrences are in the JM Wilderness and two more are just outside in areas without trails. Those in the wilderness have been visited since 2000 and have no reported negative impacts. All known populations are on FS lands (INF or Sequoia NF).

Watch list species of rock outcrop or upland habitats

Congdon's sedge (*Carex congdonii*): This large sedge grows in talus fields in subalpine zones. It is known from seven California counties and there are five known populations in the AA/JM Wildernesses. There is another population just north of the wilderness and there is much unsurveyed potential habitat.

Fell-fields claytonia (*Claytonia megarhiza*): This species grows in granitic gravels and rock crevices in alpine or subalpine environments. The California Natural Diversity DataBase (CNDDDB) lists nine occurrences, four in Yosemite, three on other National Forests, and two in the Ansel Adams Wilderness on the Inyo NF, and it also grows in Oregon and elsewhere (CNPS, 2001).

Mt. Whitney stickseed (*Hackelia sharsmithii*): This plant occurs along the crest of the Sierra Nevada and in the Toiyabe and Toiyabe ranges of Nevada. Eleven occurrences are known from the JM Wilderness and at least ten from Sequoia-Kings Canyon NP. The habitat is dry gravelly soils or talus on north facing slopes.

Alpine jewelflower (*Streptanthus gracilis*): This species grows in granitic sand and gravel in rock outcrops in the Kings-Kern Divide area. There are at least 16 occurrences reported from Sequoia-Kings Canyon N.P. and 3 occurrences on the Inyo N.F., all in the John Muir Wilderness.

Riparian Habitat Rare Plants

Eleven sensitive, one proposed sensitive, and seven watch list plant species of riparian habitats occur or have potential habitat in the Ansel Adams and John Muir and most occur in lower elevation meadows in drainages on the west slope. The following sensitive plant potential habitat descriptions are based on the known range of the species, by both elevation and watershed. Although there are no specific studies of these species, plants of riparian habitats are dependent upon properly functioning streams and meadows to maintain their habitat. The interdisciplinary team evaluated the meadows with the most pack stock use in the AA/JM Wildernesses to determine their current condition. Table 3.34 displays the meadows with moderate to severe stream impacts or changes in hydrologic function within the elevational ranges of the riparian sensitive species.

Sensitive Species of Riparian Habitats

Moonworts (*Botrychium lineare*, *B. lunaria*, *B. ascendens*, *B. minganense*, *B. crenulatum*). There are several species of rare moonworts that may be found in meadows, seeps, fens, marshes, upper or lower montane forests, or subalpine forests. Meadows with non-granitic soils, especially limestone-based, are considered to be more likely habitat for these rare species (Farrar, 2004). Part of the moonwort's life cycle is underground and in some years it may not grow above ground at all.

There is one documented population of *B. lineare* in a granitic rock crevice and one of *B. minganense* in a calcareous soil meadow. The more common species of moonwort, *B. simplex* and *B. multifidum*, known associates of the rarer species, were found in 68 (29%) of the 227 meadows visited.

Because of the wide range of habitats for the rare *Botrychium* species, all meadows in the wilderness areas are considered to be potential habitat for at least one species and any alteration of meadow hydrologic conditions may adversely affect that habitat. Approximately 9% of the mapped meadows in the wilderness had reported use by commercial packstock in 2001-2003 and about 15% of those visited (227 meadows in highest packstock use areas) had moderate or severe changes to hydrologic function.

A Conservation Assessment will be completed for the *Botrychium* species in 2005.

Bolander's candle moss (*Bruchia bolanderi*). This moss grows on streambanks in meadows, currently only known from outside the wildernesses on the west slope of the Sierra at elevations between approximately 5575 and 9200 feet. There are 518 meadows within the reported elevational range of this species, 37 (7%) with reported use. At six of these meadows, there are moderate to severe streambank impacts reported; four of these in AA West are degraded mostly by historic impacts, not current packstock use.

Tioga Pass sedge (*Carex tiogana*). Tioga Pass sedge is known from meadows around high elevation lakes in the northern Ansel Adams Wilderness at two locations on or near trails that have no recent reported use by commercial packstock. Potential habitat was identified at 14 other meadows, 4 (25%) with reported use. The habitat is in good condition at three meadows with reported use, but there are lakeshore trampling impacts at one, Marie Meadow (Upper Rush AU).

Subalpine fireweed (*Epilobium howellii*). Subalpine fireweed, a small perennial species, grows at the drier edges of meadows, usually with other species of fireweed, at elevations of 6550-8850 feet. There are at least 34 populations outside of wilderness on the Sierra National Forest and 1 on the Inyo. Two populations were recently found in the Deer Creek Meadows area (identification to be confirmed). There are 368 meadows within the reported elevational range, 23 (6%) with reported use. There are moderate to severe hydrologic function changes in three of these meadows; Chetwood is degraded mostly by historic impacts, not current packstock use.

A Conservation Assessment for alpine fireweed will be started in 2005.

Mosses (*Meesia triquetra* and *M. uliginosa*). These mosses are fen indicator species (SNFPA) with wide distributions outside of California, found in continually wet areas with deep peat and a moderate to high pH at elevations of approximately 6100-9200 feet on the west slope of the Sierra. There are no known *M. triquetra* occurrences in the AA/JM and the only known population of *M. uliginosa* is near a meadow with no reported use. Although probably less than 20% of them actually have the fen habitat required for these species, 182 other meadows are within the reported elevational range of these species, 13 (7%) of them with reported use. Of these, Johnston Meadow is the only one with stream impacts and hydrologic function changes that could negatively affect the potential habitat.

A Conservation Assessment will be completed for the *Meesia* species in 2005.

Veined water lichen (*Peltigera hydrothyria*, previously *Hydrothyria venosa*). This water lichen grows in streams at elevations below 8200 feet on the west side of the Sierra Nevada. There are no known populations in the Ansel Adams and John Muir Wildernesses, but four populations are known from the Sierra NF, the closest about two miles outside the wilderness. There are 197 meadows within the reported elevational range, 18 (9%) with reported use. There are moderate to severe hydrologic function changes in four of these meadows.

Bolander's clover (*Trifolium bolanderi*). Bolander's clover grows in meadows on the west slope of the Sierra Nevada at elevations of 6800-7300 feet. There are no known populations in the Ansel Adams and John Muir Wildernesses; the closest population of the 46 known is less than one mile outside the wilderness. There are 257 meadows within the elevational range of this species, 17 (7%) with reported use. Three of these meadows have moderate to severe hydrologic function changes.

Proposed sensitive species of riparian habitats

Blandlow's feather moss (*Helodium blandlowii*): This moss forms mats and small hummocks, often under willows, in montane fens, usually with calcareous groundwater (Christy and Wagner, 1996). It is known worldwide, but in California from only Kings Canyon National Park and three sites, two in the John Muir Wilderness, in Rock Creek and Hilton Creek on the Inyo National Forest.

Watch list plants of riparian habitats

Least moonwort (*Botrychium simplex*) Least moonwort has similar habitat to the other moonwort species, but is common in the AA/JM Wildernesses. Investigation by Don Farrar has shown that there are two western subspecies, which may have different status when *B. var. fontanum* is officially described. As noted above, the species was found in at least one third of the meadows visited, but the plants were not identified to subspecies level. Because this species was so common, site specific information will not be included.

Round-leaved sundew (*Drosera rotundifolia*): This species is found in coastal California, the Cascades, the Sierra Nevada, and is widespread in northern latitudes, but grows only in bogs or fens and is a SNFPA fen indicator species. There are three populations known from the AA/JM Wildernesses.

Yosemite mousetail (*Ivesia unguiculata*): This species is found in meadows and seeps on the west slope of the Sierra Nevada. There is one population known from a meadow on the border of the study area.

Seep kobresia (*Kobresia bellardii*): This species is one of the Rocky Mountain disjuncts in Convict Basin and there is a second California population on the Humboldt Toiyabe N.F. It grows in carbonate soils or mesic boulder and rock fields.

Short-fruited willow (*Salix brachycarpa*): This dwarf willow is another of the Rocky Mountain disjuncts in the Convict Basin. There is one other population on the Inyo N.F. outside of the AA/JM Wildernesses. It is found throughout the western US at high elevations on carbonate substrate.

Dwarf bulrush (*Scirpus pumilis*): Another of the Rocky Mountain disjuncts in the Convict Basin, this species grows in alpine dwarf scrub on carbonate soils. It also grows in the Cottonwood Creek drainage in the White Mountains on the Inyo N.F.

Prairie wedge grass (*Sphenopholis obtusata*): This perennial grows in meadows and seeps from 1,000'-6,500' elevations. There is one occurrence in the JM Wilderness and others in the Sierra Nevada and Peninsula Ranges in California.

Table 3.34 Meadows with moderate to severe stream impacts or changes in hydrologic function within the elevational ranges (potential habitat) of the sensitive riparian species

Geographic/Analysis Unit	Name	Stream Impacts	Hydrologic Function Changes	Reported commercial pack stock use (2001-2003)
AAEA/MIN	Johnston Meadow	Severe	Moderate	High of 20 stock nights (SN)
AAEA/CCD	Crater Meadow	Severe	Slight	No current use
AAEA/CCD	Summit Meadow	NA	Moderate	No current use
AAEA/SHE	JMT/Shadow Crk Junction	Moderate	None	No current use
AAEA/URU	Marie Meadow	Moderate	None	High of 175 SN
AAWE/LIL	Fernandez Meadow	Moderate	Severe	No current use
AAWE/COR	Chetwood Meadow	Severe	Severe	No current use
AAWE/COR	Detachment Meadow	Slight	Severe	No current use
AAWE/COR	Knoblock Meadow	Severe	Severe	High of 24 SN
AAWE/SAD	Joe Crane Trail Junction	Moderate	Moderate	Unknown current use
AAWE/CAR	Between Stairway and Cargyle	None	Moderate	No current use
FICR/CAS	Third Crossing	None	Moderate	High of 91 SN
FICR/CAS	Second Crossing	Severe	Slight	Closed since 2001
FICR/CAS	Cascade Meadows	N/A	Severe	Closed
MORO/FOR	Hopkins Bench Camp Meadow	N/A	Moderate	High of 134 SN
MORO/SIP	Pocket Meadow	Severe	Moderate	High of 37 SN
MORO/GRA	Graveyard Meadow	Severe	Severe	High of 32 SN
FLBE/ITA	Hilgard Meadow	Severe	Moderate	High of 66 SN
FLBE/HOO	Hell Hole Meadow	Moderate	Severe	Approx. 200 SN (Pasture)
FLBE/HOO	Jackass Meadow	Moderate	Severe	Approx. 400 SN (Pasture)
FLBE/SAK	Lower Blayney	N/A	Moderate	Approx. 60 SN
BIHU/GLA	Hutchinson Meadow	Moderate	Moderate	High of 290 SN
JMSW/BIM	Big Maxson	Severe	Moderate	Unknown current use

Weeds

Because most of the wilderness is presently weed free, preventing introduction and spread of non-native species is of great importance. There are no known Federal or State designated Noxious Weeds in the AA/JM, or at pack station facilities. Several species of non-native plants,

some highly invasive wildland weeds, do exist inside or at the edges of the wilderness boundaries. A table in the project record lists known non-native plants present in the Wildernesses, at the pack stations, corrals, pastures, or near the trailheads.

Standards and Guidelines for weed management are in the SNFPA ROD (2004), including direction to encourage use of weed free hay and straw, develop a program for certification of hay and straw, and phase in the program as certified weed free forage becomes available. A Memorandum of Understanding among California agencies is currently in place to develop a weed free forage program. At present, the very limited availability of certified weed free hay and straw does not support requiring it, but it is expected that the requirement will be in place before the end of the permit term.

Because these non-native species differ in their degree of invasiveness and competitiveness, each weed warrants different levels of concern (Sierra Nevada Forest Plan Amendment, 2001).

Cheatgrass and red brome (*Bromus tectorum*, *B. madritensis* var. *rubens*) are the most invasive of the weeds, can invade intact native vegetation, and may shorten fire intervals in shrublands (Allen, 2004). The bromes are common from the base of the eastern escarpment of the Sierra up to at least 9,000 feet, particularly in recently burned or disturbed areas, and around the reservoirs on the west side. **Zorro fescue** (*Vulpia myuros*) is another annual grass, but is not known to be as invasive as the bromes.

Bull thistle (*Cirsium vulgare*), although not as highly invasive as other noxious thistles, can pose problems in native ecosystems and is found as high as 7,000 feet elevation, often in disturbed meadows (Bossard, et al., 2000). It was present in Devil's Postpile, but a removal program has been underway for several years.

Russian thistle (*Salsola tragus*), or tumbleweed, is common on the eastern slope of the Sierra Nevada, but is mostly limited to already disturbed areas.

Several weedy members of the mustard family are known from pack stations and trailheads, including **tansy mustard** (*Descurainia sophia*), **tumble mustard** (*Sisymbrium altissimum*), **hoary cress** (*Cardaria* spp.) and **penny-cress** (*Thlaspi arvense*). Tansy mustard and tumble mustard are moderately invasive and probably limited to disturbed areas (CalIPC, 2005). Penny-cress is not known to be invasive and only one occurrence is known. Hoary cress forms dense infestations that exclude native vegetation, with deep root systems that compete with native plants for moisture and nutrients. Hoary cress is extremely difficult to control once established (CDFA, 2005). It occurs on both sides of the Sierra outside of wilderness.

There are also several weedy species from the pea family, including **white sweet clover** (*Melilotus alba*), **yellow sweet clover** (*M. indica*), and **birds foot trefoil** (*Lotus corniculatus*) occurring in or near the AA/JM in riparian habitat. None of these species are considered to be very invasive.

Dandelion (*Taraxacum officinale*) is present in meadows in and near the wilderness, especially where there has been heavy grazing in the past by livestock and packstock. Its ability to invade undisturbed sites is unknown, but it is difficult to eradicate it.

Other species not known to be very invasive or disruptive to native plant communities include **mullein** (*Verbascum thapsus*), **foxglove** (*Digitalis* sp.), **mallow** (*Malva neglecta*), **knotweed** (*Polygonum arenastrum*), **dock** (*Rumex crispus*), and **bassia** (*Bassia hyssopifolia*). Mullein has been reported in several locations near the wilderness boundaries on both sides of the Sierra,

bassia from only one location, although it may be more common. Foxglove is a garden escapee near one of the pack stations. Knotweed and mallow are found at several pack stations, but appear to be limited to parking lots or other disturbed, somewhat compacted areas. Dock is a weed of meadows, but was found at only one location and is of low concern in wildlands (CalIPC, 2005).

Spotted knapweed (*Centaurea maculosa*) a very invasive and difficult to control weed has been eradicated from a road near the Dinkey Lakes Wilderness (J. Clines, Sierra National Forest Botanist, pers. comm., 2005)

Geographic Unit Scale

Ansel Adams East

Vegetation

The northern part of Ansel Adams East is entirely on the eastern slope of the Sierra, with a high percentage of subalpine, alpine, and rocky peaks and ridges. The lower elevation vegetation is pinyon pine and sagebrush, grading into montane Jeffrey pine and lodgepole, with sparse whitebark and lodgepole in the subalpine zone. The southern section of AA East is the headwaters of the Middle Fork of the San Joaquin River and the vegetation is more characteristic of the west side mixed conifer forest, dominated by red fir, Jeffrey pine, and lodgepole with montane chaparral. Willows and aspen are common riparian tree species along with lodgepole pine.



Thousand Island Lake in the Ansel Adams East Geographic Unit, elevation 9830 feet

Approximately 11% (19 sites) of the campsites historically used by the packers are above the 10,000 foot fire closure.

Grazing Resources

Table 3.37, the *Geographic Unit Meadow Table* contains a summary of the recorded pack station grazing nights at meadows throughout the geographic area. Table 3.36 at the end of the chapter has a summary of the reported commercial pack stock use and meadow conditions by geographic unit. Many of the meadows and riparian systems in the Ansel Adams East Geographic Area have an east to northeast aspect, or exposure. This aspect combines with high elevations and abundant snowfall to result in wet meadow conditions throughout the summer at many locations.

Approximately 65% of the areas with reported grazing were not used all three years (2001-2003), most only once in that period. Six of the nine analysis units had reported use by two pack stations and the three others were used by one pack station.

In recent years, there have been significant efforts to implement sound grazing management practices in the Upper Rush Creek and Rush Creek Analysis Units. These include identifying and implementing carrying capacity estimates, range readiness criteria, and rotational grazing systems (Inyo National Forest Files, various dates).

The majority of the key area meadows assessed in the Ansel Adams East Geographic Area (93%), have localized vegetative alteration over less than one-third of the area or little to no observed vegetative alteration (43% and 50% respectively). Seven percent of the meadows assessed have well defined vegetative changes away from the potential natural community over more than one-third of the meadow.

The following discussion describes some of the resource conditions and site-specific grazing activities in the Ansel Adams East Geographic Unit:

- Alger Lakes Meadows are relatively large, with substantial forage in upland sites and few resource issues are present. In 1982, soil and vegetation condition trends were stable or upward, and in a 1990 report (USDA Forest Service, 1990) it was reported in excellent vegetative condition.
- Gem Pass Meadow was found to have a downward soil condition trend and stable vegetation condition trend in a 1982 evaluation.
- Spooky Meadows is relatively small and resource conditions include areas of trampled and unstable streambanks. In 1982, soil and vegetation condition trends were stable or upward and in 1990 it was determined to be in good vegetative condition (USDA Forest Service, Inyo National Forest, 1982)
- New grazing use patterns are becoming established in the Rodgers Lakes area. Existing conditions include sod fragmentation on a new access trail and soil displacement and sod fragmentation of meadow areas with saturated soils.
- Davis Lakes and Marie Lakes meadows were found to have stable or upward soil and vegetation condition trends in a 1982 evaluation.
- Permanent transects were established to monitor vegetation trend at Thousand Island Delta and Garnet Meadow (USDA Forest Service, 2004) and the baseline vegetation and soil score was moderate condition in 2003.
- Although the Cabin Lake area has not been recently used for commercial packstock activity, there are changes in hydrological function and plant species composition associated with the

access trail to Cabin Lake, along the trail through the wet meadow at Cabin Lake meadows, and at the meadow used for grazing along Shadow Creek. A permanent transect was established to monitor vegetation trend at Shadow Creek Meadow (USDA Forest Service, 2004) and the baseline vegetation and soil score was moderate condition in 2003.

- The only recent documented grazing use in the River High AU is in the meadows near and to the south of Badger Lake. These small montane meadows are currently used at light to moderate levels by pack stock. There is altered vegetative species associated with several active headcuts in the stream and trampled spring areas in these meadows.
- Moderate pack stock use is occurring at some locations such as Ashley Lake and Anona Lake. There are areas of trampled and fragmented sod especially near campsites and at the outlets of these lakes. There are localized trailing impacts in the meadows on the south side of Holcomb Lake, trampling impacts near the campsite at Davis Lake, the meadows above Trinity Lake, and stream channel instability with associated vegetation composition changes at upper Johnston Meadow. A permanent transect was established to monitor vegetation trend at Johnston Meadow (USDA Forest Service, 2004) and the baseline vegetation score was low condition in 2000.
- Meadows in the Crater and Deer Creek area are lightly used. Deer Creek Meadows and Crater Meadows, remain too wet to be range ready throughout the summer. Only portions of the meadows at Middle Deer Creek and Summit Meadow reach range readiness.

Fens

Fourteen meadows with fens or fen characteristics were identified among the fifty meadows visited in this geographic unit. One area with fen characteristics was bisected by a trail.

- Rush Creek AU: The spring area in Upper Spooky has fen characteristics and severe trampling impacts. At Lower Alger/Alger Terraces, there are moderate spring impacts, but the fen has only slight trampling and appears to be in good condition.
- Thousand Island AU: Incision may be lowering the water table at Garnet, where part of the meadow has fen characteristics.
- Minaret AU: The Emily Lake Trail goes through an area with fen characteristics that shows deep trampling. The spring with fen characteristics at Gladys/Rosalie has slight impacts.
- River High AU: The spring portion of Badger Meadow with fen characteristics is in a part of the meadow that appeared to receive little use and is in good condition.
- Crater Creek AU – The three meadows with fens in the Deer Creek drainage (ccd15, ccd18a, ccd19a) have reported grazing and are at risk because of moderate to severe spring impacts. In Crater Creek drainage, at ccd5b, there is damage to the fen from access from the PCT to a campsite, possibly used mostly by private packstock, and ccd4 has severe spring impacts. At Crater Meadow, the fen is in good condition, although the stream is in a downward trend and at Upper Crater Meadow, moderate spring impacts were noted.

Rare Plants

There are 11 populations of sensitive and watch list plants known from in or near this Geographic Unit, 3 are in remote areas away from trails, 4 are on or near trails, and 4 are in meadows. There are a total of 52 meadows with habitat for riparian dependent species, 6 of which have moderate to severe stream or other hydrologic impacts. There has been no recent

reported commercial packstock use in the northern part of this geographic unit (Glacier Canyon, Gibbs, Bloody AUs).

- Glacier Canyon AU: There is a population of Congdon's sedge near the Glacier Canyon Trail in talus.
- Gibbs AU: There is a reported population of Tahoe draba in the Mt. Gibbs area, not accessible by trail, that may be in Yosemite NP. There is potential habitat, if not an actual population, in the Gibbs AU.
- Bloody AU: There are two populations of Tioga Pass sedge in small meadows, one along a lakeshore away from the main trail and another near Mono Pass away from the trail.
- Parker AU: There is a population of Tioga Pass sedge near the Alger Lakes Trail, but it is north of Alger Lakers where there is no reported or observed recent commercial packstock use.
- Northern AA East: There is potential habitat for the sensitive plant Tioga Pass sedge in the upper basins at 14 meadows. There are some lakeshore trampling impacts of this habitat at Marie and Rogers Lakes Meadows.
- Upper Rush AU: There are two populations of fell-fields claytonia, one near Mount Davis and another near Mount Lyell, most likely away from trails, but their exact location is unknown.
- Crater Creek AU: There are two populations of subalpine fireweed at ccd4 and ccd5b, neither meadow with any noted hydrologic function problems. There is a population of short-leaved hulsea along the Fish Creek Trail in the Rainbow Fire area.
- River High AU: There is a population of Pinzl's rock cress just outside the wilderness along San Joaquin Ridge and potential habitat in the wilderness along the ridge. The San Joaquin Peak use trail goes through this habitat and continues over the ridge.
- Southern AA East: Approximately 38 of the lower elevation meadows in the San Joaquin drainage are potential habitat for at least one of the west side sensitive riparian species (subalpine fireweed, Bolander's clover, veined water lichen, and mosses Bolander's candle moss and *Meesia* spp). Four of these meadows have reported use. There are degraded hydrologic or stream conditions at Johnston Meadow (pasture), Crater Meadow, JMT/Shadow Creek Junction Meadow, and Summit Meadow that put the potential habitat for these species at risk. At Crater Meadow, the degraded condition is apparently due to trail impacts rather than grazing impacts.
- There is potential habitat for short-leaved hulsea in Crater Creek, River Corridor, and Minarets AUs.

Weeds

Known locations of non-native species in AA East are as follows:

- Rush AU: Cheatgrass is present along the lower slopes of the main Rush Creek Trail. There are many vectors for weeds along this trail, including tram tracks for use by the hydroelectric facilities, packstock and hikers. Six species of non-native plants are growing in the vicinity of Frontier Pack Station and Silver Lake Resort: cheatgrass, Russian thistle, tansy mustard, mallow, knotweed, and mullein. Dandelions are present in Rodeo pasture used by Frontier Pack Station.
- Crater Creek AU: Four species of non-native plants are growing in the vicinity of Reds Meadow Pack Station and resort: cheatgrass, mallow, yellow sweet clover, and penny-cress.

Bull thistle occurs along the trail to Rainbow Falls and inside the Devils Postpile National Monument, but there is a removal program that has been going on for several years and most has been removed.

Ansel Adams West

Vegetation

The lower elevations of this area are dominated by mixed conifer forest with patches of montane chaparral. Jeffrey pine, red fir, and lodgepole are the dominant trees. In the subalpine zone, there is whitebark pine, lodgepole, and mountain hemlock.

There were no campsites historically used by the packers above the 10,000 foot elevational closure in this geographic unit.



Fernandez Lake, Lillian AU in the Ansel Adams West Geographic Unit

Grazing Resources

Table 3.37, the *Geographic Unit Meadow Table* contains a summary of the recorded pack station grazing nights at meadows throughout the geographic area. Table 3.36 at the end of the chapter has a summary of the reported commercial pack stock use and meadow conditions by geographic unit. None of the meadows in this geographic unit were used all three years (2001-2003 reports).

Three of the seventeen analysis units in Ansel Adams West had grazing reported by two pack stations; four had only one pack station with grazing use.

There are multiple trips with grazing by commercial pack stock during each trip during the summer season at several sites, including Sadler Lake, and Joe Crane Lake. Fernandez Creek Junction is used by private pack stock.

The current condition of the grazing resource in the geographic area is likely the result of historic production livestock activity (see photo below) (2200 Files, Sierra National Forest, various dates). Permitted use by cattle on the Jackass Common Allotment, mostly within the western Ansel Adams Wilderness area and some nearby locations in the John Muir Wilderness, reached a high of 5,000 animal months (approximately 150,000 stock nights) in 1921. Cattle grazing was reduced gradually between 1921 and the 1960s, and was reduced or eliminated throughout much of this geographic area in the early 1990s (Sierra N.F., 2200 files, various dates). Currently the permitted grazing use by cattle is 1,549 animal months (46,470 stock nights) with most of this use occurring in the Ansel Adams West geographic area and some of this use occurring in those portions of the Dinkey Lakes and John Muir Wilderness areas adjacent to the Ansel Adams Wilderness area (Wilderness Plan FEIS, Chapter 3, pages 26-33).

Fens

Six meadows with fens or fen characteristics were identified among the thirty meadows visited in this geographic unit, with conditions as follows:

- Sadler AU: The spring area with fen characteristics at McClure to Sadler Meadow is heavily trampled and the hydrologic function change is rated severe, putting it at risk.
- Lake Catherine AU: About 30% of Stevenson Meadow is a fen, with no reported adverse impacts.
- Cargyle AU: There are fens in four meadows with no recent reported use (Between Stairway and Cargyle, Cargyle North, Lower East Fork, and Middle East Fork Meadows) and in all but Lower East Fork Meadow, which has no visible impacts, there are moderate spring and hydrologic function impacts (see Table 3.34).

Rare Plants

There are 22 populations of sensitive and watch list plants known from in or near this Geographic Unit: 3 are in remote locations, 3 are in meadows, and 16 are near trails. One of these trails (Timber Creek) has moderate resource risks/impacts. In this geographic unit, approximately 76% of the meadows (about 209 meadows) are within the elevational range of at least one of the west side riparian sensitive species. Only seven of these meadows have reported commercial packstock use, but many were or still are used for cattle grazing and six have moderate to severe stream impacts or changes to hydrologic function.

- Fuller Buttes AU: The French Trail goes through a population of Mono Hot Springs evening primrose. Maintenance of this trail is currently done yearly by a volunteer group (M. Ketcher, Sierra National Forest Trails Coordinator, Pers. Comm., 2004). There is a population of Yosemite lewisia in this AU, but it is not accessible by trails.
- Cassidy AU: There is a population of Yosemite lewisia on the wilderness boundary away from any trails or grazing areas.

- Lower Mono Creek AU: The Mono Hot Springs Cutoff Trail goes through a population of Mono Hot Springs evening primrose. The trail has very low use, mostly from hikers.
- Hot Springs AU: The Mono Hot Springs Trail bisects a population of Mono Hot Springs evening primrose. Stock use on this trail is mostly limited to Forest Service stock accessing a pasture.
- Staniford AU: There are two populations of Kettle dome buckwheat near the Lillian Lake Loop Trail and two on the Walton Trail, one inside and one outside the wilderness.
- Jackass AU: There are populations of Kettle dome buckwheat outside the wilderness near the Norris and Fernandez Trailheads that access the Ansel Adams.
- Lake Catherine AU: There is habitat for all the west side riparian sensitive species at Stevenson and Hemlock Crossing Meadows, where commercial packstock use occurs, but which have only slight meadow hydrologic function problems. There are two populations of Kettle Dome buckwheat near the Stevenson Trail.
- Lillian AU: There is a population of the Congdon's sedge on a ridge that is not accessible to pack stock and a population of Kettle Dome buckwheat along the Timber Creek Trail. There is potential habitat for the sensitive Bolander's candle moss in this AU, but there is no recently reported commercial pack stock grazing in the meadows within its range. There is no longer cattle grazing in these meadows, but there are remaining impacts from previous use. Fernandez Junction Meadow has severe changes to hydrologic function and stream function was rated FAR with no apparent trend.
- Cargyle AU: Round-leaved sundew, watch list plant and fen indicator species, is present in Cargyle Meadow, Cargyle North, and Upper East Fork Meadow where there is no current reported use, but there are some moderate spring impacts. There is potential habitat for the west side riparian sensitive plants in most of the meadows in this unit, but there is very little current use and conditions are generally good. An exception is the meadow between Stairway and Cargyle, where there is moderate hydrologic function change, but no reported use.
- Triple Divide AU: There is potential habitat for Bolander's candle moss, but there is no recently reported commercial pack stock grazing in the meadows within its range. There is no longer cattle grazing in these meadows, but there are remaining impacts.
- Sadler AU: There is potential habitat for Bolander's candle moss at the Joe Crane Trail Junction meadow where there are moderate to severe stream impacts degrading the habitat. Commercial packstock grazing use is unknown at this meadow.
- Cora AU: Although there is potential habitat for subalpine fireweed, Bolander's clover, Bolander's candle moss, and the rare moonworts, no sensitive plants were found at Detachment, Knoblock, or Chetwood in an intensive 2004 survey. The habitat is degraded by historic grazing impacts and there is very little current commercial packstock use. There are populations of Kettle Dome buckwheat near the Stevenson Trail and the Chetwood Cabin Trail, and two near the Isberg Trail, one outside of wilderness.
- Bridge Crossing AU: There is habitat for all the west side riparian sensitive species, but no reported use in this unit.
- Arch AU: Most (24 of 26) of the meadows in this analysis unit are potential habitat for the West Side riparian sensitive plant species, but there is no reported commercial pack stock use.
- There is potential habitat for Congdon's lewisia in the San Joaquin watersheds on rocky outcrops.

Weeds

There are weed populations, including cheatgrass, mullein, and bull thistle, at Edison Lake near the ferry landing and along the trail on the north side of the lake.

Non-native species were found at all of the pack stations that use this area (see *Undesirable plants present in the AA/JM, at pack station facilities, or trailheads table* in project record).

Fish Creek/Convict/McGee

Vegetation

This geographic unit includes the Fish Creek drainage on the west slope and Convict and McGee drainages on the east side.

Fish Creek is on the west side of the sierra crest and reaches its lowest elevation at the western end, at approximately 5500 feet. Montane chaparral communities, including bush chinquapin and greenleaf manzanita, occupy much of the lower elevation area near the bottom of the Fish Creek drainage. As the elevation increases to over 11,000 feet in the eastern and southern portions of the analysis area, the vegetation communities change to montane and subalpine forests, and finally to sparsely vegetated or barren rocky areas at the highest elevations.

The drainages on the east side of the Sierra are steep canyons with soils influenced by metamorphic rocks, limestone being of particular interest. The lower elevations are in sagebrush scrub with cottonwood and aspen in riparian areas. The montane vegetation is Jeffrey pine and lodgepole, grading in to the subalpine whitebark pine and lodgepole.

The vegetation of the Convict Basin, in particular the Convict Canyon and Mildred Lake area, is notable because there are several plant species whose populations there are widely disjunct from the rest of their range (Major and Bamberg, 1963). Three of these are watch list plants that are endemic to the limestone/marble derived soil.



Mildred Lake Meadow in the Fish Creek/Convict/McGee Geographic Unit

Approximately 34% (117 sites) of the campsites historically used by the packers are above the 10,000 foot campfire closure in this geographic unit.

Grazing Resources

Table 3.37, the *Geographic Unit Meadow Table* contains a summary of the recorded pack station grazing nights at meadows throughout the geographic area. Table 3.36 at the end of the chapter has a summary of the reported commercial pack stock use and meadow conditions by geographic unit. Meadows with little to no alteration of vegetative composition are common throughout this geographic area, occurring at 59% of the key areas assessed. Localized alteration of vegetative composition, over less than one-third of the area, is observed at 35% of the key area meadows assessed. Locations with a well-defined altered vegetative species composition over more than one-third of the meadow, are observed at 6% of the key areas assessed. The western portion of this geographic area, the Fish Creek watershed, receives higher use and more overnight stock use than the eastern portion.

Repeated overnight trips by commercial pack stock with associated stock holding and grazing use occurs throughout the summer each year at Grassy Lake, Jackson Meadow, Long Canyon, in the Purple Lake area, between Sheep Camp and Lee Lake, Horse Heaven, Third Crossing, and Island Crossing.

In the Convict AU, Genevieve is the only meadow with reported grazing; 14 reported stock nights in 2002 by MLPO, but no reported grazing in 2000 or 2001. In this AU, little or no alteration of vegetative composition is documented. In upper Convict Basin there is some evidence of historic grazing and vegetative recovery, such as below the mine at upper Mildred Lake Meadows, where historic grazing use was likely high by stock in support of the mining operations. Since the mid-1980s, use by stock has been limited in the Convict Basin area due to a lack of access. Within the last few years Convict Basin has been accessed by pack stock entering from Laurel Canyon.

In the Cascade Valley AU, the meadows in Cascade Valley near the confluence of Fish Creek with Minnow and Purple Creek were closed to grazing in 1988 due to concerns with resource condition. Existing conditions such as trailing, dusting areas, soil compaction, excessive sediment deposition, stream bank instability, channel incisement, lowered water tables, and, alteration and loss of riparian vegetation is documented at several areas including: the meadow areas along the trail to Lee and Cecil Lakes, the tarn pond below Lee Lake, Purple Meadow, Purple Bench, Ram Tarn meadow along the trail above Purple Meadow, Jackson Meadow, and Grassy Meadow. In some locations there is a shift toward early-seral plants associated with alteration of the soil and water process, such as at Tully Lake meadow in Upper Fish Creek, the spring near Tarn Lake, Horse Heaven, lower Long Canyon Meadow, Island Crossing (Fox) Meadow, and Second Crossing Meadow. In a 1987 study of differences in ecological status between 1963 and 1986 (USDA Forest Service, 1987), Long Canyon Meadow had improved from good to excellent in that time, and Grassy Meadow had maintained fair condition. A 1990 study (USDA Forest Service, 1990) found that Minnow Creek Meadow (Cascade Meadows) was in fair vegetation condition, while Purple and Horse Heaven were in good condition.

In the McGee Creek drainage, White Meadow (Martin's) was found to be in poor condition in a 1990 study (USDA Forest Service, 1990) due to unpalatable forage species, and Red Meadow (between Martin's and Big McGee Lake) was in good vegetative condition.

Drift fences at Purple Lake, Horse Heaven, Tully Hole, and east of McGee Pass allow wranglers to release stock at various camping locations throughout this area, allowing grazing stock to roam freely with uncontrolled access to locations within and between the associated meadows.

The Fish Creek/Cascade Valley and Minnow Creek areas have a high level of historic use, including sheep, cattle, and pack stock supporting mining operations near Jackson Meadow, and traveling recreational pack stock parties. The drift fence near Coyote Lake allows wranglers to release stock in the Silver Creek drainage, allowing grazing stock to roam freely with uncontrolled access to locations within and between the associated meadows and the pass above Coyote Lake.

Fens

Fourteen meadows with fens or fen characteristics were identified among the fifty-six meadows visited in this geographic unit, with conditions as follows:

- McGee AU: The fens at Grass Lake and Steelhead appear undisturbed and there is no recent reported grazing use.
- Convict AU: There are two fens on benches above Mildred Lake Meadow. The meadow itself is not a fen by soils definition, but has many plant species characteristic of Rocky Mountains fens, including some watch list species. This area has not been used by packstock for about 20 years and there are no visible negative impacts from the historic mining use and structures.
- Purple Bench AU: There are meadows with fen characteristics near High Camp and Ram Camp in the Purple Meadow area, with only slight impacts to springs or hydrologic function in these areas despite high use at Purple Meadow. Although not in the saturated area with fen characteristics, there is soil compaction and sod fragmentation at Purple Bench Meadow.
- Upper Fish Creek AU: There are only slight impacts to the Red Slate and Tully Lake Meadows that have some fen characteristics. At Tully Hole, however, moderate hydrologic changes and moderate spring impacts may have degraded the area with fen characteristics.
- Cascade Valley AU: Second Crossing Meadow is almost entirely fen, most of it never reaching range readiness, and there are headcuts and other trailing impacts near the bottom of the meadow that led to its closure to pack stock grazing in 2001. At Third Crossing, moderate hydrologic function changes have taken place that may lead to degradation of the fen.
- Silver Divide AU: At Peter Pande tarn, a meadow with fen characteristics, there is no reported use, although there is evidence of recent use and slight alteration of the hydrologic function. There is a fen at Iva Belle Hot Springs where overnight stays by pack stock are not permitted.
- Margaret AU: At the Coyote grazing area, there is heavy trampling impact that has only slightly affected the hydrologic function of the meadow and there are moderate spring impacts that may be affecting the function of the area with fen characteristics. Convict AU: There are fens on benches above Mildred Lake meadow. The meadow itself is not a fen, but has many plant species characteristic of fens in the Rocky Mountains, including some watch list species. The meadow is in very good condition and has no current grazing.

Rare Plants

There are six populations of sensitive and watch list plants known in or near this Geographic Unit; four are in meadows where there is no recent packstock use, one is near a trail open to all uses, and one is on a use trail just outside the wilderness with little current use. There are 20 meadows with potential habitat for sensitive species, 4 with some resource concerns.

- Cascade Valley AU: There is potential habitat for the west side riparian sensitive species in the Fish Creek drainage and there are three meadows, two of which are currently closed, with moderate to severe impacts that may negatively affect this habitat. There is a small population of short-leaved hulsea just off the main trail near Island Crossing.
- Purple AU: Subalpine fireweed occurs along the main trail near Purple Bench.
- Silver Divide AU: There is potential habitat for the Bolander's candle moss in Long Canyon, where there is slight streambank trampling.
- Convict AU: Mingan moonwort occurs in the meadow area near Mildred Lake in the Convict Basin. Watch list plants seep kobresia, short-fruited willow, and dwarf bulrush are also present in this meadow, in populations very disjunct from the rest of their distribution. The meadow has not been used for grazing recently and gets very little use.
- McGee AU: There is a population of Inyo beardtongue outside the Wilderness near the McGee pack station.
- There is potential habitat for Congdon's lewisia in the San Joaquin watershed on rocky outcrops.

Weeds

There is cheatgrass in the sagebrush scrub around Convict Lake, outside the wilderness. The trail from Convict Lake accessing the wilderness is currently outside of the packers' use area.

There are patches of cheatgrass along the Fish Creek Trail on the slope north of Island Crossing bridge and near Iva Belle Hot Springs. These areas are heavily used by both hikers and pack stock. Red's Pack Station has several species of non-native plants, including cheatgrass. In McGee Canyon, cheatgrass is present at the pack station and along the main trail accessing the canyon.

Mono Creek/Rock Creek

Vegetation

The Mono Creek drainage has montane mixed conifer forest at the low elevations grading in to subalpine and alpine environments at the higher elevations. The north facing side canyons, in particular Second and Third Recesses, have denser vegetation and more moisture than the south facing ones like Laurel and Hopkins (see photos).



Photo on left Third Recesses; Photo on right Laurel

The Rock Creek Trailhead is in the subalpine zone and is a very popular day hiking setting. The low riparian vegetation along the stream and lakeshores has been trampled by anglers and hikers in many locations.

Approximately 29% (104 sites) of the campsites historically used by the packers are above the 10,000 foot fire closure.

Grazing Resources

Table 3.37, the *Geographic Unit Meadow Table* contains a summary of the recorded pack station grazing nights at meadows throughout the geographic area. Table 3.36 at the end of the chapter has a summary of the reported commercial pack stock use and meadow conditions by geographic unit. Although the Hilton Lakes Basin receives intensive stock use, there is little overnight stock holding or actual grazing occurring the area.

At the outlet of Dorothy Lake in the Tamarack Analysis Unit, much of the perennial grass portion, approximately half of the meadow area, has recently died and the remnant sod is being lost to wind erosion in the meadow. There are also areas of fragmented sod, hummocks, and bare areas within this meadow. There has been no recent reported packstock grazing in this unit, and the cause of the die-off is unknown. The interdisciplinary team identified historical water diversions, some still functioning that are likely related to historical sheep operations in this meadow. Elsewhere in the Tamarack AU, accessible portions of the meadows reach range readiness and there is little change from high-seral vegetation except at localized trail stream crossings.

In the Morgan AU, there are a series of small meadows (none larger than ¼ acre) and a constructed pond with associated riparian area along the creek above Morgan Lakes. The riparian vegetation in these areas is in high-seral condition with high vigor and high productivity. Historical use was likely high in support of the mining operations. Current pack stock related use is relatively low and little actual grazing use occurs.

In the Fourth Recess AU, the meadows along Mono Creek below the junction with the Golden Lake Trail are generally wet, with trampling related impacts along the trail shortcut to Mono Pass. No grazing appears to be currently occurring in these meadow areas. Most of the

meadows downstream of that junction, including at Mono Rock, the confluence with Hopkins Creek and at Fourth Recess Creek, are used for grazing as stock roam freely throughout the Mono Creek drainage. The most heavily and repeatedly used meadow, Hopkins Bench Camp, is located adjacent to an often-used pack stock campsite along Mono Creek. Indicators of repeated recent use include bare areas, soil compaction, and changes in plant species, sod fragmentation, and headcuts. This meadow appears to be in early to mid-seral condition, with low plant vigor and an increase in forbs.

In the Mono Creek drainage, the 1987 study (USDA Forest Service, 1987) determined that 2nd-3rd Recess was in fair condition and Fish Camp was in good condition, both sites in the same ecological status in 1963 and 1982.

Pioneer Basin has been closed to grazing since 1988 due to concerns with resource condition. A 1987 study (USDA Forest Service, 1987) showed that ecological status had declined from good to fair between 1963 and 1986. The sub-alpine meadows in the upper basin are fragile with thin, highly erosive sod, and poor soil development. Trails are located in the streamside meadow corridors resulting in trail incisement, erosion, and associated localized changes toward low-seral vegetative species. In the lower portion of the basin, the upland moist or dry meadow areas surrounding Mudd Lake and extending to the east and south do become dry enough to support stock. There are some old headcuts and gullies in these meadows. There are visible impacts to Camp Meadow, but the meadow is recovering.

In the Hopkins AU, areas with higher levels of current use (such as at Lower Hopkins Lake) exhibit indicators of repeated disturbance by pack stock including fragmented sod in wetter portions of the meadow, wallowing sites, or bare areas within the mesic portions of the meadow, incised trails, and multiple trails. There is active erosion, including headcuts on user define trails on the west side of Lower Hopkins Lake. Vegetation is late seral condition, with some local bare areas, low vigor, and low ground cover.

The Volcanic AU contains two large meadows over 30 acres, and neither has reported grazing. There are very few soil or hydrologic impacts.

The Graveyard area was part of the Jackass Common Allotment on the Sierra N.F. and has been heavily used by cattle as described in the Allotment Management Plan (USDA Forest Service, 1961). One of the early riders thought the Graveyard portion of the Jackass Community Allotment was “heavily overgrazed in the early days by early season use when over 1200 head of cattle were concentrated in a small area waiting for snow to leave the upper reaches” (USDA Forest Service, 1961). Trend monitoring transects were set up in several meadows in the Mono allotment, including Graveyard, Lower Graveyard, and Twin Meadows. Baseline information gave vegetation scores of low to Graveyard Meadow and moderate to the other two.

An active cattle allotment extends through the entire Graveyard watershed; however, the current use by cattle does not appear to occur often above the lowermost and largest Graveyard Meadow and no use by cattle currently occurs at Quail Meadow. There were no substantial negative current stock related impacts noted at Kip Camp. The presence of standing dead lodgepole pine in saturated soils and debris deposits in the creek at Kip Camp do indicate there may have been a recent historical change in hydrologic conditions.

Fens

Eighteen meadows with fens or fen characteristics were identified among the forty-four meadows visited in this geographic unit.

- Little Lakes Valley AU: There is no reported grazing use in the five meadows with fens or fen characteristics in this analysis unit, Marsh, N. of Long Lake, Gem, Heart, and Above Long Lake Meadows. Most of the impacts noted were from hikers and fishermen. At Marsh Meadow, one of the fen areas was dried out when spring water was channeled, but the cause of the channeling is unknown.
- Fourth Recess AU: North of Mono Rock Meadow with fen characteristics has moderate spring impacts that may negatively affect the fen. Third Recess along Creek Meadow has fen characteristics and there is some spring trampling damage from the trail.
- Volcanic AU: There is no reported use of the large Volcanic Knob Meadow that has scattered areas with fen characteristics and is in good condition.
- Graveyard AU: There is a fen in Goodale Pass Meadow with headcuts in the spring channel. There are several other fens lower in the drainage, most in steeply sloping meadows that receive little current use from either cattle or packstock. There is an active cattle allotment in the drainage and cattle use is the source of most impacts. There is a fen at Feather Lake in good condition and there is no recent use reported or evident.
- Hilton AU: There is a fen at the upper end of Turk meadow, and there is compaction and vegetation composition change in the lower end. The outlet of Davis Lake and East of Davis meadows have fen characteristics, but no reported recent use.
- Pioneer AU: Camp Meadow has fen characteristics and not been grazed since the closure in 1988, but there are moderate changes to hydrologic function due to the incised trail.
- Second Recess AU: Second Recess Meadow with fen characteristics is in good condition and light use has been reported, although the access trail is not easily passable by stock.
- Bear AU: There is a meadow with fen characteristics near Kip Camp where there are some impacts to the springs. There has been only light grazing reported recently.

Rare Plants

There are eight populations of rare plants known from in or near this Geographic Unit, two are in meadows open to grazing, one is in a pasture, four are near trails open to all uses, and one is on a trail used only by hikers. There are 17 meadows with habitat for sensitive species:

- Hilton AU: Blandlow's feather moss is present in the upper, very wet, portion of Turk meadow under the willows and in a meadow near the Hilton Lakes Trail. There is currently very light grazing at Turk Meadow (seven reported stock nights in three years), with some soil compaction and vegetation composition change in the lower portion of the meadow. There is a population of subalpine fireweed near the outlet of Lake 3. Inyo beardtongue grows along the Hilton Lake Trail just outside the wilderness boundary.
- Fourth Recess AU: The potential habitat for Bolander's candle moss in Bench Camp meadow (for8) may be negatively affected by the Functional at Risk stream conditions and moderate changes in hydrologic condition. There is a population of Congdon's sedge along a hiker trail above Golden Lake in talus.
- Silver Peak AU: The streambank potential habitat of Bolander's candle moss in Pocket Meadow has moderate impacts.

- Graveyard AU: There is a population of Mono Hot Springs evening primrose near Quail Meadow and the intersection of the Mono Creek (Edison) Trail and the PCT. The trail is the main access from High Sierra Pack Station in to Mono Creek and there is currently packstock grazing at Quail Meadow. The sensitive plant habitat in Graveyard Meadow has been degraded by cattle use. There is potential habitat for the west side sensitive riparian species at Quail Meadow, where there are slight hydrologic changes and moderate spring impacts.
- Bear AU: There is habitat for the west side sensitive riparian species at nine meadows, including Kip Camp. There were no apparent negative impacts at Kip Camp, where there has been no recent reported use, although there was heavy use in the past. The Bear Creek and Bear Creek Cutoff Trails bisect a population of Mono Hot Springs evening primrose and there is a second population along Bear Creek Trail to the east. These trails have moderate use by commercial pack stock, partly for “dead heading” stock between pack stations, and have no reported resource problems.
- There is potential habitat for Congdon’s lewisia in the San Joaquin watershed on rocky outcrops.

Weeds

There are several species of non-native plants at Edison Lake and at the Hilton Lake Trail head. Non-native species were found at Rock Creek, High Sierra, D&F, and Pine Creek Pack Stations, the outfits that use this geographic unit (see *Undesirable plants present in the AA/JM, at pack station facilities, or trailheads table in the project record*).

Bishop/Humphreys

Vegetation

Much of this area is in the subalpine zone dominated by sparse whitebark pine and lodgepole. The Humphreys Basin is an open rocky basin with very little vegetation. French Canyon has large meadows along the stream with wetter, fen-like areas particularly at the confluence of streams from the side canyons. The area around Hutchinson Meadow is in the montane mixed conifer forest. The Bishop Creek drainage is east side jeffrey pine and lodgepole forest grading in to subalpine terrain.



Golden Trout Lake in Humphreys Basin in the Bishop/Humphreys Geographic Unit

The elevational fire closure is 10,000 feet in the northern part of this area and 10,400 feet in the south. Approximately 71% (87 sites) of the campsites historically used by packers in the north and 95% (72 sites) in the south are above the fire closures in this geographic unit.

Grazing Resources

Table 3.37, the *Geographic Unit Meadow Table* contains a summary of the recorded pack station grazing nights at meadows throughout the geographic area. Table 3.36 at the end of the chapter has a summary of the reported commercial pack stock use and meadow conditions by geographic unit. Five percent of the key areas assessed in the Bishop/Humphreys Geographic Area are locations with a well defined altered vegetative species composition over more than one-third of the area. Forty-two percent of the key area meadows assessed have vegetative species alteration over less than one-third of the meadow area and fifty-three percent have little or no alteration of vegetative species composition.

In the North Piute, Lamarck, Sabrina, Tyee, Treasure, and Bishop Creek Analysis Units, little to no grazing use occurs and no grazing key areas are identified in these analysis units. There are few identified concerns with identified grazing areas.

In the Glacier Divide AU, at Hutchinson Meadow the meadow nearest the large packer camp is dominated by aster and similar mid-seral to low-seral plant species. Elsewhere in the Hutchinson Meadow area in the meadows under the lodgepole forest and along the creek, the vegetation is dominated by Canada reedgrass (*Calamagrostis* spp.).

Most of the meadows along Piute Creek between Hutchinson Meadow and Summit Lake remain too wet to be range ready throughout the summer. There are some benches and lakeshore terraces in the vicinity of Golden Trout Lakes that may reach range readiness in some years, such as during drought conditions; these likely do not reach range readiness during normal years. This area is used infrequently for grazing.

In the northern section of the geographic unit, Humphreys Basin is a large, open and rocky basin, with difficult off trail travel conditions. Much of this area is high, 10,000 to 12,000 feet in elevation. The wet meadows in this area remain too wet to be range ready during a most years. In drier locations the soils are thin, with thin and easily fragmented sod. Areas of frost heaving, with fragmented sod and bare soils were observed (see photo).

The stream corridors and the tributaries in upper French Canyon, above the Elba Lake and French Lake confluences, are narrow, steep and dominated by wet meadows and sphagnum wetlands. Drier vegetation is found adjacent to the wetland areas and stream corridors. Below the Elba Lake confluence, the main French Canyon is a large, “U” shaped, glaciated valley with a rock-controlled stream in the valley floor, with a Forest system trail in the valley along the north side of the creek. There is a wetland complex of springs, sphagnum, and very wet meadows at each tributary confluence in French Canyon. Areas of hoof punching, fragmented sod, damaged or missing sphagnum, and rutted trails were noted in this wetland complex. Between the wet confluence areas and on the side slopes, such as toward Merriam Lake, are meadow complexes including streamside meadows moist to dry forest understory meadows, dominated by upland sedges (*Carex filifolia*), upland rushes (*Juncus drummondii*) and grasses (*Poa wheeleri*) with few changes to hydrological function or vegetative species composition. Permanent transects for studying meadow condition trends have been set up in Merriam, French

Canyon, Hutchinson, and Piute Creek. The baseline vegetation condition at all these meadows was scored as moderate (USDA Forest Service, 2004).

Among granite shelves and benches above French Canyon, are lakes such as Elba, Moon, L, Merriam, and Royce. Meadows and riparian vegetation in these areas is located on narrow lakeshore terraces or along narrow, moderately steep creekside corridors. There are some dry meadows dominated by upland sedges (*Carex filifolia*) on the upland benches. These upland areas typically have thin poorly developed sod, highly erosive soils, and are low in productivity.

Fens

Twelve meadows with fens or fen characteristics were identified among the thirty-two meadows visited in this geographic unit, with conditions as follows:

- French AU: “Adjacent to Waterfall Camp” there was severe trampling damage to the fen and the stream was rated Functional at Risk with a downward trend. There are several other meadows with fen characteristics in this drainage, all in good hydrologic condition. Grazing reporting from the canyon has not been consistent, so actual use is unknown.
- Bishop AU: The meadow at Hurd Lake has fen characteristics, but no reported grazing or resource concerns.
- Lamarck AU: Grass Lake has fen characteristics, but there is no grazing reported and it appeared to be in good condition.
- Pine AU: East of Pine Creek Pass Meadow has fen characteristics, with no observed hydrologic function or spring impacts.
- Glacier Divide AU: Packsaddle and below Packsaddle meadows have fen characteristics but no observed hydrologic function problems.

Rare Plants

There are nine known populations of sensitive and watch list plants in or near this geographic unit, six are on or near trails and three are in locations without known trails or packstock use. There are two meadows with habitat for sensitive species, one has resource concerns.

- North Piute AU: There is a recorded population of slender moonwort in Piute Canyon near the Piute Canyon Trail, but it has not been relocated since a collection in 1968. The plants reportedly grow in a rock crevice. This population of *Botrychium lineare* is one of 32 reported (16 known to be extant) populations in the country. There is extensive unsurveyed habitat for this plant in the planning area and over much of the country, although “its sporadic occurrence is probably a true reflection of its rarity” (Farrar, 2004).
- Horton AU: There is a population of Inyo beardtongue bisected by the Longley Reservoir Trail.
- Bishop Creek AU: There is a population of Congdon’s sedge bisected by the Chocolate/Ruwau Trail. This species was also found in talus above Saddlerock Lake where there appears to be no pack stock use.
- Lamarck AU: There is a population of Inyo beardtongue along the Grass Lake Outlet Trail.
- Sabrina AU: Outside the wilderness there are populations of Inyo beardtongue along the Sabrina Basin Trail and in the North Lake area.
- French AU: There is potential habitat for veined water lichen in the Merriam Confluence to Chevaux Confluence Meadow, where there is no recent reported use. There are slight

vegetation composition changes, but no problems with hydrologic or stream function in this meadow.

- Glacier AU: Hutchinson Meadow, where there has been heavy human and packstock use, both historically and pre-historically, is within the elevational range of veined water lichen. The meadow has moderate changes to hydrologic function and the stream is Functional at Risk, which has a negative effect on the potential habitat of this species.
- There is potential habitat for Congdon's lewisia in the San Joaquin watershed on rocky outcrops.

Weeds

There are several species of non-native plants at the Bishop Pack Station and three species on the Piute Pass Trail within a mile of the trailhead, bird's foot trefoil, dandelion, and clover. One non-native species was found at Rainbow Pack Station and several at Pine Creek Pack Station.

Horton AU: The lower slopes near the trailhead have moderate cheatgrass cover.

Florence/Bear

Vegetation

The vegetation in this unit is montane mixed conifer forest at the lower elevations, grading into subalpine whitebark pine and lodgepole above about 10,000 feet.

43% (41 sites) of the campsites with historical packer use are above the 10,000 foot fire closure.



Trail near Sallie Keyes Lake in the Florence/Bear Geographic Unit

Grazing Resources

Table 3.37, the *Geographic Unit Meadow Table* contains a summary of the recorded pack station grazing nights at meadows throughout the geographic area. Table 3.36 at the end of the chapter has a summary of the reported commercial pack stock use and meadow conditions by geographic unit.

Twenty-eight percent of the key area meadows assessed in the Florence/Bear exhibit well defined altered vegetative species composition over more than one-third of the area. Eighteen percent of the key area meadows have vegetative species alteration over less than one-third of the meadow area and fifty-four percent have little or no alteration of vegetative species composition.

The Bolsillo, Dutch, Dutch Boulder, Ershim, Ward, East Florence, and Apollo Analysis Units are not often used for overnight trips; most use is to drop off dunnage and the pack stock return to the trailhead or travel through to other analysis units at higher elevations. Little or no grazing use occurs and no grazing key areas are identified in these analysis units.

Jackass, Poison and Hellhole Meadows have been used by the High Sierra Pack Station as pastures and are located in the Hooper Analysis Unit. Jackass Meadow is used to pasture varying numbers of pack and saddle stock throughout the season. The Forest Service has one administrative pasture within the meadow complex used during the season. A majority of this 135 acre meadow complex, which is adjacent to the South Fork San Joaquin River area below Florence Lake dam, is currently used by the High Sierra Pack Station for pack stock grazing. A drift fence adjacent to the Jackass Campground helps to keep their stock out of the campground area. The IDT estimated that 75% of meadow is suitable for pack stock grazing, with meadows in the northeast primarily unsuitable due to wet pond-like conditions that favor species unpalatable to stock.

Poison and Hellhole Meadows are located in the John Muir Wilderness. These meadows are not used annually, but use has been authorized in the 1995 Environmental Assessment for High Sierra Pack Station.

Poison Meadow is a 20 acre meadow that has historically been used by the High Sierra Pack Station periodically throughout the season for their broodmares and foals. Although portions of the meadow are dry and have some sagebrush encroachment and some isolated changes in vegetation away from potential natural plant community, roughly 80% of meadow is suitable for pack stock grazing. Poison Meadow has good access for stock watering as the meadow borders the South Fork of the San Joaquin. The small channel within the meadow was rated as Proper Functioning Condition (PFC). This meadow has an aspen and willow component with regeneration evident. The system trail goes through the eastern, drier portion of the meadow, but the trail is not causing any detrimental impacts.

Hellhole Meadow has been used by High Sierra Pack Station for grazing broodmares and foals. A PFC assessment was conducted and the PFC rating is functional at risk rating due to a stream diversion at Crater Creek. Since the water from this channel does not reach or flood the meadow on a regular basis, the riparian vegetation appears to be supported by groundwater/snowmelt recharge only. There is a dominant willow community throughout the meadow and vegetation condition is good with a high percentage of late seral species composition for this meadow.

In the Sallie Keyes Analysis Unit, Double Meadow and Blayney Meadow are used by Lost Valley and Muir Trail Ranch. Double Meadow is a 60 acre meadow, grazed seasonally by stock owned by Lost Valley Pack Station and Muir Trail Ranch, has moderate to high forage production, with the average forage production. Muir Trail Ranch uses Double Meadow in the fall of the year (September-October) and typically graze between 15-30 head of stock for up to 5 weeks.

Lower Blayney Meadow is a 32 acre (includes private acreage) meadow and includes private land owned by the Lost Valley Pack Station, Muir Trail Ranch, and another owner. Both Lost Valley Pack Station and Muir Trail Ranch use this Forest Service portion of this meadow for turning out their stock during the season. The meadow is used by recreational stock and there is a potential for conflict between commercial and recreational use, due to stream conditions that have been altered from historic improper grazing, continued heavy grazing upstream on the private sections, and current use by stock to access water at the South Fork of the San Joaquin. Streambank disturbance was recorded at 25% at reach below private property on North Fork San Joaquin River, based on toe-point method sampling conducted in August, 2004. Although a PFC assessment was not conducted, the stream reach below the private land appears functional at risk.

It may be possible to enter into an agreement with the private land owners to create gaps in their fence so that stock do not concentrate at the fenceline and have access to both the private and Forest Service land during the grazing season. This may facilitate better distribution and lessen negative effects from the heavier grazing on the private land. Carrying capacity was not estimated for the private land, only the Forest Service portion.

Light to moderate forage utilization was observed as of August, 2004 and the meadow itself is in good condition with over 85% of meadow suitable for pack stock use. Lost Valley stock may be using Blayney Meadow disproportionate to Muir Trail Ranch use of this area.

Resource conditions such as widened stream crossings, trampled spring areas, sod fragmentation, and localized alteration of vegetation species, are present in Quail Meadow, Hilgard Meadow, Rose Marie Meadow, Shooting Star Meadow, and the meadows around Sallie Keyes Lake.

Due to concerns with resource impacts the Sierra Nation Forest has closed and then opened Hilgard Meadow with rest-rotation grazing at Rose Marie and Hilgard meadows. In 1961 there were concerns over early season “misuse” at Rose Lake Meadow, watershed degradation at Rose Marie Meadow, and overall vegetative conditions. The 1961 Annual Management Plan contained a number of recommendations including requiring packing feed; minimizing over night use; prohibiting at large grazing above 8,000 feet elevation prior to July 1st; prohibiting picketing at Hutchinson Meadow near Pilot Knob Camp, Rosemarie Meadow, and in the Margaret Lake Basin; closing Pocket Camp Meadow due to “severe overgrazing”; prohibiting overnight stockholding along the Muir Trail in the Bear Creek drainage; grazing in the backcountry only in conjunction with an actual recreation trip; and keeping “accurate records.”

In the Italy AU, almost all recreational pack stock use is concentrated around Hilgard Meadow. This meadow has severe impacts and is regularly grazed by commercial pack stock. The meadow is compacted, the stream through the meadow is widened and likely incised, and banks are sloughing into Hilgard Creek. However, the meadow only has moderate hydrologic function alteration because it still has intact water sources.

Most of the Seldon Analysis Unit has low concentrations of trails and campsites, and few hydrologic or soils impacts. However, the area around Rosemarie Meadow is more heavily used and shows some alteration of soil productivity and hydrologic function. Rosemarie Meadow has slight soil compaction, some streambank trampling, and headcuts propagating up tributary channels to West Fork Bear Creek. The headcuts appear to be recovering.

Fens

Two meadows with fens or fen characteristics were identified among the 11 meadows visited in this geographic unit, with conditions as follows:

Italy AU: There is a fen in Upper Hilgard Meadow with no hydrologic problems noted.

Sallie Keyes AU: Big Fen Meadow is almost entirely fen, with no reported recent grazing, and no problems observed.

Rare Plants

There are 10 known populations of sensitive and watch list plants in or near this geographic unit, 4 are on or near trails, 1 may have impacts from wandering grazing stock, 3 are in remote areas (1 near a pipeline), and 2 are in meadows (1 in the vicinity of a hot spring). There are 51 meadows with potential habitat for sensitive species. In this geographic unit around Florence Lake are the most extensive known populations of Mono Hot Springs evening primrose and several trails intersect these populations.

- Hooper AU: There is a population of Mono Hot Springs evening primrose at the north end of Florence Lake in the vicinity of Jackass Meadow. There are no trails through this population, but there is grazing at Jackass Meadow by both commercial and Forest Service pack stock. There is a population of Mono Hot Springs evening primrose at the Hooper Creek Gaging Station on the Hooper Diversion Trail. There are subpopulations of the evening primrose outside the wilderness at the north end of Florence Lake, where there is recreational and dam maintenance activity. There is a reported population of Yosemite mousetail in Jackass Meadow outside of the wilderness and the meadow is within the elevational range of the west side sensitive riparian species. Jackass Meadow has severe hydrologic function changes due to the proximity of Florence Dam, the stream is Functional at Risk, and there is plant composition change over a large portion of the meadow. Poison and Hell Hole are also in the elevational range of the sensitive riparian species and both have moderate plant composition change. Hell Hole also has severe hydrologic function change because of a water diversion. All these meadows are being used as pastures for packstock. There is a population of grey-leaved violet on Mount Hooper, inaccessible by trail.
- Dutch/Boulder AU: The Florence Lake and Thompson Lake Trails go through populations of Mono Hot Springs evening primrose. The Florence Lake Trail is used by pack stock, some hikers, and 4WD vehicles accessing private property. The Thompson Lake Trail may be blocked by downed trees.
- East Florence AU: The Florence Lake Trail bisects populations of Mono Hot Springs evening primrose. The trail receives more hiker use than in Dutch/Boulder or Ward Mountain because the ferry drops off hikers. Grazing occurs in Double Meadow near one occurrence and burros from Lost Valley Pack Station were observed freely roaming near the ferry landing. There are two other populations of Mono Hot Springs evening primrose on the north shore of Florence Lake where there are no pack stock trails.

- Italy AU: There is potential habitat for veined water lichen at Hilgard Meadow, which has moderate hydrologic function changes and the stream condition is Functional at Risk.
- Ward Mountain AU: A small segment of the Florence Lake Trail intersects a population of Mono Hot Springs evening primrose.
- There are 51 meadows within the elevational range of at least one of the west side riparian species in this geographic unit. Six of them have reported grazing and five of these are used as pastures (see Hooper and Sallie Keyes AUs). Five of these meadows have moderate to severe changes to hydrologic function and stream condition (Table 3.34).
- Sallie Keyes AU: Three of the meadows with pack stock use are within the elevational range of the west side sensitive riparian species. Shooting Star meadow has severe vegetation composition changes over much of the meadow. Lower Blayney is used as a pasture and has moderate hydrologic function changes and moderate plant composition change. There is a population of Prairie wedge grass near Blayney Hot Springs, but the exact location is not known and may be on private land.
- There is potential habitat for Congdon's lewisia in the San Joaquin watersheds on rocky outcrops.

Weeds

Weeds are present in the Florence Lake area and on the trail between Florence Lake and the PCT that is used by vehicles, hikers, and pack stock.

Non-native species are present at the pack stations of all operators who use this area (see *Undesirable plants present in the JM and AA, at pack station facilities, or trailheads* table in the project record).

John Muir Southeast

Vegetation

The vegetation in this area is pinyon/juniper woodland at the low elevations, with some oaks, willows, and cottonwoods in the riparian zones. Trails rise quickly through Jeffrey pine and lodgepole montane forests to subalpine whitebark pine and lodgepole. Foxtail pine occurs in the southern AUs of this geographic area. There is a Research Natural Area with foxtail pine as the target element just outside the wilderness; this subspecies only occurs in the southern Sierra.

Approximately 55% (17 sites) of the campsites historically used by packers are above the 10,400 foot elevational fire closure.

Grazing Resources

Table 3.37 the *Geographic Unit Meadow Table* contains a summary of the recorded pack station grazing nights at meadows throughout the geographic area. Table 3.36 at the end of the chapter has a summary of the reported commercial pack stock use and meadow conditions by geographic unit. Most commercial pack stock use is by groups moving through to access Sequoia Kings Canyon National Park. Little grazing use occurs in this geographic area. Anvil Camp meadow was used historically, including by commercial pack operations, until closed due to stock related impacts in the early 1990s. Sawmill Meadow has been used historically, and is currently used lightly and intermittently. Windy Flat was used as a pasture by a commercial pack station until

the early 1990s and has not been used in the last decade. There is an unmaintained drift fence at Windy Flat. Light, intermittent private stock grazing may occur in this geographic area mostly associated hunting parties in the fall.



Second Lake in Big Pine Creek drainage in the John Muir Southeast Geographic Unit

Fens

There are no known fens in John Muir SE, but very few meadows were visited due to low use by commercial packstock.

Rare Plants

There are 31 known populations of sensitive and watch list plants in this Geographic Unit. Twenty-two of these populations are on or near trails in the wilderness. Nine of the populations are in relatively inaccessible locations. Four of those near trails are in areas that are likely to be used for camping or fishing. There are two more populations just outside the wilderness on access trails.

- Taboose AU: There are populations of Raven's milkvetch, Inyo beardtongue, and alpine jewel-flower on the Taboose Trail, with no reported negative impacts from the light to moderate use over this pass. There is another population of Inyo beardtongue not accessible by trails.
- Sawmill AU: There is a population of Raven's milkvetch on the Sawmill Pass Trail, where there are no reported negative impacts.
- Kearsarge AU: There are populations of Mt. Whitney draba and Sharsmith's stickseed within 0.1 mile of the Bench Lake and Matlock/Slim Lake Trails. There is another population of Mt. Whitney draba with no known access trails. There are two inaccessible populations of Sharsmith's stickseed, one on the border with the Sequoia N.P. and another in Pinyon Creek drainage, and another near the terminus of the Grand Group Trail. There are two populations of alpine jewel-flower, one on the Golden Trout Lake Trail, and one at Heart

Lake. There is also a population of Congdon's sedge on the Golden Trout Lake Trail. There is a population of Big Pine biscuitroot near the Parker Canyon Trail. Along the Shepherd Pass Trail there are two populations of Dedecker's clover and a population identified as marble rock mat. The rock mat population is inaccessible to pack stock and hikers.

- Shepherd AU: There are populations of Father Crowley's lupine and Sharsmith's stickseed along the Shepherd Pass Trail. These populations were visited in 2000 and the trail appeared stable with no off-trail travel occurring. There is low commercial pack stock use in this area, but very high overall hiker use. There are also two populations of Dedecker's clover with no trail access.
- Whitney AU: There is no pack stock use allowed in this analysis unit. There are two populations of Mt. Whitney draba and two of Sharsmith's stickseed near the main trail, but these populations were visited in 2000 and limited trampling by hikers was noted, mostly confined to trail tread.
- North Fork of Lone Pine AU: There is a population of Sharsmith's stickseed away from any trails.
- North Fork Big Pine AU: There are populations of Father Crowley's lupine and Inyo beardtongue along the North Fork Big Pine Trail. These were surveyed in 2000 and no problems were noted for these populations.
- South Fork Big Pine AU: There are populations of Inyo beardtongue and Father Crowley's lupine along the South Fork Big Pine Trail, an access route to the wilderness.
- Baxter AU: There is a population of Dedecker's clover bisected by the Baxter Pass Trail. There are no known resource concerns.
- Cottonwood AU: There is a population of sweet-smelling monardella between Lakes 4 and 5 near the end of the Cottonwood Lakes Trail, where there are many social trails. There are two populations of the watch list plant Sharsmith's stickseed in this AU on rock outcrops away from trails and another near Lake 4 in talus near a use trail to Long Lake. A site visit in 2000 found no adverse impacts to the stickseed near Lake 4, but the monardella was not located.

Weeds

There are populations of cheatgrass, red brome, and Russian thistle at many of the trailheads in this geographic unit. Cheatgrass has been found as high as 9,000 feet along these trails (K. Nelson, Inyo National Forest Botanist, pers. comm.).

At Glacier Pack Station, four species of non-native plants were found, most in the client's parking lot. Rock Creek and Pine Creek use trailheads in this area and non-natives species are present at their pack stations.

John Muir Southwest

Vegetation

The montane mixed conifer forest is limited in this area to the lower elevations of the Middle and North Forks of the Kings River. Much of the area is subalpine with higher alpine zones along the eastern side.



McGuire Lake, John Muir Southwest Geographic Unit

Approximately 12% (12 sites) historically used by packers are above the 10,400 foot elevational fire closure.

Grazing Resources

Table 3.37, the *Geographic Unit Meadow Table* contains a summary of the recorded pack station grazing nights at meadows throughout the geographic area. Table 3.36 at the end of the chapter has a summary of the reported commercial pack stock use and meadow conditions by geographic unit. Vegetative species composition change was not documented in this geographic area. Current reported grazing use is light throughout this geographic area.

Some localized trailing related sod fragmentation and hoof punching are documented at locations in the McGuire Lake, Meadowbrook, and Fleming Lake areas. Trailing related erosion is present in the meadow at Fall Creek. Historical sheep and cattle grazing, was high especially in the montane meadows, such as Big Maxson, which exhibit indicators.

Fens

In John Muir SW, of the ten meadows visited, there is only one, Meadowbrook, with a fen and there are no reported hydrologic function or spring impacts. The *Meesia uliginosa* occurrence at Spanish Lake is an indicator that there is a fen there as well. There is no information about its condition, but there has been no recent reported use by commercial packstock.

Rare Plants

Of the three populations of sensitive and watch list plants known from in or near this Geographic Unit, two are inaccessible with no threats and one is in a meadow with no reported use. There is habitat for six other sensitive and watch list plants of rock outcrop or upland habitats. In the John Muir SW Geographic Unit, about 45% (178) of the meadows are within the elevational range of at least one of the west side sensitive riparian species. Only two of these meadows have reported grazing, Geraldine Lake Meadow and North Fork Kings River near Fleming, neither with reported hydrologic or stream problems.

- Spanish AU: There is a population of the fen indicator and sensitive moss, *Meesia uliginosa* near Spanish Lake. There was no use reported at Spanish Meadow in 2001-2003.
- Rodgers AU: There is a population of Tulare County bleeding heart near Spanish mountain, not accessible by any known trail.
- Crown Basin AU: There is a population of Kettle Dome buckwheat on Kettle Dome, inaccessible by trail. There is potential habitat for unexpected larkspur, Muir's raillardella, and Hall's daisy in the Kings River watershed in the southern part of this analysis unit in rocky outcrops. The raillardella may also be found in openings in montane forest. Monarch goldenaster is also found in this watershed, but on limestone. There is potential habitat for Tehipite Valley jewel-flower also in this drainage on granitic or carbonate soils in forest openings.
- There is potential habitat for Congdon's lewisia in both the Kings and San Joaquin watersheds on rocky outcrops.

Weeds

Two non-native species were found at Clyde Pack Station, the main operator in this area. There were also weeds found at High Sierra, Lost Valley, and D&F Pack Stations, occasional users of the area.

Table 3.35 Pack station use by analysis unit

This table uses self reported data by pack stations from tally sheets. It includes both spot and dunnage trips and full service trips. However, since full service trips are recorded as on e trip, some assumptions were made to calculate nightly destinations for the traveling trips. A two way spot and dunnage trip were counted as two trips with the same number of people, with stock numbers counted for each trip. These numbers reflect the collective use of all pack stations in these two wildernesses.

Geographical Unit	Analysis Unit	2003			2002			2001			
		Trips	People	Stock	Trips	People	Stock	Trips	People	Stock	
Ansel Adams East	Crater Creek	12	30	86	7	26	115	16	45	67	
	King Creek	53	173	387	42	91	276	45	188	448	
	Minaret	24	81	198	9	38	80	18	81	153	
	Parker	0	0	0	1	14	24	2	27	49	
	River-High	19	66	124	18	52	98	22	78	147	
	Rush Creek	74	298	715	67	374	713	41	268	495	
	Shadow-Ediza	51	165	283	56	197	362	38	130	243	
	Thousand Island	67	256	613	88	348	787	63	310	568	
	Upper Rush Creek	19	81	233	21	140	322	16	161	368	
	Total		319	1150	2639	309	1280	2777	261	1288	2538
Ansel Adams West	Bridge Crossing	3	11	15	2	5	8	0	0	0	
	Cargyle	7	18	83	9	18	73	9	32	87	
	Cassidy	5	17	22	12	28	84	13	22	73	
	Chiquito	20	96	193	26	88	134	2	9	24	
	Cora	12	29	111	12	39	115	26	79	171	
	Iron Creek	1	4	10	2	5	20	0	0	0	
	Jackass	2	6	6	4	10	13	3	14	21	
	Junction	4	11	28	11	31	81	10	30	71	
	Lake Catherine	11	32	83	13	32	113	20	55	158	
	Lillian	28	70	185	24	49	156	23	77	210	
	Sadler	26	79	229	21	73	207	28	132	228	
	Staniford Lakes	43	113	199	22	63	154	10	22	49	
	Triple Divide	6	17	40	2	5	12	4	17	38	
	Total		148	407	1011	134	358	1036	146	480	1106

		2003			2002			2001		
Geographical Unit	Analysis Unit	Trips	People	Stock	Trips	People	Stock	Trips	People	Stock
Fish Creek/Convict/McGee	Cascade Valley	30	108	278	41	156	426	42	204	424
	Cold-Duck	7	19	71	2	12	11	8	29	39
	Convict	15	38	82	17	49	102	30	121	217
	Margaret	8	35	48	7	30	29	15	45	152
	McGee	49	182	364	41	127	234	47	163	332
	Purple Bench	60	230	492	62	210	515	92	413	410
	Silver Divide	20	98	242	24	106	285	23	137	268
	Upper Fish Creek	12	52	135	15	54	153	21	58	141
	Total		201	762	1712	209	744	1755	278	1170
Mono Creek/Rock Creek	Bear Ridge	6	12	38	8	31	84	15	74	88
	Devils	4	17	56	0	0	0	0	0	0
	Fourth Recess	44	161	376	47	179	380	66	284	582
	Graveyard	35	111	256	37	113	273	47	146	348
	Hilton Creek	109	254	670	97	375	750	89	416	700
	Hopkins	2	9	26	3	12	42	9	37	119
	Laurel									
	Little Lakes Valley	1	11	8	3	4	6	7	56	31
	Morgan Lakes	0	0	0	0	0	0	8	16	34
	Pioneer	21	64	110	25	62	184	26	72	264
	Second Recess	9	51	64	3	13	19	14	34	107
	Silver Peak	22	122	234	13	56	148	19	77	192
	Tamarack	0	0	0	5	22	52	2	13	34
Volcanic	1	2	6	0	0	0	3	3	10	
Total		254	814	1844	241	867	1938	305	1228	2509
Florence/Bear	Apollo	0	0	0	0	0	0	5	10	29
	Bear Lakes	2	7	8	1	7	0	1	3	7
	Dutch	8	14	48	5	17	28	3	16	22
	Hooper	2	2	6	0	0	0	5	17	41
	Italy	13	62	61	10	20	38	6	33	88
	Sallie Keyes	9	25	60	5	25	38	21	125	260
	Seldon	3	9	27	4	20	28	6	60	104
Total		37	119	210	25	89	132	47	264	551

Geographical Unit	Analysis Unit	2003			2002			2001			
		Trips	People	Stock	Trips	People	Stock	Trips	People	Stock	
Bishop/Humphreys	Bishop Creek	35	79	124	34	79	92	30	72	119	
	French Canyon	33	62	165	23	53	157	25	92	236	
	Glacier Divide	61	278	630	80	307	703	92	329	654	
	Horton	2	4	12	0	0	0	2	8	11	
	Humphreys Basin	23	84	88	25	67	158	44	91	229	
	Lamarck	7	26	24	4	10	12	3	10	10	
	North Piute	16	57	148	1	3	5	14	70	121	
	Pine Creek	26	101	134	32	120	169	38	146	213	
	Piute	1	2	2	1	10	5	3	15	13	
	Sabrina	49	166	277	45	157	258	39	116	236	
	Treasure	0	0	0	5	6	25	5	15	25	
	Tyee	0	0	0	2	2	9	0	0	0	
	Total		253	859	1604	252	814	1593	295	964	1867
	John Muir Southeast	Birch	2	3	14	0	0	0	2	3	15
Coyote		2	3	13	0	0	0	0	0	0	
Kearsarge		3	17	29	2	9	14	1	6	5	
NF Big Pine Creek		93	222	468	93	289	319	148	430	783	
Sawmill		1	6	5	2	8	9	1	6	12	
SF Big Pine Creek		0	0	0	2	6	4	6	9	39	
Shepherd		9	45	35	17	49	81	5	18	47	
Taboose		1	2	5	1	1	5	2	27	67	
Total			111	298	569	117	362	432	165	499	968
John Muir Southwest	Basin	5	15	27	10	23	55	11	28	68	
	Bench	5	8	26	2	2	10	4	6	24	
	Big Maxson	4	13	30	6	16	26	9	26	96	
	Crown Lake	2	6	11	0	0	0	0	0	0	
	Fleming Mountain	6	32	32	5	15	36	1	2	4	
	Hobler	6	17	74	6	13	58	4	10	60	
	Post Corral	3	36	14							
	Red Mountain	2	7	8	0	0	0	8	42	51	
	Rogers	4	18	22	0	0	0	3	20	15	
	South Woodchuck	4	10	28	11	43	99	10	32	81	
	Spanish	0	0	0	0	0	0	4	4	20	
Total		41	162	272	40	112	284	54	170	419	

Table 3.36 Reported commercial pack stock use and meadow conditions by geographic unit.**Abbreviations:****Pack Stations:** MLPO = Mammoth Lakes Pack Outfit**Resource Conditions:** Mod.=Moderate**PFC:** PFC=Proper Functioning Condition, FAR=Functional at Risk (arrows indicate upward, non-apparent, or downward trend), NF=non-functional.

Analysis Units	# Pack-stations Reported Grazing Use	Total Reported Use 01-03			Resource Conditions				
		2001	2002	2003	Hydrologic Function Change (% of meadow acres)	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
AA East	Frontier, Reds, Rock Creek, MLPO	1616	1154	1040	None 68% Slight: 23% Mod. 9% Severe: 0	PFC 58% FAR↑ 5% FAR↔ 23% FAR↓ 13% NF 3%	None 0 Slight 51% Mod. 42% Severe 7%	5-25= 19% 26-75= 52% >75= 29%	None 38% Slight 27% Mod. 35% Severe 11%
AA West	Minaret, Frontier, High Sierra	142	114	197	None: 29% Slight: 7% Mod.: 31% Severe: 33%	PFC: 30% FAR↑ 25% FAR↔ 40% FAR↓ 5%	Slight: 19% Mod. 19% Severe: 62%	5-25: 18% 26-75: 65% >75: 17%	None: 19% Slight: 25% Mod.: 50% Severe: 6%
Fish Creek/Convict/McGee	McGee, MLPO, Rock Creek, Reds, Frontier, High Sierra, D&F	2292	2047	925	None: 39% Slight: 39% Mod.: 8% Severe: 14%	PFC: 57% FAR↑: 11% FAR↔: 14% FAR↓: 18%	Slight: 53% Mod.: 42% Severe: 5%	5-25: 15% 26-75: 57% >75: 28%	None: 35% Slight 21% Mod.: 26% Severe: 18%
Mono Creek/Rock Creek	Rock Creek, High Sierra, D&F, MLPO, Reds	42	926	661	None: 45% Slight: 33% Mod.: 3% Severe: 18%	PFC: 65% FAR↑: 11% FAR↔: 4% FAR↓: 18%	Slight: 40% Mod.: 43% Severe: 17%	5-25: 47% 26-75: 27% >75: 26%	None: 24% Slight: 48% Mod.: 24% Severe: 4%

Analysis Units	# Pack-stations Reported Grazing Use	Total Reported Use 01-03			Resource Conditions				
		2001	2002	2003	Hydrologic Function Change (% of meadow acres)	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Bishop/Humphreys	Pine Creek, Rock Creek, Bishop, High Sierra, Reds	133	176	493	None: 92% Slight: 7% Mod.: 1%	PFC: 76% FAR↔: 18% FAR↓: 6%	Slight: 50% Mod.: 44% Severe: 6%	26-75: 24% >75: 76%	None: 64% Slight: 27% Severe: 9%
Florence/Bear	High Sierra, D&F, Rock Creek, MLPO, Bishop, Lost Valley	214	80	178	None: 49% Slight: 25% Mod.: 11% Severe: 14%	PFC: 73% FAR↑: 7% FAR↔: 20%	Slight: 50% Mod.: 20% Severe: 30%	5-25: 10% 26-75: 60% >75: 30%	None: 50% Slight: 13% Mod.: 25% Severe: 12%
JM SW	Clyde	251	155	125	None: 50% Slight: 40% Mod.: 10%	PFC: 60% FAR↑: 20% FAR↔: 20%		26-75: 100%	
JM SE	Pine Creek	9	0	0	NA	NA	NA	NA	NA
TOTALS		4598	4670	3147					

Table 3.37 Geographic unit meadow table**Ansel Adams East Geographic Unit****Definitions:****Critical Areas/Habitat****Yotoad:** Yosemite Toad**SPH:** Sensitive Plant Potential Habitat (Number of different species in parenthesis)

Reported commercial pack stock use and meadow conditions for Ansel Adams East Analysis Units

Meadow	Pack-station	Reported Use 01-03		Critical Areas/Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% NOT Range Ready	Spring Impacts
		Earliest on-date							
Ansel Adams – East Mono Drainage									
Rush Creek Analysis Unit (Total Reported Use: 2001: 528, 2002: 262, 2003: 345)									
Upper Alger	Frontier	160	0	Yotoad, SPH(1)	None	PFC	Slight	>75	Slight
		July 15							
Lower Alger	Frontier	296	24	Yotoad, SPH(1)	None	PFC	Slight	26-75	Mod.
		July 4							
Upper Spooky	Frontier	44	14	Fen	Slight	NA	Mod.	26-75	Severe
		July 17							
Lower Spooky	Frontier	91	38		Slight	NA	Mod.	5-25	None
		July 15							
Rush Creek below 10,000 ft.	Rock Creek	24	0		Non-site-specific grazing report.				
		July 27							
Clark Lakes	Frontier	91	0		NA	NA	NA	NA	NA
		July 18							
Upper Rush Creek Analysis Unit (Total Reported Use: 2001: 346, 2002: 403, 2003: 140)									
Rogers Lakes Mdws	Frontier	104	44	Yotoad, SPH(1)	None	PFC	Slight	>75	Mod.
		August 3							
Davis Lake Mdw	Frontier	116	0	Yotoad	None	PFC	Slight	26-75	Slight
		July 27							
E Davis to Waugh Stringers		0	0	Yotoad	None	PFC	Slight	5-25	None

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% NOT Range Ready	Spring Impacts
		Earliest on-date							
Bench E of Davis		0	0	SPH(1)	Slight	PFC	NA	5-25	None
Marie Mdws	Frontier	175	0	Yotoad, SPH(1)	None	FAR↔	Slight	26-75	Mod.
		August 2							
Donahue Camp Mdws	Reds, Frontier	127	36		None	NA	Slight	5-25	NA
		August 4							
URU4		0	0		NA	NA	NA	NA	NA
Ansel Adams East - Upper San Joaquin Drainage									
Thousand Island Analysis Unit (Total Reported Use: 2001: 390, 2002: 231, 2003: 127)									
NW Delta Thousand Island	Reds, Rock Creek	227	40		Slight	FAR↓	Mod.	26-75	NA
N Delta Thousand Island		July 24			NA	NA	NA	NA	NA
NW Delta behind Moraine				Yotoad	None	FAR↔	Slight	>75	NA
West End Thousand Island Lk				Yotoad	NA	NA	NA	NA	NA
Stringer N of Thousand Island					NA	NA	NA	NA	NA
NE Shore Thousand Island					NA	NA	NA	NA	NA
Garnet Lake Meadow	Reds	164	35	Fen	Slight	FAR↓	Mod.	>75	NA
SW shore of Garnet Lake		July 8			NA	NA	NA	NA	NA
Garnet/ Emerald Complex					Mod.	FAR↓	Mod.	5-25	NA

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% NOT Range Ready	Spring Impacts
		Earliest on- date							
Complex S of Garnet Lake					NA	NA	NA	NA	NA
Shadow-Ediza Analysis Unit (Total Reported Use: 2001: 137, 2002: 0, 2003: 177)									
John Muir Trail/ Shadow Creek Jct.	Reds	110	0	SPH(1)	None	FAR↔	Mod.	26-75	NA
Shadow Creek above Nydiver confl.		August 19		SPH(1)	None	NA	Mod.	>75	NA
Ediza Lake-shore		0 (Closed)			None	NA	Mod.	26-75	NA
Upper Ediza					None	FAR↑	Mod.	26-75	None
Mdws west of Gladys /Rosalie	Reds	110	0	Fen	None	PFC FAR↔	Mod.	26-75	Slight
		September 5							
Gladys Lake	Rock Creek	27	0		NA	NA	NA	NA	NA
		August 20							
Cabin Lake		0 (Closed)			None	PFC	Mod.	26-75	Slight
Laura Lake	Reds	40	0		None	NA	NA	26-75	NA
		August 30							
Stringer W of Lois Lake		0	0		NA	NA	NA	NA	NA
River Corridor Analysis Unit (Total Reported Use: 2001: 0, 2002: 13, 2003: 0)									
PCT Jct River Trail S riv2		0	0	SPH(6)	None	PFC	Mod.	26-75	NA
San Joaquin River	Rock Creek	13	0		Non-site-specific reports of grazing.				
		July 26							
River High Analysis Unit (Total Reported Use: 2001: 25, 2002: 65, 2003: 92)									
Badger	Reds	10	0	Fen	Slight	FAR↔	Mod.	26-75	NA

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% NOT Range Ready	Spring Impacts
		Earliest on-date							
Meadow rih2		August 17							
River, Upper	Reds	42	25		Non-site-specific reports of grazing.				
		August 3							
San Joaquin River, Upper	Reds	40	0						
		August 16							
Minaret Analysis Unit (Total Reported Use: 2001: 0, 2002: 44, 2003: 22)									
Lower Minaret Mine Mdw	Reds	24	0		Slight	FAR↔	Slight	NA	NA
Upper Minaret Mine Meadow					None	PFC	Slight	>75	None
Middle Minarets Creek Meadow		August 20		SPH(3)	None	NA	Slight	26-75	NA
Upper S Fork Minaret Creek					None	PFC	Slight	26-75	None
Johnston Meadow	Rock Creek	20	0	SPH(6)	Mod.	FAR↓	Mod.	26-75	NA
		August 23							
Trinity Meadows Complex		0	0		None	FAR↑	Slight	26-75	NA
MIN7		0	0	SPH(1)	NA	NA	NA	NA	NA
King Creek Analysis Unit (Total Reported Use: 2001: 130, 2002: 94, 2003: 42)									
Anona N Meadows	Reds	44	0	SPH(1)	NA	NA	NA	NA	NA
Anona		August 19		SPH(1)	None	PFC	Slight	26-75	None
Superior Lake Meadows	Reds	42	0		None	NA	Slight	26-75	Slight
Superior Lake Meadows S		August 17			NA	NA	NA	NA	NA

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% NOT Range Ready	Spring Impacts
		Earliest on- date							
Holcomb Area Meadows		0	0		None	PFC	Slight	5-25	NA
Ashley Lake Terraces	Reds	86	0		None	PFC	Slight	5-25	None
		August 6							
Crater Creek Analysis Unit (Total Reported Use: 2001: 60, 2002: 42, 2003: 95)									
Deer Creek Meadows ccd12	MLPO, Rock Creek	95	42	Fen, SPH(1)	Slight	PFC	Slight	>75	Severe
Deer Creek Meadows ccd14		July 17		SPH(1)	NA	NA	NA	NA	NA
Deer Creek Meadows ccd15				Yotoad, fen	None	PFC	Mod.	>75	Mod.
Middle Deer Creek ccd17		0	0	Yotoad	None	PFC	Severe	26-75	Slight
Upper Deer Creek ccd18a		0	0	Yotoad, fen	Slight	PFC	Slight	>75	Mod.
Upper Deer Creek ccd18b		0	0		None	PFC	Mod.	26-75	None
Deer Lakes ccd19a		0	0	Fen	None	NA	Slight	>75	Slight
Deer Lakes ccd19b		0	0	Yotoad	None	PFC	Slight	26-75	Mod.
Crater Meadow ccd1		0	0	Fen, SPH(2)	Slight	FAR↓	Mod.	>75	None
Summit Meadow ccd11		0	0	Yotoad, SPH(1)	Mod.	NA	Severe	>75	Severe
ccd16		0	0	Yotoad	Mod.	NF	Severe	5-25	None

Ansel Adams West Geographic Unit

Reported commercial pack stock use and meadow conditions for Ansel Adams West Analysis Units

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Ansel Adams West – Western San Joaquin Drainage									
Lillian Analysis Unit (No reported use)									
Flat Lake Meadow		0	0	SPH(1)	Slight	PFC	Severe	26-75	NA
Fernandez Pass Meadow		0	0		NA	NA	NA	NA	NA
NW of Fernandez Lakes		0	0	SPH(1)	Severe	NA	NA	5-25	Mod.
Fernandez Meadow		0	0		Severe	NA	Severe	26-75	Mod.
Triple Divide Analysis Unit (Total Reported Use: 2001: 54, 2002: 6, 2003: 28)									
N of Anne Lake trd1	Minaret	54	0		Slight	NA	Mod.	26-75	None
S of Slab Lakes trd6		0	0		None	NA	Severe	>75	NA
Isberg Meadow trd8	Minaret	6	0		Mod.	NA	Severe	26-75	None
trd11		0	0	SPH(1)	NA	NA	NA	NA	NA
Sadler Analysis Unit (Total Reported Use: 2001: 36, 2002: 59, 2003: 127)									
Joe Crane Lake sad1		0	0		Mod.	NA	Severe	5-25	Slight
W of Joe Crane Lake sad2		0	0		Severe	NA	Severe	26-75	NA
Joe Crane Trail Jct sad4		0	0	SPH(1)	Mod.	NA	Severe	26-75	NA
N Isberg Lakes Mdws sad10		0	0		None	NA	NA	26-75	None
W of N Isberg Lake sad11		0	0		NA	NA	NA	NA	NA

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Sadler Pond Mdw sad22		0	0	Yotoad	Slight	NA	NA	NA	Slight
Sadler Lake Mdw sad12	Frontier, Minaret	59	0		Mod.	NA	Severe	26-75	Mod.
McClure to Sadler sad13	Minaret	127	0	Fen	Severe	NA	Severe	26-75	Severe
West of Sadler sad14		0	0		NA	NA	NA	NA	NA
Cora Analysis Unit (Total Reported Use: 2001: 24, 2002: 15, 2003: 0)									
Cora Lakes	Minaret	15	0	SPH(3)	Slight	NA	Severe	26-75	NA
Chetwood		0	0	SPH(3)	Severe	NA	Severe	26-75	NA
Bugg Meadow		0	0	SPH(3)	NA	NA	NA	NA	NA
Knoblock Meadow	Minaret	24	0	SPH(3)	Severe	NA	Severe	5-25	NA
Detachment		0	0	SPH(3)	Severe	NA	Mod.	26-75	NA
Bridge Analysis Unit (No Reported Use)									
BRC1		0	0	SPH(6)	NA	NA	NA	NA	NA
BRC2		0	0	SPH(6)	NA	NA	NA	NA	NA
BRC3		0	0	SPH(6)	NA	NA	NA	NA	NA
BRC4		0	0	SPH(6)	NA	NA	NA	NA	NA
BRC5		0	0	SPH(3)	NA	NA	NA	NA	NA
BRC6		0	0	SPH(3)	NA	NA	NA	NA	NA
Junction Analysis Unit (No Reported Use)									
Rattlesnake Lake		0	0		NA	NA	NA	NA	NA
Arch Analysis Unit (Total Reported Use: 2001: 10 2002: 0 2003: 0)									
Rock Creek Mdw	High Sierra	10	0		NA	NA	NA	NA	NA
Ansel Adams West—Eastern San Joaquin									
Bench Canyon Analysis Unit (Total Reported Use: 2001: 0, 2002: 34, 2003: 0)									
Long Creek	Minaret	34	0		NA	NA	NA	NA	NA

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
BEC34		0	0		NA	NA	NA	NA	NA
BEC35		0	0		NA	NA	NA	NA	NA
BEC36		0	0		NA	NA	NA	NA	NA
Lake Catherine Analysis Unit (Total Reported Use: 2001: 42, 2002: 73, 2003: 83)									
Hemlock Crossing	Minaret, Frontier	42	0	SPH(6)	None	PFC	None	5-25%	Unknown
Stevenson	Minaret	83	0	Fen, SPH(6)	None	PFC	Slight	26-75%	Slight Impacts
The Falls	Minaret	0	0		None	NA	Slight	26-75%	NA
Upper Falls	Minaret	0	0		None	NA	None	NA	NA
Pond Meadow	Minaret	0	0	Fen	None	NA	Slight	5-25%	No impacts
Lower Stevenson	Minaret	0	0		Slight	NA	Slight	5-25%	NA
Cargyle Analysis Unit (Total Reported Use: 2001: 18, 2002: 0, 2003: 42)									
Stairway	Minaret	20	0	Yotoad, SPH(1)	Mod.	NA	Severe	5-25	Mod.
Stairway South					None	NA	Slight	>75	Slight
Between Stairway and Cargyle		0	0	Yotoad, fen, SPH(3)	Mod.	NA	Mod.	26-75	Mod.
Cargyle Meadow		0	0	DRRO, SPH(6)	None	NA	Slight	26-75	Mod.
Cargyle North		0	0	Fen, SPH(6)	None	NA	Slight	>75	Mod
77 Corral	Minaret, Frontier	22	0	SPH(6)	NA	NA	NA	NA	NA
West of 77 Corral		0	0	SPH(6)	NA	NA	NA	NA	NA
CARL4		0	0	SPH(6)	NA	NA	NA	NA	NA
North of Corral		0	0	SPH(3)	NA	NA	NA	NA	NA
Lower East Fork Meadow		0	0	Fen, SPH(3)	None	PFC	Slight	26-75	Slight
Middle East Fork Meadow		0	0	Fen, SPH(1)	None	PFC	Mod.	>75	Mod.
CARL9				SPH(2)	NA	NA	NA	NA	NA

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Alstot Lake; East of Alstot Lake		0	0		NA	NA	NA	NA	NA
Spano Meadow		0	0	SPH(1)	NA	NA	NA	NA	NA
Straube Lake Meadow		0	0	SPH(1)	NA	NA	NA	NA	NA
Head-quarters Meadow		0	0	SPH(6)	NA	NA	NA	NA	NA
CARL33, CARL35		0	0	SPH(3)	NA	NA	NA	NA	NA
CARL34		0	0	SPH(6)	NA	NA	NA	NA	NA

Fish Creek/Convict/McGee Geographic Unit

Reported commercial pack stock grazing use and meadow conditions for Fish Creek/Convict/McGee Analysis Units

Meadow	Pack-station	Reported Use (in stock nights) 2001-03		Critical Areas/Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Fish Creek/Convict/McGee—East Side Drainage									
McGee Analysis Unit (Total Reported Use: 2001: 43, 2002: 0, 2003: 0)									
Cable Meadow		0	0		None (beaver pond)	PFC	Slight	>75	None
Baldwin (Sche-elore)		0	0	Yotoad	Slight	PFC	Slight	26-75	None
Big McGee (Hopkins Bench)	McGee	7	0	Yotoad	Slight	FAR↔	Slight	>75	Mod.
Martin's	McGee	5	0	Yotoad	Mod.	FAR↔ (2001) NF (2005)	Mod.	>75	Severe
Chute Meadow		0	0	Yotoad	None	PFC	Slight	<5	None
NW of Big McGee Lake		0	0		Slight	NA	Mod.	>75	Mod.
Round (Sheep)	McGee	15	0	Yotoad	Slight	NA	Mod.	26-75	None
Grass Lake		0	0	Yotoad, fen	None	NA	Slight	>75	None
Meadow Lake		16	0		This is an unknown location.				
Second Meadow (above Martin's)		0	0		None	PFC			

Meadow	Pack-station	Reported Use (in stock nights) 2001-03		Critical Areas/Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Fish Creek/Convict/McGee—Fish Creek Drainage									
Purple Bench Analysis Unit (Total Reported Use: 2001: 428, 2002: 534, 2003: 59)									
Duck Lake Benches ppb15	McGee, MLPO	16	0		Slight	PFC	NA	26-75	None
Pika Lake Meadow ppb4					Slight	NA	Slight	26-75	Mod.
Duck Lake Meadows ppb6		Yotoad			Slight	NA	Slight	26-75	Mod.
South of Duck Lake ppb9		0	0		NA	NA	NA	NA	NA
Purple Meadow ppb12	MLPO	438	47		Mod.	PFC FAR↓ (2)	Mod.	26-75	NA
High Camp ppb5		Fen			None	NA	Mod.	>75	None
Ram Meadow ppb10	MLPO	164	0	Fen	Slight	NA	Slight	26-75	NA
NE of Purple Lake ppb7		0	0		NA	NA	NA	NA	NA
Purple Bench ppb13	Rock Creek, MLPO	20	10	Fen	None	PFC	Slight	26-75	Slight
Virginia Lake ppb1	Rock Creek, McGee	60	0		Slight	NA	Mod.	26-75	NA
Betw Virginia and Glennette ppb11		0	0		NA	NA	NA	NA	NA
Upper Fish Creek Analysis Unit (Total Reported Use: 2001: 299, 2002: 161, 2003: 40)									
Red Slate Meadow ufc3	McGee	75	0	Yotoad, fen	None	NA	Slight	26-75	Slight

Meadow	Pack-station	Reported Use (in stock nights) 2001-03		Critical Areas/Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Tully Lake Meadow ufc4	McGee	28	0	Yotoad, fen	Slight	PFC	Mod.	26-75	Slight
Stringers SE of Tully ufc10		0	0	Yotoad	NA	NA	NA	NA	NA
Lee-Cecil ufc7	McGee	10	0		None	NA	Mod.	26-75	NA
Below Lee Lake at Tarn ufc1					Slight	NA	Mod.	>75	Severe
West of Lee/Cecil Lks ufc11					Slight	NA	Mod.	26-75	Mod.
Lee/McGee Trail Jct ufc6		0	0		Severe	NA	Mod.	26-75	Mod.
Horse Heaven ufc8	MLPO, Rock Creek, McGee	156	36		Slight	PFC	Mod.	26-75	Slight
Tully Hole ufc9	MLPO, Rock Creek	105	4	Fen	Mod.	FAR↔	Mod.	26-75	Mod.
Cascade Analysis Unit (Total Reported Use: 2001: 681, 2002: 550, 2003: 214)									
Island Crossing/Fox cas6	Reds Frontier	159	40	Fen, SPH(3)	NA	NA	Mod.	26-75	NA
Second Crossing cas1	Reds (Closed since 2001)	207	0	Fen, SPH(6)	Slight	FAR↓	Slight	>75	Severe
Third Crossing	Frontier, Rock Creek, MLPO	103	30	Fen, SPH(2)	Moderate	PFC	Slight	>75	None
Cascade Meadows		Closed		SPH(3)	Severe	NA	Severe	5-25	NA

Meadow	Pack-station	Reported Use (in stock nights) 2001-03		Critical Areas/Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Between Cascade & Second	Rock Creek, Reds	166	36	SPH(6)	None	NA	NA	5-25	NA
Fish Creek	Reds, MLPO	309	0	These are non-site-specific reports of grazing in Fish Creek Valley.					
Fish Valley	Rock Creek	25	0						
Fish Creek – Pond Meadow	Reds	24	0						
Silver Divide Analysis Unit (Total Reported Use: 2001: 884, 2002: 802, 2003: 404)									
Long Canyon	MLPO, Reds	130	0	SPH(1)	None	PFC	NA	26-75	Slight
Long Canyon					Slight	PFC	NA	26-75	Slight
Lost Keyes Lakes	MLPO	4	0		NA	NA	NA	NA	NA
Midge Lake Basin Mdws		0	0		NA	NA	NA	NA	NA
Beetlebug Lake Mdws		0	0		NA	NA	NA	NA	NA
Iva Belle/ Sharktooth	Reds	105	0	Fen, SPH(6)	NA	NA	NA	NA	NA
Squaw Lake Meadow		0	0	Yotoad	None	NA	Slight	>75	NA
Anne Lake Meadows		0	0		NA	NA	NA	NA	NA
Papoose		0	0	Yotoad	Slight	NA	Slight	>75	NA
Btwn Lone Indian and Grassy		0	0	Yotoad	Slight	NA	Slight	>75	Severe
Olive West	Rock Creek	25	0		None	PFC	Mod.	26-75	None
Olive Meadows					None	NA	Slight	26-75	NA

Meadow	Pack-station	Reported Use (in stock nights) 2001-03		Critical Areas/Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Chief	High Sierra	9	0	Yotoad	NA	NA	NA	NA	NA
Box Canyon above Grassy		0	0		None	PFC	Slight	26-75	Mod.
Minnie		0	0		None	NA	NA	NA	NA
Grassy	High Sierra, MLPO, Rock Creek, D&F	447	199	Yotoad	Severe	FAR↓	Severe	<5	Severe
Near Lake of the Lone Indian		0	0		NA	NA	NA	NA	NA
Peter Pande	Rock Creek, High Sierra, D&F	92	14	Yotoad	Slight	NA	Slight	26-75	NA
Wilber May Lake		0	0	Yotoad	NA	NA	NA	NA	NA
Peter Pande Tarn		0	0	Yotoad, fen	Slight	NA	Slight	>75	NA
Jackson Meadow	McGee, Rock Creek, MLPO, Frontier	363	168		Severe	FAR↓	Mod.	26-75	Severe
Box Canyon above Jackson		0	0		Severe	Unkn.	Unkn.	Unkn.	Unkn.
Margaret Divide Analysis Unit (Total Reported Use: 2001: 4, 2002: 84, 2003: 3)									
Coyote Grazing Area mar1	High Sierra	84	0	Fen	Slight	PFC	Slight	26-75	Mod.
Big Margaret Lake West mar11	High Sierra	4	0		None	FAR↑	Slight	5-25	NA

Meadow	Pack-station	Reported Use (in stock nights) 2001-03		Critical Areas/Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Frog Lake Mdw mar17	High Sierra	0	0	Yotoad	None	PFC	Slight	5-25	None
Frog Lake SE mar18		0	0		Slight	FAR↔	Mod.	5-25	Slight
North of Frog Lake mar19		0	0	Yotoad	None	PFC	Slight	26-75	None
Rainbow to Margaret mar4		0	0		Slight	FAR↔	Mod.	5-25	None

Mono Creek/Rock Creek Geographic Unit

Reported commercial pack stock grazing use and meadow conditions for Mono Creek/Rock Creek Analysis Units

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Rock Creek—East Side Drainage									
Hilton Analysis Unit (Total Reported Use: 2001: 0, 2002: 0, 2003: 7)									
Hilton Creek/ Turk Meadow	Rock Creek	7	0	Fen, HEBL	Slight	PFC	Mod.	26-75	Slight
Davis Lake Outlet		0	0	Fen	None	NA	NA	NA	NA
Davis lakeside near outlet		0	0		None	PFC	Mod.	26-75	Mod.
Davis Lakeside		0	0		Slight	NA	Mod.	26-75	Mod.
Davis S Camp		0	0		NA	NA	NA	NA	NA
Davis Pond md/pasture		0	0		None	NA	NA	NA	NA
East of Davis hill		0	0	Fen	NA	NA	NA	NA	NA
Hilton Lake meadows		0	0		None	NA	NA	NA	NA
North Hilton		0	0		NA	NA	NA	NA	NA
Hilton 5-6		0	0		None	NA	Mod.	26-75	None
Little Lake Valley Analysis Unit (No reported use)									
Marsh Lake		0	0	Fen	None	PFC	Slight	>75	NA
Gem Lake Meadows		0	0	Fen	None	PFC	Slight	>75	Slight
Heart Lake		0	0	Fen	None	NA	NA	NA	NA
Above Long Lake		0	0	Yotoad, Fen	None	PFC	Slight	>75	NA

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Chicken-foot Lake		0	0		None	PFC	Slight	>75	Slight
Mack Lake		0	0	Fen	NA	NA	NA	NA	NA
Long Lake to Treasure Lakes		0	0		None	NA	Slight	>75	NA
SW of Long Lake		0	0		NA	NA	NA	NA	NA
Tamarack Analysis Unit (No reported use)									
TAM 1,2,4, 13,6,7,8		0	0		NA	NA	NA	NA	NA
Dorothy Outlet Meadow		0	0		Mod.	FAR↓	Severe	26-75	Slight
Rock Creek – Upper Mono Creek Drainage									
Fourth Recess Analysis Unit (Total Reported Use: 2001: 8, 2002: 435, 2003: 250)									
N of Mono Rock	Rock Creek	174	0	Fen	None	PFC	Mod.	>75	Mod.
Below Golden Lake along Creek		0	0		NA	NA	NA	NA	NA
Third Recess along creek	Rock Creek	14	0	Fen	None	PFC	Mod.	>75	None
Third Recess Pond		0	0		NA	NA	NA	NA	NA
Third Recess Lake		0	0	Fen	NA	NA	NA	NA	NA
Fourth Recess Lake	Rock Creek, High Sierra	7	0		NA	NA	NA	NA	NA
Hopkins/Bench Camp Meadow	Rock Creek	272	0	SPH(1)	Mod.	FAR↑	Severe	>75	NA

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Mono Corridor	Rock Creek Reds	146	8		These are non-site-specific reports of grazing in Mono Creek.				
Pioneer Analysis Unit (No Reported Use – Closed)									
Camp Meadow		Closed		Yotoad, fen	Slight	NA	Mod.	<5	None
Upper Pioneer Basin Lake Meadow		Closed			None	NA	Slight	<5	None
W Pioneer Basin Lk Meadows		Closed			NA	NA	NA	NA	NA
Mudd Lake Mdw		Closed		Yotoad	Slight	NA	Severe	<5	Slight
E of Mudd Lake Mdw		Closed			NA	NA	Severe	NA	Slight
Hopkins Analysis Unit (Total Reported Use: 2001: 0, 2002: 183, 2003: 63)									
West of Lower Hopkins		0	0		NA	NA	NA	NA	NA
Hopkins Creek Complex	Rock Creek	51	0		NA	NA	NA	NA	NA
Upper Hopkins meadows		0	0		NA	NA	NA	NA	NA
Lower Hopkins Lake Meadow	Rock Creek	37	0		NA	NA	NA	NA	NA
Hopkins to Mono	Rock Creek	146	0		NA	NA	NA	NA	NA
Laurel Analysis Unit (Total Reported Use: 2001: 0, 2002: 26, 2003: 0)									
Lower Laurel Creek	Rock Creek	26	0		NA	NA	NA	NA	NA
Laurel Creek Complex		Trail blocked		Yotoad	NA	NA	NA	NA	NA
Middle Laurel Creek					NA	NA	NA	NA	NA

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
		Second Recess Analysis Unit (Total Reported Use: 2001: 21, 2002: 49, 2003: 61)							
First Recess Meadow	Rock Creek	22	0	SPH(3)	NA	NA	NA	NA	NA
Second Recess Meadows	Rock Creek	23	0	Fen	None	NA	NA	NA	NA
Mono Creek at Second Recess	Rock Creek, D&F	27 82	0 0	SPH(2)	NA	NA	NA	NA	NA
Lower Mono Creek		0	0	SPH(6)	NA	NA	NA	NA	NA
N Second Recess Meadows		0	0	SPH(1)	NA	NA	NA	NA	NA
Silver Peak Analysis Unit (Total Reported Use: 2001: 13, 2002: 104, 2003: 68)									
Silver Pass Complex					None	PFC	Slight	<5	None
Silver Pass Lk Mdw	Rock Creek	127	0	Yotoad	None	PFC	Slight	<5	Slight
Silver Pass Meadow					Severe	FAR↓	Mod.	<5	Mod.
N Fork Mono Crk SE of Mott Lk	High Sierra	13	0		None	PFC	Slight	26-75	None
Pocket Meadow	Rock Creek	37	0	SPH(1)	Mod.	FAR↔	Mod.	<5	NA
Rock Creek – Lower Mono Drainage									
Volcanic Analysis Unit (No Reported Use)									
Volcanic Knob Meadow		0	0	Yotoad, fen	None	PFC	Mod.	26-75	None
Volcanic Knob East		0	0	Yotoad	NA	NA	NA	NA	NA
East of Volcanic Knob		0	0	Yotoad	NA	NA	NA	NA	NA
South of Volcanic Knob		0	0		NA	NA	NA	NA	NA

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Graveyard Analysis Unit (Total Reported Use: 2001: 0, 2002: 80, 2003: 31)									
Quail Meadows	Rock Creek, MLPO	48	0	SPH(6)	Slight	PFC	Mod.	26-75	Mod.
Graveyard Meadow	Rock Creek	32	0	SPH(1)	Severe	FAR↓	Severe	<5	Severe
Middle Graveyard		0	0	Fen	Slight	FAR↑	Mod.	26-75	Slight
Upper Graveyard Meadow		0	0	Yotoad	Severe	FAR↓	Mod.	<5	Slight
East of Upper Graveyard		0	0		NA	NA	NA	NA	NA
Lower Graveyard Lakeshore		0	0		None	PFC	Slight	<5	NA
Lower Graveyard Lake S		0	0	Fen	None	NA	Slight	<5	Slight
Upper Cold Creek Complex		0	0	Fen	Slight	NA	Mod.	<5	Mod.
Goodale Pass Meadow		0	0	Fen	None	NA	Slight	<5	Slight
Devils Analysis Unit (No Reported Use)									
Devil's Bathtub Mdw		0	0	Yotoad	NA	NA	NA	NA	NA
Bear Analysis Unit (No Reported Use)									
Kip Camp		0	0	Fen, SPH(6)	NA	NA	NA	NA	NA
Bear Ridge Meadow		0	0		NA	NA	NA	NA	NA
BER8		0	0		NA	NA	NA	NA	NA

Bishop/Humphreys Geographic Unit

Reported commercial pack stock grazing use and meadow conditions for Bishop/Humphreys Analysis Units

Meadow	Pack-station	Reported Use 01-03		Critical Areas/Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Bishop/Humphreys – Pine Creek Drainage									
Pine Creek Analysis Unit (No reported use)									
Pine Creek Stringers		0	0		NA	NA	NA	NA	NA
Honey-moon Lake Meadows		0	0		NA	NA	NA	NA	NA
Upper Pine Lake Inlet		0	0	Yotoad	None	FAR↔	Mod.	26-75	None
Upper Pine Lake Outlet		0	0	Yotoad	None	NA	Slight	>75	None
West of Honey-moon Lake		0	0		NA	NA	NA	NA	NA
East of Pine Creek Pass		0	0	Yotoad, fen	None	PFC	Slight	>75	None
Golden Lake Meadows		0	0		NA	NA	NA	NA	NA
Granite Park Analysis Unit (No reported use)									
Above Honey-moon Lake to Italy Pass		0	0	Yotoad	None	NA	Slight	>75	None
Bishop/Humphreys—Humphreys/Piute Drainage									
Glacier Divide Analysis Unit (Total Reported Use: 2001: 133, 2002: 163, 2003: 290)									
Golden Trout Lk to Summit Lk glal		0	0	Yotoad	None	NA	Mod.	>75	Slight
Lobe Lakes Meadows glal0		0	0		NA	NA	NA	NA	NA
Golden Trout Lk N. glal1		0	0	Yotoad	None	NA	Mod.	>75	Slight

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Hutchinsn Meadow gla12	High Sierra, Bishop, Reds	290	121	Sens. plant hab. (1 sp.)	Mod.	FAR↔	Mod.	26-75	NA
Summit Lake Meadow gla14		0	0	Yotoad	None	NA	NA	NA	NA
North of Summit Lake gla4		0	0	Yotoad	None	PFC	NA	NA	None
Below Packsddle Mdw gla8		0	0	Fen	None	PFC	NA	>75	Slight
Lower Honeymo on		0	0		NA	NA	NA	NA	NA
Piute Creek	High Sierra	12	0		These are non-site-specific reports of grazing in Piute Creek.				
Humphreys Analysis Unit (No reported use)									
West of Lower Desolation		0	0	Yotoad	NA	NA	NA	NA	NA
Lower Desolation Lake Meadow		0	0		NA	NA	NA	NA	NA
SW shore Desolation Lake		0	0		None	NA	NA	NA	NA
Desolation to Humphreys		0	0	Yotoad	None	NA	Slight	>75	None
Lake SE of Cony Lake Mdw		0	0		NA	NA	NA	NA	NA
Mesa Lake shoreline		0	0		NA	NA	NA	NA	NA
Toma-hawk Lake Complex		0	0		NA	NA	NA	NA	NA
French Canyon Analysis Unit (Total Reported Use: 2001: 0, 2002: 13, 2003: 203)									
“L” Lake Stringers		0	0		NA	NA	NA	NA	NA

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
W Elba Lake Meadows		0	0		Slight	NA	Mod.	26-75	NA
E Elba Lake Meadows		0	0	Yotoad	NA	NA	NA	NA	NA
Moon Lake Stringers		0	0		NA	NA	NA	NA	NA
Puppet Lake Meadows		0	0		NA	NA	NA	NA	NA
Meadow between French Canyon & Elba		0	0		NA	NA	NA	NA	NA
West of Pine Creek Pass		0	0	Yotoad	None	PFC	Slight	>75	None
French Bench above 10,760 ft.	Rock Creek, Pine Creek	39	0	Yotoad, fen	None	PFC	Slight:	>75	None
Waterfall Camp to 10,760 ft.									
Adj. To Waterfall Camp		0	0	Fen	Slight	FAR↓	Severe	>75	Severe
Waterfall Camp to Merriam Creek	Pine Creek	23	0	Fen	None	PFC	Mod.	26-75	NA
French Canyon, Merriam confluence	Pine Creek	126	0 0	Fen	None	PFC	Slight	>75	NA
Merriam Creek to Chevaux confluence				Yotoad, fen, sens. plant hab. (1 sp.)	None	NA	Slight	>75	NA
Chevaux to below Hutchinsn				None	NA	Unk.	Unk.	NA	

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
		Merriam Lake Meadows	Pine Creek		15	0	Yotoad, fen	None	PFC
North Piute Analysis Unit (No Reported Use)									
NW of Hutchinson		0	0		NA	NA	NA	NA	NA

Florence/Bear Geographic Unit

Reported commercial pack stock grazing use and meadow conditions for Florence/Bear Analysis Units

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Florence/Bear – Lower Florence Drainage									
Dutch Analysis Unit (No reported use)									
Dutch Lake		0	0	Sens. plant hab. (1 sp.)	NA	NA	NA	NA	NA
DUT3		0	0	Yotoad	NA	NA	NA	NA	NA
Ershim Analysis Unit (No reported use)									
Lakecamp Lake		0	0	Yotoad	NA	NA	NA	NA	NA
Mallard Lake		0	0		NA	NA	NA	NA	NA
ERS 13, 14		0	0		NA	NA	NA	NA	NA
Hooper Analysis Unit (No reported use)									
Poison Meadow		0	0	Sens. plant hab. (4 spp.)	None	PFC	None	5-25	No impacts
Hell Hole		0	0	Sens. plant hab. (4 spp.)	Severe alteration (from Florence dam)	FAR	Some isolated changes away from PNC	Entire meadow range ready	NA
Jackass Meadows		0	0	Sens. plant hab. (5 spp.)	Severe alteration (from Florence dam)	FAR	Well defined changes away from PNC	5-25	NA
East Florence Analysis Unit (No reported use)									
Jackass Meadow		0	0	Sens. plant potential habitat (5 sp.)	Severe (dam influence)	FAR↔	Severe	15%	NA

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Double Meadow		0	0	Sens. plant potential habitat (5 sp.)	None	NA	Some isolated or patchy changes away from PNC	5-25	No impacts
Apollo Analysis Unit (Total Reported Use: 2001: 29, 2002: 0, 2003: 0)									
Cirque Lake	High Sierra	14	0		NA	NA	NA	NA	NA
Marcella Lake	High Sierra	15	0	Yotoad	NA	NA	NA	NA	NA
APOL1		0	0		NA	NA	NA	NA	NA
Orchid		0	0		NA	NA	NA	NA	NA
Italy Analysis Unit (Total Reported Use: 2001: 4, 2002: 0, 2003: 6)									
Hilgard Meadow	D&F	66	0	Sens. plant hab. (1 sp.)	Mod.	FAR↔	Severe	26-75	Mod.
Upper Hilgard Branch	High Sierra	4	0	Fen	None	PFC	Slight	<5	None
Bear Lakes Analysis Unit (Total Reported Use: 2001: 0, 2002: 34, 2003: 32)									
Bear Creek	Rock Creek	34	0		NA	NA	NA	NA	NA
Seldon Analysis Unit (Total Reported Use: 2001: 93, 2002: 20, 2003: 19)									
Rosemarie Meadow	MLPO, High Sierra	38	0		Slight	FAR↑	Severe	26-75	NA
Rose Lake Meadow	High Sierra	33	0	Yotoad	NA	NA	NA	NA	NA
Lou Beverly	D&F, High Sierra	20	4	Yotoad	None	PFC	Mod.	>75	None
Marie Lake Outlet	High Sierra	2	0		NA	NA	NA	NA	NA
Marie Lake Meadow				Yotoad	None	PFC	Slight	>75	None
West of Marie Lk		0	0		NA	NA	NA	NA	NA

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
		Terrace NE of Marie Lake			0	0		NA	NA
Sallie Keyes Analysis Unit (Reported Use: 2001: 88, 2002: 26, 2003: 61)									
Water Trail Mdw		0	0		Slight	PFC	Slight	26-75	None
Senger Creek Pockets	Rock Creek	8	0		NA	NA	NA	NA	NA
Senger Creek Stringers					NA	NA	NA	NA	NA
Senger Ponds Meadows					NA	NA	NA	NA	NA
Shooting Star Meadow	High Sierra, Rock Creek	38	0	Sens. plant hab. (4 spp.)	None	PFC	Severe	26-75	NA
Blayne Meadows	Bishop, MLPO	23	0	SPOB, sens. plant hab. (5 spp.)	Slight/Moderate hydrologic function alteration	NA	Some isolated changes away from PNC	5-25	No impacts
Lower Blayne Mdw	Lost Valley and Muir Trail Ranch	60	0	Sens. plant hab. (5 spp.)	Slight/Moderate hydrologic function alteration	NA	Some isolated changes away from PNC	5-25	No impacts
Boot Meadow	High Sierra (Sallie Keys)	28	0		None	PFC	Mod.	26-75	Mod.
Old Trail Meadow					None	PFC	Slight	26-75	Severe
N of Sallie Key		0	0		NA	NA	NA	NA	NA
Big Fen Meadow		0	0	Yotoad, fen	None	PFC	Slight	>75	Slight
W of Big Fen Mdw		0	0		NA	NA	NA	NA	NA
SAK8		0	0		NA	NA	NA	NA	NA

John Muir Southwest Geographic Unit

Reported commercial pack stock grazing use and meadow conditions for John Muir Southwest Analysis Units

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Hobler Analysis Unit (Total Reported Use: 2001: 40, 2002: 0, 2003: 26)									
Burnt Corral Meadow	Clyde	8	0	Yotoad	NA	NA	NA	NA	NA
Red Rock Basin	Clyde	40	0		These are non-site-specific reports of grazing in Red Rock Basin.				
Post Corral Analysis Unit (No Reported Use)									
POC13		0	0		NA	NA	NA	NA	NA
Fleming Mountain Analysis Unit (Total Reported Use: 2001: 4, 2002: 0, 2003: 23)									
Above Fleming Lake	Clyde	23	0		Slight	FAR↑	NA	26-75	NA
East of Lower Indian		0	0		NA	NA	NA	NA	NA
Above Lower Indian		0	0		Slight	PFC and FAR↔	NA	26-75	NA
FLE10		0	0		NA	NA	NA	NA	NA
Fleming Mtn. Mdw.		0	0		NA	NA	NA	NA	NA
Rae Lake Mdw.		0	0		NA	NA	NA	NA	NA
Near Fleming Lake; W of Fleming Lake		0	0		NA	NA	NA	NA	NA
Diamond-x Lake Mdw.		0	0		NA	NA	NA	NA	NA
Dale Lake Mdw: Above Dale Lake	Clyde	4	0		None	PFC	NA	26-75	NA
FLE 7,9		0	0		NA	NA	NA	NA	NA

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Red Mountain Analysis Unit (Total Reported Use: 2001: 52, 2002: 0, 2003: 8)									
Ponds W of Devil's Punch-bowl		0	0		NA	NA	NA	NA	NA
Disappointment Lake	Clyde	22	0		NA	NA	NA	NA	NA
Little Shot Lake	Clyde	12	0		NA	NA	NA	NA	NA
Red Mountain Basin	Clyde	18	0		Non-site-specific grazing information.				
Bench Analysis Unit (Total Reported Use: 2001: 0, 2002: 0, 2003: 14)									
Upper Fall Creek ben8	Clyde	14	0		NA	NA	NA	NA	NA
Horsehead Lake (ben4)	Clyde	0	0	Yotoad	NA	NA	NA	NA	NA
Filly Lake (ben3)	Clyde	0	0	Yotoad	NA	NA	NA	NA	NA
Roman Four (ben5)	Clyde	0	0	Yotoad	NA	NA	NA	NA	NA
Big Maxson Analysis Unit (Total Reported Use: 2001: 45, 2002: 109, 2003: 17)									
Meadow-brook	Clyde	71	0	Fen	NA	NA	NA	NA	NA
NF Kings	Clyde	34	0	Sens. plant (4 spp.) hab.	NA	PFC	NA	NA	NA
McGuire Lake	Clyde	0	0	Yotoad	NA	PFC	NA	NA	NA
Fall Creek/ Bench Valley	Clyde	12 38	0 0		NA	NA	NA	NA	NA
Upper Meadow-brook Creek		0	0	Yotoad	NA	NA	NA	NA	NA
Guest Lakes		0	0		NA	PFC	NA	NA	NA
BIM19		0	0		NA	NA	NA	NA	NA

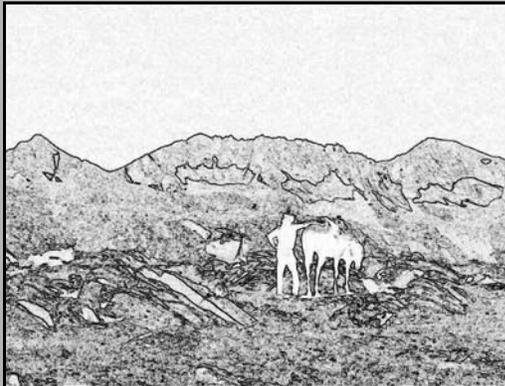
Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
N Shore Kings Creek		0	0	Sens. plant (5 spp) hab.	NA	NA	NA	NA	NA
Mid-Meadow-brook		0	0	Yotoad, sens. plant (4 spp) hab.	NA	NA	NA	NA	NA
Basin Analysis Unit (Total Reported Use: 2001: 105, 2002: 25, 2003: 0)									
Lightning Corral	Clyde	27	0		NA	NA	NA	NA	NA
Blackcap Basin Meadow	Clyde	13	0		NA	NA	NA	NA	NA
Snag Camp	Clyde	3	0		NA	NA	NA	NA	NA
Maxson Lake	Clyde	0	0		NA	NA	NA	NA	NA
Unnamed (BAS6)	Clyde	0	0		NA	NA	NA	NA	NA
Pearl Lake Meadow	Clyde	62	0		NA	NA	NA	NA	NA
Crown Lake Analysis Unit (No Reported Use)									
Scepter Meadow		0	0	Yotoad	NA	NA	NA	NA	NA
CRL 3, 35		0	0		NA	NA	NA	NA	NA
Crown Basin Analysis Unit (Total Reported Use: 2001: 0, 2002: 22, 2003: 27)									
Upper Crown Basin	Clyde	10	0		NA	NA	NA	NA	NA
Lower Crown Basin	Clyde	4	0	Sens. plant (5 spp.) hab.	NA	NA	NA	NA	NA
Crown Basin Meadow	Clyde	23	0		NA	NA	NA	NA	NA

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
		Finger Analysis Unit (No Reported Use)							
Round Corral		0	0	Yotoad, sens. plant (1 sp.) hab.	NA	NA	NA	NA	NA
FIN1		0	0	Yotoad, sens. plant (1 sp.) hab.	NA	NA	NA	NA	NA
FIN12		0	0		NA	NA	NA	NA	NA

John Muir Southeast Geographic Unit

Reported commercial pack stock grazing use and meadow conditions for John Muir Southeast Analysis Units

Meadow	Pack-station	Reported Use 01-03		Critical Areas/ Habitat	Resource Conditions				
		High	Low		Hydro. Function Change	PFC	Veg. Comp. Change	% Not Range Ready	Spring Impacts
Sawmill Analysis Unit (Total Reported Use: 2001: 9, 2002: 0, 2003: 0)									
Sawmill Meadow	Pine Creek	9	0		NA	NA	NA	NA	NA
SAW3		0	0		NA	NA	NA	NA	NA
Shepherd Analysis Unit (No Reported Use)									
SHP 1,2,3		0	0		NA	NA	NA	NA	NA
Cottonwood Analysis Unit (No Reported Use)									
Above Cottonwood Lakes		0	0		NA	NA	NA	NA	NA
Cottonwood Lakes Meadow		0	0		NA	NA	NA	NA	NA
COT 10, 13, 14, 15		0	0		NA	NA	NA	NA	NA



Chapter 4 Environmental Consequences

Chapter 4 – Environmental Consequences

Introduction

The National Environmental Policy Act (NEPA) requires that environmental documents disclose the environmental impacts of a proposed federal action, reasonable alternatives to that action, and any adverse environmental effects that cannot be avoided should the proposed action be implemented. This chapter analyzes the environmental impacts of the alternatives on natural resources, cultural resources, the visitor experience, and social resources. This analysis provides the basis for comparing the beneficial and adverse effects of the alternatives. In compliance with NEPA, the environmental analysis evaluates the potential effects of the alternatives on all of the wilderness's physical, natural, cultural, and human resources.

This analysis addresses environmental consequences associated with the implementation of alternatives necessary to meet the direction of the District Court of San Francisco and the Ninth Circuit Court of Appeals. The remaining management elements, as previously described and analyzed in the 2001 Wilderness Plan, are not revisited or reanalyzed in this analysis.

Following this introduction, Chapter 4 discloses the environmental effects associated with each of the six alternatives. The impact analysis sections are organized by resource function at two scales. First, each resource function analyzes the six alternatives at the Wilderness Scale. This scale is an analysis at a broad geographic and programmatic scale. A second analysis considers the effects of actions at a more site-specific scale, referred to as the Geographic Scale. The geographic unit section is organized by eight regions. Under each geographic unit is the resource effects analysis of the six alternatives.

Cumulative Impacts

The District Court in San Francisco ordered that a cumulative environmental analysis be conducted prior to site-specific analysis for the pack station permits. (*High Sierra Hikers v. Jack Blackwell* January 10, 2002). This document provides that cumulative environmental analysis.

A cumulative impact is described in regulations developed by the Council on Environmental Quality (CEQ) under regulation 1508.7, as follows:

Cumulative impact is the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The catalogue of past, present, and reasonably foreseeable actions combined with the establishment of time and space boundaries for each resource area provide the foundation of the cumulative impacts analysis in Chapter 4.

The alternatives were designed to combine multiple actions on the landscape. Had the agency separately undertaken the Trail Plan, or the grazing actions, the cumulative effects would have

been more substantial. In combining these actions, the analysis examined multiple actions. For this reason, potentially cumulative effects are often described as direct and indirect effects and, where relevant, the synergistic effects of the various actions are contained in the “Analysis” section that describes direct and indirect impacts. Where relevant, cumulative impacts are based on the following list of past, present, and reasonably foreseeable actions.

Table 4.1. Catalog of past, present, and reasonably foreseeable actions

Past Actions			
Type	Action	Affected Area	Timeframe under which actions have or will occur
Dams	Gem Lake Dam	Rush Creek	Completed 1915
	Waugh Lake Dam	Rush Creek	Completed 1920
	NF Big Pine	Second Lake; NFBP	Currently used for downstream power generation. Built in 1920s/30s.
	Lower Sardine Lake Dam	Bloody Canyon	Built for mining under outlet of lake in early 1900s 1900-1910. Abandoned.
	McClure Lake Dam	Sadler Lake	Built approximately 1960 for stream flow management for fisheries. No longer used or maintained.
	Rutherford Lake Dam	Triple Divide	Built approximately 1960 for stream flow management for fisheries. No longer used or maintained.
Impoundment Structures	McGee/Longley	Horton Lake	Built approx. 1930s
	Birchim Lake Impoundment	Pine Creek	Built approx. 1930s
	Davis Lake Impoundment	Upper Rush Creek	Built in 1940s
	Chiquito Lake Impoundment	Chiquito	Built approximately 1960 for stream flow management for fisheries. No longer used or maintained.
	Lillian Lake Impoundment	Lillian Lake	Built approximately 1960 for stream flow management for fisheries. No longer used or maintained.
Mines	Mono Pass Mine	Bloody Canyon	Mining activity and cabins circa 1880s-90s
	Minaret Mine	Minaret Creek	Built in 1920s operated through 1940-50s. Used as a retreat until early 1990's. Abandoned
	Panaminas Mine	Morgan; Little Lakes Valley	Active in the 1920/30s until the late 1980s when it was decommissioned.
	Pick N Shovel Mine and cabin	Silver Divide	Cabin and unpatented mining claim from the 1940s operated until 1960s. Forest Service acquired in early 2000s.
	Cabin Lake Mine	Shadow Creek	Mine and cabin built in early 1900s. Abandoned
	Nydiver Mine	Shadow Creek	Early 1900s
	Gable Creek	Gable Lakes	Active in the 1930s -40s. Abandoned

Past Actions			
Type	Action	Affected Area	Timeframe under which actions have or will occur
Mines (con't)			since then. Remnant equipment present today.
	Horton – Hanging Valley	Horton Creek	Mine and cabin. Active in the 1930s/40s. Abandoned.
	Sheelore-Baldwin	McGee Creek	Active in 1930s-40s
	Baldwin Mine	Convict Creek	Active 1940s -1970s. Abandoned.
	Iron Lake	Iron Creek	Active mine in the 1930s-1940s. Private in-holding, inactive
	Pincushion		Active mine in 1930s. Abandoned
	Rex Montis	Kearsarge	Active 1962-1991
Cabins	Snow and Stream Survey Cabins	Millers Crossing; Sallie Keyes; Mono Pass (Trail Lake); Bishop Lake; Piute lake; Agnew Pass; Iron Creek; Rosemarie meadow; Meadow Brook; Burnt Corral; Big Pine 1 st and 2 nd Lakes; Volcanic Knob; Big Maxon; Coyote Lk; Iron Creek	Most of the cabins were built from 1912-1952 by California State Department of Water Resources, and cooperators. They are used and maintained today for winter snow surveys.
	Heidi Cabin	North Fork Big Pine	1930s
	Cabins associated with grazing	Chetwood; Perkins;	Built between 1920s and 1940s
	Shorty Lovelace cabin	Various	Primitive shelters built by trapper in 1940s to 1950s.
	Administrative Cabins	Muir Trail Cabin Post Corral; Crown Valley; Heitz Meadow Mono Meadow	Tool cache cabin built for the construction of the Muir Trail in 1912. Administrative cabins built in 1950s Built in 1914
	Leffingwell Cabin	John Muir Southwest	Built in the 1923 as a resort, recreation residence. Forest Service acquired in 1971.
	Department of Fish and Game Cabin	Cottonwood Lakes	Built in late 1920s, early 1930s. Still in use today.
	Baker Cabin	Rush Creek	Recreation residence built in 1934. No longer in use.
	Chaney Cabin	North Fork Big Pine	Built in the late 1920s

Past Actions			
Type	Action	Affected Area	Timeframe under which actions have or will occur
Grazing	Historic Grazing	Throughout Ansel Adams West Florence-Bear east to headwaters Graveyard - Goodale John Muir Southwest Ansel Adams East Fish Creek	Extensive production livestock grazing of cattle and sheep occurred throughout the analysis area dating back to the late 1800s. This activity reached its peak in these wildernesses 1940s and began to decline in the 1950s. In the Ansel Adams East, and north John Muir (Fish Creek) there was grazing in support of mining operations from the late 1800s to the 1940s. Active management of the allotments on the Sierra national Forest occurred in the 1960s with the development of Allotment Management Plans. In the Ansel Adams West production livestock grazing occurred until the mid 1990s.
Snow Survey Sensors		Gem Pass; Agnew Pass; Big Pine ; Blackcap basin; Upper Burnt Corral; Woodchuck; Volcanic Knob	1980s-1990s
Other	Convict Pack Station	Convict	Operated until the mid 1980s
	Hilton Pack Station	Hilton	Operated until the late 1970s early 1980s
Present Actions			
Trail Projects	Capital Investment Project	Pine Creek Trail	2004-2006
	Capital Investment Project	Bishop Pass	2002-2005
	Capital Investment Project	Pacific Crest Trail - Agnew Pass to Donahue Pass	2005
Grazing		AAW; Graveyard; Lower Mono, John Muir Southwest.	Active allotments for cattle grazing
Reasonably Foreseeable Actions		Affected Area	Assumptions
Backpacking Use		All areas	Backpacking use will generally remain stable with fluctuation increasing or decreasing by 10-15%
Day hiking		All areas	Day hiking use will continue to increase in popularity. This activity could increase by as much as 30% over the next 10-20 years.
Private equestrian use		All areas, with the majority of this use on the west side.	Private equestrian use will likely remain stable or increase slightly over the next 10-20 years.

Reasonably Foreseeable Actions	Affected Area	Assumptions
Outfitting and Guiding	All areas	These activities will continue at current use levels that have been capped with the 2001 Wilderness Plan.
Research permits	All areas	Applications are received annually; between 10-20 projects throughout the analysis area for short-term research on climate, water, wildlife, vegetation.
Hunting	All areas	Hunting will continue at low levels, defined by California State Fish and Game permits.
Trail maintenance	All areas	Basic trail maintenance will continue to occur.
California Department of Fish and Game (CDFG) Mountain Yellow Legged Frog (MYLF) Restoration Projects	All areas	CDFG Management Plans determine restoration areas for MYLF. Project work is not subject to CEQA compliance.
CDFG Fish Stocking	All areas	Fish Stocking is determined by CDFG and subject to their management.
Maintenance activities associated with Dams (above)	Rush Creek; North Fork Big Pine;	Project work can be expected to maintain and repair dams on a regular basis.
Mammoth Mountain and associated Resort expansion	Ansel Adams East and Eastern portions of John Muir wilderness.	Mammoth Mountain as a destination resort will draw more visitors, and population will grow both creating urban pressures on wilderness, including recreation use, and visual effects.
Federal Energy Regulatory Commission (FERC) re-licensing – Big Creek Project	South Fork San Joaquin River	May affect stream flow regimes in South Fork San Joaquin.

4.1 Human Environment

4.1.1 Commercial Pack Station Operations

The effects analysis for Commercial Pack Station Operations is in Section 4.1.5, Socioeconomics and Operations.

4.1.2 Wilderness

Wilderness Scale

Introduction

Methodology

This section evaluates the effects of the alternatives on the wilderness resource at the Wilderness and Geographic Scale. The Wilderness Scale section discusses wilderness-wide effects and is coarse and broad. The Geographic Scale provides more details on the local scale, including projected levels of stock by alternative. Cumulative effects are discussed, where relevant, at both scales.

A key component of the wilderness resource is wilderness character. The concept of wilderness character comes from Section 2(a) of the Wilderness Act: “... for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness and so as to provide for the protection of those areas, the preservation of their wilderness character.”

Wilderness character is, in part, an intangible concept, yet provides a basis for significant disagreement over whether the agency is managing wilderness in a manner that meets the legal requirements of the Act. For this reason, this analysis will use concepts from the Act to help frame the discussion. The four qualities will be referred to throughout this analysis and used to represent wilderness character. These four qualities are derived from the definition of Wilderness, Section 2(c) of the Act, which contains distinct attributes that link to the concept of wilderness character:

A Wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.”

The four qualities or concepts of wilderness character that will be addressed throughout this analysis are:

1. **Untrammeled** – wilderness ecosystems are essentially unhindered and free from human control or manipulation.

2. **Undeveloped** – wilderness is essentially without permanent improvements or modern human occupation.
3. **Natural** – wilderness ecological systems are substantially free from the effects of modern civilization.
4. **Outstanding opportunities for solitude or a primitive and unconfined type of recreation** – wilderness provides outstanding opportunities for people to experience solitude or primitive and unconfined recreation, including the values of inspiration and physical and mental challenge.

Landres et al. (2005) describes the use of these qualities in monitoring wilderness character. In this approach, wilderness character is the primary administrative responsibility mandated by the Wilderness Act, but it is not defined by the Act. Wilderness character is also the biophysical, experiential, and symbolic relationships and meanings that distinguish wilderness from all other lands, is supported or degraded by stewardship decisions and action, and is unique to each wilderness.

The wilderness resource discussion in this chapter will use these qualities for evaluating the effects of management actions on the wilderness character. In addition to the use of the four qualities of wilderness character in the evaluation, the context, intensity, duration, and type of effects provide boundaries for the effects analysis. For the purpose of this analysis, the following approach is used.

Context: Local effects are those that occur at site-specific locations within the wilderness. **Wilderness-wide impacts** would be effects to the entire wilderness. **Regional** effects would be impacts to adjacent lands, such as the adjacent and contiguous National Parks, Yosemite to the north and Sequoia Kings Canyon to the south.

There are activities outside the wilderness boundary of the Ansel Adams and John Muir Wildernesses that may have cumulative effects. Developed recreational sites, such as campgrounds and recreational facilities, exist in many locations adjacent to the wilderness boundary. In these cases, activities outside the wilderness boundary may have effects inside wilderness areas.

Intensity: The intensity of the impact considers whether the effect to wilderness character is negligible, minor, moderate, or major. **Negligible** effects are considered not detectable to the visitor and therefore expected to have no discernible outcome. **Minor** effects are slightly detectable, though not expected to have an overbearing results on wilderness character. **Moderate** effects would be clearly detectable to the visitor and could have an appreciable effect on one or more aspects of wilderness character. **Major** effects would have a substantial, highly noticeable influence on the visitor's experience and could permanently alter more than one aspect of wilderness character.

Duration: The duration of the effect considers whether the impact would occur in a short- or long-term period. A **short-term** effect would be temporary in duration, such as an encounter while traveling or camping. A **short-term** effect (to physical qualities of wilderness character) would be 1 to 2 years. A **long-term** effect would have lasting effects on the wilderness character, such as an impression from noticeable ecological impacts or the permanent closure of an area. Long-term physical effects to the wilderness character are 10 to 20 years.

Type of effect: Impacts were evaluated in terms of whether they would be beneficial or adverse to wilderness character. **Beneficial** effects would enhance one or more of the qualities of wilderness character. **Adverse** effects would harm one or more of the qualities of wilderness character.

Organization of the analysis is to focus on relevant and significant issues. The topics addressed in this section include use levels, party size, campsites, campfires, and trail suitability. To assist in analyzing the effects of use levels on wilderness character, maps of current use levels by analysis unit were developed, along with data on use levels and impact ratings at destinations that were evaluated by the interdisciplinary team. These displays were used to assess proposed changes by alternative.

Data

Use data has been compiled using the most accurate data available. Commercial pack stock use is measured by the number and type of trips and the people and stock used to reach each destination. Records for the entire planning area for this level of analysis are only available from 2001 through 2004. Some data gaps and margins of error exist due to data interpretations. Reports of use provided by the pack stations occasionally recorded vague or unknown destination locations. Also, for all-expense trips, the trip is recorded with no indication of which locations were used for each night. Grazing reports provided additional information that could be tracked, but a best estimate given knowledge of the trips is all that could be tracked. At the analysis unit scale, this information is more accurate, but at the destination scale, there may be a larger margin of error. It is the best information available (up to 95 percent accurate) for use of pack stations. This level of accuracy is more than adequate for this analysis. More detailed use data, or data that goes back farther in time, is not essential and is not critical to the analysis of wilderness character attributes. Any improvements to wilderness character that may be unknown as a result of not having more precise data, or data that goes farther back in time, is not likely to affect the decision making process. Current conditions and future uses are the most relevant factors to consider.

For the use levels discussion, specifically at the Geographic Scale, commercial stock and clients are referred to as very low, low, moderate, high, and very high. These categories were used throughout this analysis to compare and assess changes in use levels. The categories are defined as:

Categories used to describe stock and commercial use levels

Very low	1-10 stock or people per year
Low	11-50 stock or people per year
Moderate	51-200 stock or people per year
High	201-350 stock or people per year
Very High	351-800 stock or people per year

In summary, the objective of this analysis is to forecast identify potential environmental effects of the proposed actions and alternatives on wilderness resources with particular attention to qualities of wilderness character. Wilderness character is described by using four qualities: 1. untrammled; 2) undeveloped; 3) natural; and 4) outstanding opportunities for solitude or a primitive and unconfined type of recreation of wilderness character. The context of impacts, intensity of impacts, and the duration and type of impacts— as defined above— further bound the analysis. The topics focus the discussion on meaningful and relevant effects.

Alternative 1

Summary of Alternative 1 Wilderness Resource Effects

- Overall, impacts to wilderness character with this alternative will be moderate intensity at a number of site-specific locations. Less than (approximately) 50 locations out of thousands of possible destinations in these wildernesses would have moderate long-term impact to some qualities of wilderness character (naturalness).
- Impacts to some visitor's experience (solitude, unconfined recreation) would be short term, while some impacts to wilderness character may be longer term, but none would have permanent adverse effects.
- With the fewest limits on where and how frequently pack stock can go on trails, this alternative has the greatest risk of increasing the aggregate extent of impact caused by commercial pack stock use and the public.
- Campfire closures at higher elevations may disperse use to lower elevation campsites and wood depletion may increase at these locations. However, these locations will tend to be more abundant with the ability for renewal of downed wood resources.
- Campsites can expand and new stock camps can be created. However, this is not probable since stock camps are well established and the current number and location of stock camps seem to meet the needs of the commercial packers.
- Opportunities for solitude will not be high in the first six miles from trailheads and at popular destinations. Beyond this, opportunities for solitude and unconfined recreation will be very high. Areas where commercial pack stock are prohibited will have moderate to high opportunities for solitude. Once inside the wilderness, most opportunities of unconfined recreation are with the primary regulator of use, an external control, and very few internal controls.
- System trail assignments create a conflict between trail objectives and wilderness character objectives (recreation categories).
- Wilderness character is moderate to high in popular destinations, and high throughout recreation category 1 and 2 areas with localized impacts at campsites and in primary trail corridors.
- Uncontrolled growth of day hiking will have a cumulative effect on visitor's seeking solitude in a few areas during a short time of the year.

Analysis

Use Levels

Outstanding opportunities for solitude will exist in the majority of locations with this alternative. Crowding can diminish a visitor's solitude on some trails within six miles of a trailhead during the summer season, June through September. Less than 20 of the 81 trailheads have moderate-to-high-use levels. Use on trails is concentrated in the first few miles and then disperses. This is typical of many popular wilderness areas throughout the country. Visitor use is also concentrated

into four months of the year, and the remaining months see very low use because the majority of the area is under a substantial snow pack.

In this alternative, use levels for commercial packers will range from 12,000 service days to 16,300 service days. To support these operations, there are between 3,000 to 5,000 people served and 6,000 to 10,000 stock used. Primary use will be spot and dunnage type of trips with approximately 40 percent spot, 40 percent dunnage, and 20 percent all-expense traveling. These percentages vary and take into consideration three large outfits running 50 to 70 percent of the all-expense trips. The effects of the types of trips are described at the geographic unit in more site-specific terms.

Use levels for commercial pack stock are controlled primarily by the overall allocation of service days and by the trailhead quota. The service day allocation has an effect on the type of commercial pack stock trip and, consequently, the type of impact. Service days control the amount of time the service is provided. Operators can choose to run a few all-expense trips or schedule more spot and dunnage trips with their allocation. With the allocations reduced for many operators from previous historic use levels to the “actual two years of high use” there will continue to be a trend toward spot and dunnage trips to maximize service day use.

Spot and dunnage trips will have relatively less impact than all-expense trips. The all-expense trip—with the use of more stock, the duration of the time in the wilderness, the use of larger campsites, more intensive use of campsites, and use of grazing resources—will have a higher level of impact than the spot and dunnage trips which go in and out of the wilderness in one day.

Without controls on the number of stock used for these trips (other than party size), there will be more opportunities for growth in commercial services since only clients or people are the focus of the control. This is described in more detail in sections below as it has effects at the site-specific scale (geographic unit).

Trailhead quotas are effective at reducing temporal spikes in trailhead use. Controlling temporal spikes is necessary on holidays and in peak seasons, which is predictably the first two weeks of August. With a spike in trailhead use, many parties can converge on a location at once. When all sites are used, new sites are created. It is very difficult, if not impossible to predict how often this will happen. The trailhead quota control is designed to allow freedom of movement once inside the wilderness. Spikes in trailhead use typically occur on the holiday weekends, and in the first two weeks of August, at popular well-known destinations. These destinations are generally a one day ride or hike from the trailhead. This current quota mechanism is best for reducing the experiential impacts of crowding by controlling the sheer number of people allowed to enter the wilderness area each day. It provides for the most unconfined type of recreation given the fact that management is directly controlling the trailhead use.

The trailhead quota does not effectively control the spatial distribution of use. With less effective control of spatial distribution, there is a higher probability that ecological values will be impacted. With trailhead quotas, the frequency of use or number of times a destination gets used is not controlled. Once users enter the wilderness through the daily quota restriction, they can travel anywhere. Since 80 to 95 percent of commercial pack stock use is spot and dunnage, the commercial pack stock facilitates access to a starting point for the rest of the client’s trip. Clients may travel anywhere on the trailhead and are not subject to any trail use restrictions that the commercial pack stock would be limited to. In the case of spot trips, most clients tend to remain at the site where the packer drops their camp gear. The lack of control on the number of times a

destination gets used can have an effect on the trail resource, the opportunities for solitude, and naturalness characteristics.

Trailhead quota availability has a moderate and sometime critical effect on the ability of commercial operators to run a trip. Records indicate that the actual limiting of trailhead use occurs 50 days a year on 22 commercial trailheads used by the pack stations on the Inyo National Forest and 55 days on 7 commercial trailheads on the Sierra National Forest—this trend will likely continue. However, it is expected that limited available trailhead quota space is as much a factor as a party's ability to go when, where, and sometimes if at all. For example, if there are only two spaces left on a trailhead that a party of six desires in August, that party might not be flexible enough to reschedule that trip.

Commercial operators have reported difficulty in obtaining quota space for the single-use trails (Shepherd Pass is an example) where they must compete with the public for the quota space. On popular trails, the reservable amount (60 percent of the quota) can be booked up to six months in advance, and many fill quickly. This has left some operators unable to offer trips into these areas and may be the reason operators have not been able to use their allocations of service days. They simply are not able to book the trips the public wants. This trend is expected to continue with this alternative, possibly affecting pack stations from accessing desirable areas. The capping of this use is preventing spikes in use and the subsequent potential for additional impacts at campsites and crowding in areas accessed by these trailheads. Opportunities for solitude and natural conditions are protected because of limiting freedom and unconfined use of these areas.

By managing use primarily at the trailhead, the visitor can maintain a high degree of freedom once they have entered the wilderness, which achieves an important goal for protecting quality of wilderness character. Any spatial control that is achieved is based on a probability that each day the number of parties disperse to a variety of destinations. This management regime balances the effects of visitor use with the wilderness value of unconfined recreation.

Day Rides

Up to 3,900 service days for day rides can be expected to occur with this alternative. The majority of this use will occur in the Inyo National Forest portion of the Ansel Adams Wilderness. Even more specifically, most of this use will only penetrate the wilderness boundary by less than 1/4 mile. Some areas will experience occasional use further into the wilderness; on these trails, there will be more manure, smell of urine, and encounters with riding stock. Some turnarounds within the first five miles of the wilderness will show signs of impact. These sites will look like campsites, with vegetation loss, and minor tree damage from holding stock for short periods. This use is not expected to have major effects to natural conditions in the wilderness, although there will be short durations of minor effects to opportunities for solitude for visitors. The locations of these minor adverse effects to solitude will occur within an area that has other uses detracting from these qualities as well (day hiking, fishing, and sightseeing).

Party Size

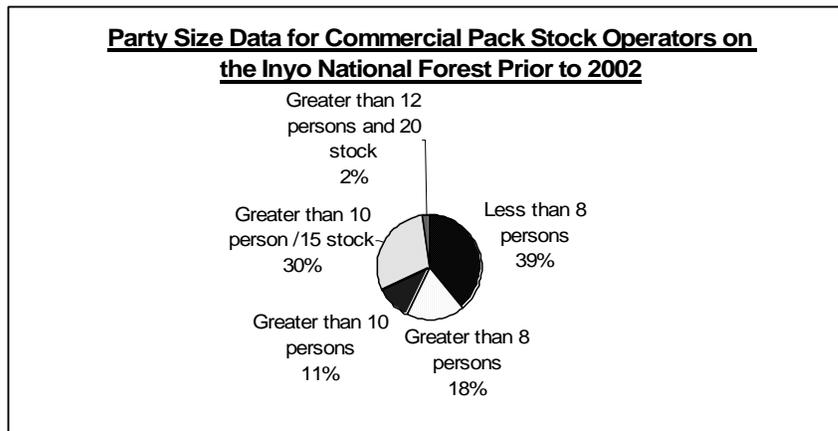
In this alternative, with commercial group size limitation of 15 persons and 25 pack stock per trip wilderness-wide, visitor opportunities for solitude in parts of the wilderness will not be affected. The effect will be short-term and minimal. Commercial operators rarely reach the maximum party size; however, some operators have a higher percentage of large parties than others (see Figure 4.1).

Large parties will tend to be associated with the all-expense trips. Spot trips are the next highest percentage of large parties since each person is riding an animal and then additional stock is needed for packing supplies and equipment. Dunnage parties are typically the smallest parties. There has been a trend towards more dunnage-type trips over the years, which may be why party-size trips have seen an overall downward trend since the early 1990s. On the Inyo National Forest, between 25 and 31 percent of all the commercial trips have a party size of greater than 10 to 15 stock. About 2 percent of all trips have a party size of greater than 12 persons and 20 stock (prior to 2002). Operators are free to change the type of trips they offer; they are only limited by the number of service days. Some operators could move from primarily a small party and dunnage operation, to running fewer large-party all-expense trips, although this is not likely.

The effects of large parties can be seen on campsites and use trails or trails that may pass-through soil or vegetation that is sensitive to disturbance. The total numbers of stock and timing of the use of stock has more bearing on this effect than the actual party size. For instance, there would be no difference on the effects to the resources between a party size of 15 and 25 and 2 parties (1 of 8 and 10 and the other party of 7 and 5). It is not the size of the party that is the most relevant factor, but the type, timing, and overall use that is the significant factor. Given the current distribution of party size by commercial operators, other than experiential effects, it is difficult to assert that party size in and of itself is the effect.

Some visitors prefer fewer large parties as compared to a large number of small parties in terms of encounter in the wilderness. Others simply do not like to encounter a large party for its effect on their opportunities for solitude and personal values. Participants of large parties are also seeking an experience; sharing wilderness with friends or relatives through primitive recreation (i.e., hiking, or riding, and stock packing). This alternative will continue to see the beneficial and adverse effects of the current party size. While the adverse effects are short-term and depending on the person's perception, minor to major in intensity, the beneficial effects can be long-term. The magnitude of the problem is quite low in context to the overall amount of wilderness lands and the excellent ability to avoid groups and find opportunities for solitude in these wildernesses.

Figure 4.1. Party size data for commercial pack stock operators on the Inyo National Forest prior to 2002 (Indicates the number of occurrences of large parties).



Campsites

Unconfined recreation can have an effect on ecological conditions. The locations visitors choose to camp at is one area where this is evident. Educational efforts have been quite successful influencing visitors to camp in existing sites. However, several new campsites continue to be created by both the commercially serviced and non-commercial public. In this alternative, there will be the effect of uncontrolled use of sites. With one exception (Rush Creek), there are no designated sites in this alternative. With no direct control on which sites the packers can use there can be incremental expansion of existing sites with the associated impacts of soil compaction, vegetation loss, and firewood depletion. These impacts will be minor at the wilderness-wide level, and moderate at the local level.

Campsites where packers drop clients and do not remain at the site with stock (spot and dunnage) have fewer effects than campsites where stock is held overnight. The spot and dunnage sites may have evidence of an impacted area where the loading and unloading takes place with stock. Sometimes this occurs in the midst of a campsites “kitchen” or “sleeping” area. When this occurs, there can be some observed effects of camping with some direct impacts of stock (manure, urine, and disturbed soils). These effects are relatively contained but can cause some expansion of the site if the party does not want to sleep or eat in the same area where the stock has been briefly held.

Some spot and dunnage sites have short-use trails that may show varying levels of impact. The overall scale or intensity of this type of impact is minor to negligible at the Wilderness Scale. Many times dunnage sites are locations on the trail where very little impact is noticeable from their use. Probably 90 percent of the impacts that will occur with this alternative are within acceptable range of conditions. The effects are minor and, although they may persist from year to year, it is generally more acceptable to have fewer moderate to heavy impacted sites than more light to moderate impacts.

While freedom to use additional spot and dunnage sites has relatively few impacts, the use of sites for holding stock tends to show the greatest impact. These holding-stock sites expand with every new location used for high-lining stock. Over time, the extent of area vegetation loss, exposed roots, and disturbed soil can and likely will expand at many sites.

Even without a requirement, most commercial packers that camp with stock will use existing campsites. Generally speaking, stock campsites have been well established for over fifty years, the result of both commercial and non-commercial stock use. On occasion new stock camps are created and, over time, the commonly used campsites are expanded. The majority of the physical and biological impacts have occurred at the established stock camps. When stock users (both commercial and non-commercial) tie stock to trees, even if just for loading and unloading pack animals, animals can paw and expose tree roots. Over time, continued tying to the same tree(s) will harm the tree. At some sites, new areas for holding stock are created due to preferences of different wranglers. This can lead to a campsite getting larger in total area and can result in both ecological and experiential effects. These types of impacts are noted in the geographic unit discussion; while these impacts do occur, it is on a very limited basis. On over 800,000 acres, there are approximately 200 known stock camps and of these, probably less than 10 percent see unacceptable impacts where the site is expanding. Unacceptable impacts include expanding the site too close to water, highly developed sites, or otherwise sites highly impacted by the use of trails. In this alternative, these sites could be improved over time, set back from water or designated areas. However, this beneficial effect of improving the sites may involve long-term wilderness-wide actions.

This alternative allows for the most unconfined recreation for the user can continue to choose where to camp. This enhances the quality of wilderness character for visitors by limiting the number of direct controls once inside the wilderness area. However, this option could lead to the expansion of additional impacted sites, which could diminish the qualities some visitors look for when seeking solitude and naturalness in the wilderness.

Campfires

Campfires enhance some visitors experience in wilderness. At the same time, the impacts associated with campfires can diminish another visitor's experience. Areas where campfires are allowed or occur illegally have the potential for impacts, both experiential and environmental. Fire rings fill with ash, foil, and other non-burnable garbage over time and in popular areas require cleaning more than once a season. The fluctuation of this type of impact is dependent on Forest Service ranger presence and personnel levels, which can be dependent on a budget that has been declining for many years.

With the implementation of the 2001 Wilderness Plan, campfires have been prohibited above 10,000 feet in the north and 10,400 feet in the south. Compliance issues will continue to exist at locations where the prohibition is not signed. Visitor compliance, which will improve over time with this alternative, declines without adequate notification of rules, especially new rules. When non-compliance leads to fire-ring proliferation, others who may be aware of the regulation can be confused and think that the presence of a fire ring indicates fires are allowed. Currently the fire closure is still in the process of implementation and the effects of campfires are still occurring. These effects include wood depletion, soil and vegetation loss, and the scarring of rocks. Over time, compliance will probably improve. Newly closed areas that have been cleaned up from fire-rings have a higher potential to achieve compliance. Packers are responsible for educating their clients about wilderness regulations and it has been noted that clients of pack stations comply with the prohibition of fires at the higher elevation. There have been some instances of non-compliance and packing in of charcoal into closed areas by packers, perhaps unknowingly.

Overall, limiting campfires to locations where available firewood is more abundant has the effect of enhancing the naturalness qualities of wilderness character while diminishing some of the experiential (unconfined recreation) qualities for other visitors. The effects of campfires in open areas of the wilderness have low to moderate intensity impacts on naturalness in a limited portion of the wilderness.

Trail Suitability

In many places in this alternative, the established and recognized system of trails conflicts with the recreation category desired conditions identified in the 2001 Wilderness Plan. If this system of trails were to be maintained or built to the prescribed level in the 2001 Plan, many areas identified by the prescribed recreation category for low-use would be subject to a high level of maintenance and development. This indicates a conflict between current wilderness management goals and past trail inventories. The management direction is to align the trail system goals with the desired condition.

Although some trails will ultimately be identified as “not recommended for stock” (NRFS) in this alternative, no trails are currently identified as such. However, there are still remnants of a system of educational postings for NRFS on visitor maps and some trail signs on the Sierra National Forest.

The effects of commercial stock on all system trails are moderate- to-high intensity on both effects to naturalness and visitor’s experience in the more pristine areas. At the wilderness scale, the number of such inconsistencies amount to a relatively low percent of trails. In the current system, only approximately 7 percent of the trails are considered for NRFS or a not suitable for commercial stock classification. This amounts to a minor to moderate effect on the wilderness character quality of naturalness and some, not all, visitor perceptions of solitude.

Some effects occur with commercial pack stock on non-system use trails. Under the trailhead quotas scheme, annual decisions allow remote areas to be accessed with no limits on frequency of use. The decision to limit packer activities is the responsibility of the line officer. To date, 102 use trails (half of the total requested amount) are approved for continued use. General guidelines for frequency of use are provided for a small number of these trails that allow use into pristine areas. It is possible additional effects to natural conditions, including soil and vegetation, are occurring to a very small percent of the wilderness with this use. Some of these areas, if sensitive, can experience irreparable harm. No known new effects of use trail approvals has occurred yet, though into the future the use of some trails could lead to more persistent and permanent effects to both naturalness and solitude.

Cumulative Impacts of Alternative 1

Past levels and types of visitor use, when added to the current “No Action” alternative, have effects on the natural characteristics of the wilderness. In the context of altering wilderness ecological systems—in contrast to activities such as production livestock grazing, mining, and hydro-projects—the combined effect of past and present visitor use is very insignificant in its effect on naturalness.

Ecological processes are, at the wilderness scale, greatly undisturbed by this level of continued recreational use by commercial and non-commercial publics. Visitor behaviors in the past have left effects upon the landscape that persist and add to the effects of current use. Campfire use is

an example. Past high use and a more common practice of cutting live limbs and trees for firewood have affected both the level of ecological systems as well as the experiential qualities of naturalness. Trees that have been mutilated (e.g., cut limbs and stumps) will show this impact for many years. Some areas show these impacts from over 50 years ago, even when current use is not adding to this effect. This effect is only present in a very small percentage of the landscape and only a small number of visitors are affected.

At the wilderness scale, these effects are not likely to affect the wilderness ecology although there may be site-specific locations where effects are more intense. Similar, but with even less effect, are practices from the past such as burying garbage and camping close to water. These effects (garbage dumps and sedimentation into water from campsites) may persist for a long time. However, management actions such



This photo shows a number of tree branches that have been cut. Some are quite recent, while others are scars that are many years old.

as active removal of sites close to water and garbage, along with

education efforts to change visitor practices, have greatly improved the condition of the wilderness today. The No Action alternative maintains this trend toward a slow improvement, elimination of past effect, and reduction of new effects. Actions in the 2001 Wilderness Plan such as closing areas to campfires, further setbacks from water, and pack-out trash requirements all support this trend.

Past actions of commercial livestock grazing, mining, water diversions and retention structures, and fish stocking are actions that have a persistent and lasting effect on both the naturalness and untrammled qualities of wilderness character. Effects of current pack stock use, when added to these past conditions are negligible at the wilderness scale. These actions (specifically, mining, hydro-projects, and fish stocking) have changed the wilderness environment and have the effect of human controls on natural processes and ecosystems. However, few occurrences persist today. Dams will have lasting effects that far outweigh recreational impacts in the areas of wilderness ecosystem disturbances. Currently no mining occurs, yet the effects of past mining activities persist with few abandoned structures but no known pollutant effects.

Past activities have had minor effects on the undeveloped character of wilderness. The wilderness has, and continues to be, essentially without permanent improvements and human occupation. Fourteen snow survey cabins and a few abandoned mining cabins exist on the landscape. The effect of cabins is minimal, but can be an intrusion on a visitor's experience. In

some areas, where current visitation is high, commercial pack stock is also high and the cumulative effect of the presence of these cabins can be one of significant diminished experiences to some visitors. However, other visitors may not perceive the presence of cabins as a negative effect on their experience. In fact, their visit may be enhanced if the cabin is historic or not perceived to be in contrast to the environment.

The level of commercial pack stock activities, combined with non-commercial recreational overnight use, commercial day rides, and day hiking can simultaneously occur and affect the wilderness experience in some locations. The number of locations where all or many of these activities converge are relatively few. Day hiking is an increasingly popular activity and current management does little to control this use of trails. If this is an identified issue, a foreseeable action is to consider control measures for day hikers. The impacts of additional day hikers in the wilderness is primarily experiential, diminishing opportunities for solitude while at the same time providing primitive recreation to a sector of the population who chooses that activity. The locations where these converging activities have effects are very limited and usually occurs on the first 6 to 10 miles of a trail. High-day use occurs on less than 20 of the trails in the planning area (Inyo National Forest day use study, 2003). In the wilderness scale context, these areas are few and only affect a small portion of the visiting public. At the local scale, in perhaps a dozen locations, this may be considered a moderate effect on solitude and wilderness experience.

Overlap of pack station operations occurs primarily because of all-expense traveling trips. Overlap of operations can cause overuse of some site-specific destinations and grazing areas. Without coordination of the all-expense trips, there is a chance that overuse can occur. Few areas will experience such effects, but where this occurs, the impacts can be of a moderate intensity.

Presently no mining, and very little production livestock grazing occurs. There would be no cumulative effect to wilderness character.

Future management and restoration on Mountain Yellow Legged Frog habitat and populations is a reasonably foreseeable action. These activities are subject to California Fish and Game management. Restoration efforts entail removal of fish from some locations and stocking of fish in other locations. These activities have an effect on the untrammeled qualities of wilderness character by manipulating the ecosystem and wilderness environment to meet other objectives. Such manipulations may have unintended long-term affects that are unknown at this time. More immediate and potential cumulative effects of pack stock supported recreation could be the displacement of use to new areas where fish are stocked. This would occur if use currently is concentrated at a lake that has fish and now and then the fish are removed and another less popular lake becomes stocked with desirable fish. Results of changing use patterns can occur to trails and have effects to solitude. Actions such as this have a potentially minor to moderate affect on wilderness character at the wilderness scale.

No other reasonably foreseeable actions have been identified, other than the ones proposed in this planning effort.

Alternative 2 – Modified

Summary of Alternative 2 – Modified Wilderness Resource Effects

Generally, the effects of Alternative 2 – Modified are very similar to Alternative 2. The distinguishing feature in both alternatives is the manner of controlling use, the destination quota.

Overall, the intensity of impacts to wilderness character with this alternative will be low to moderate and moderate to high at less than 25 site-specific locations. These moderate to high impacts will be at fewer locations than in Alternatives 1, 2, and 3. Moderate impacts will occur in locations that can sustain higher levels of use and have been popular for decades by both commercial and non-commercial visitors. These locations will be consistent with the recreation category desired conditions. Most locations of moderate impacts to wilderness character are the same in all action alternatives.

Impacts to wilderness character are primarily to naturalness and opportunities for solitude and unconfined recreation. Impacts to naturalness are minor in the long-term. Impacts to opportunities for solitude occur in high-use corridors and occasionally in other areas of the wilderness. They also tend to be short-term and avoidable. In this alternative, where travel is either prohibited or limited, opportunities for unconfined recreation are moderate to a portion of the public (clients of commercial pack stock and visitors wanting few to no encounters with pack stock).

Impacts to a visitor's experience would be short-term, particularly at popular destinations and on primary trails. While some impacts to natural conditions may be longer term, they are not likely to have permanent adverse effects. Some long-term site-specific adverse effects to wilderness character may result because of trail development decisions. Some affected trails can lose their primitive characteristics when improved and developed to facilitate uses. However, the same actions (trail development) that may occur over the long-term could enhance ecological and natural qualities of wilderness character.

In this alternative, there would be no regional, long-term adverse impacts. Beneficial effects in this alternative include improved wilderness character of many destinations where impact sources (pack stock) are removed. However, there will still be sources of impacts from other visitors at these locations. It is expected that the severity of the impact will be reduced over the short-and long-term. Some visitors that rely upon commercial pack stock support would be permanently affected by closure of these areas.

There would be no irretrievable or irreversible adverse effects from this alternative, since a strong element of the alternative is managing for conditions and adapting techniques, controls and regulations to achieve the desired conditions. A monitoring component identifies indicators and thresholds for when to implement adaptive measures. This monitoring strategy is embedded in this alternative to provide the assurance needed to modify and manage actions over time to prevent any irretrievable losses to the wilderness resource.

Analysis

Use Levels

The most significant aspect of this alternative for wilderness effects is the replacement of trailhead quotas with destination quotas. The determinations for use trails, identification of trails not to be used by commercial stock, locations of party size limitations, and locations where stock camps are designated will work in combination with destination quotas to achieve a reduction in adverse effects to wilderness character by limiting where and to what extent commercial pack station use will occur at each destination. Use levels and site-specific restrictions respond to resource concerns, risk factors and an assessment of the capability of the destination.

This alternative, unlike the trailhead quotas of Alternatives 1, 3, and 4, controls the frequency of use to destinations. In this alternative, use levels will remain similar to current levels at the Wilderness Scale, but will greatly change the distribution and frequency of use throughout the wilderness. The effect of this will be to provide more opportunities for solitude and contain and reduce the potential for physical impacts at destinations. With controls on the number of times stock go to a location, there is a direct relationship between use and impact and more precision in managing impacts.

Destination quotas provide site-specific spatial controls on commercial pack stock operators. Since these quotas were derived based on an assessment of the capability of each destination, the destination is managed for an allowable determined level of use. There is higher consistency with the desired condition of the destination when the number of trips or frequency of use to the destinations is controlled. Where needed, additional mechanisms (such as limiting the number of stock seasonally to the destination, party size and number of parties) are also employed to control the setting and character of each destination.

Visitor solitude, while not guaranteed everywhere at all times, has a higher probability of not being affected by commercial pack stock operations in this alternative. This is particularly effective at the more remote locations since the number of times the packer can go there is limited. In these locations, there may be more of an effect to solitude based on visitor expectations. Trailhead quotas do not offer this level of control over destination use.

In addition to the actual destination having higher wilderness character, the trails accessing the destination also benefit from the control on frequency of use. Under this alternative, the approval for use is specifically considered in the level of use. The control on frequency of use is often the factor for reducing or maintaining a certain level. There are continued effects on these trails, but the effects are minimized by limiting the number of trips to a level considered consistent with the capability of the trail.

There is an effect on the commercial pack stock operator's ability to choose when, where and how often they want to travel to the destinations. This effect involves their freedom of use, and the public they serve. This also diminishes the unconfined recreation opportunities of a wilderness experience. The allocated trips to each destination is within the range of current (2001-2004) trips to those destinations. If a party is denied access to a desired destination through the rationing system of this alternative, they will be able to go to another location since the overall level of trips is consistent with existing use levels. The difference is the commercial pack stock operator's use will occur where it is determined to have the least effect on wilderness resources. While the overall amount of use remains relatively constant, the effect of controlling this amount, so it occurs at suitable levels by destination, will have a beneficial effect on wilderness qualities. Areas protected from overuse will improve the natural characteristics of wilderness.

Those seeking to have few or no encounters with commercial pack stock will be affected by the use levels in this alternative in about 10 to 20 percent of the wilderness¹. Opportunities for solitude will be outstanding in locations in these wildernesses most of the time. There will be

¹ The physical area of impact is estimated to be 9 percent (all trails and campsites) while the area subject to experiential effects is estimated at 20 percent (all trails available to commercial pack stock with a ¼ mile buffer).

some locations where pack stock use is intense. These locations will be in areas where the effect of this use on the physical and biological resources is contained and will have less of an extent of impact and noticeable effects to visitors. Daily stock use limitations (stock at one time in the wilderness) are not tied to trailheads but to daily commercial stock use in the wilderness. In the absence of direct temporal controls, this at one time limitation on stock becomes the means by which spikes in use are capped. With the limitation derived from the past use, there would be the same temporal dispersion of use as Alternative 1 (trailhead quotas).

This alternative provides commercial pack stock operators flexibility to respond to year-to-year business fluctuations and client destination requests. Operators are not likely to use all the trips assigned to them each year. Some years destinations may never get used. Other years, destinations may receive maximum use. By imposing a limit on the number of stock each operator can have in the wilderness at one time ensures there are no spikes in use and use levels will remain similar to recent and past levels of use.

There are also limits, and in some cases reductions, in traveling trips. These limits curb the trend towards the overlap occurring in Alternative 1. This may have the single most direct effect. Since all-expense and traveling trips use stock for the duration of their trip and tend to have a larger number of stock and people in the trip, they have a greater potential for impacts to campsites and grazing areas. Campsites tend to be larger with increases in the extent of soil compaction, vegetation loss, and total area of disturbance. By reducing the number of all-expense trips, and preventing the growth of these types of trips, there will be a reduction in the type of impacts. In addition, the requirement that all trips holding stock in designed and contained designated wilderness camps will improve the conditions of these sites and prevent deterioration over time. Similarly, the establishment of grazing management strategies, including stock numbers, will help maintain meadows in acceptable conditions. Collectively, these actions provide significant improvement in the wilderness character from the current situation (No Action), where fewer controls translate to a higher potential for impacts. Conditions at stock camps, routes of the traveling trips, and grazing areas being used are testimony to the current conditions.

The allowances for a small amount of commercial llama use, (250-service-day allocation) for east side entry, would likely have no noticeable effect. The service will be provided from a variety of high use trailheads, with itineraries managed through annual operating plans. When the llamas operate in areas where commercial pack stock use is moderate to high, there will be a need for coordination to ensure that conflicts between stock and llamas are minimized. Currently, a small level of private llama use occurs and commercial pack stock operators are familiar with methods to minimize conflict.

A small-scale commercial burro operator would probably not have any additional effects on resources. This operation takes one long trip a year. As long as the itinerary is coordinated and grazing regulations are adhered to, there would be little effect. Often the trips begin on the Inyo National Forest and go into Sequoia-Kings Canyon National Park where the National Park Service regulates the use.

Day Rides

Wilderness-wide, proposed day-ride levels will be similar to Alternative 1 – No Action. In two areas where commercial day-ride levels are high and contribute to crowding and loss of wilderness qualities (Inyo portion of Ansel Adams Wilderness), the day rides are capped at

existing levels. The locations for this intensive day-ride activity barely penetrates the wilderness. Most of the ride takes place outside wilderness areas and, although there are intensive experiential effects, the ride is short and localized. A very small area is affected by this use.

The primary effect of the day-ride activities will have minor- to moderate-adverse effects on experiential qualities of wilderness. These adverse effects will be short-term in duration, and minor in scale, affecting a small portion of the wilderness. As in Alternative 1, the commercial day rides occur in the first ½ mile to 6 miles of the wilderness. The use would occur on highly developed trail systems. Other than some minor contribution to overall trail deterioration with this relatively low level of stock use, effects would be negligible to the natural conditions of these wildernesses but moderately adverse to solitude.

Party Size

The direct effects of the wilderness-wide party size (15 persons and 25 stock) will typically be the same as the effects described in Alternative 1. Spot and dunnage trips tend to be smaller in party size than all-expense trips. In this alternative, as under the No Action alternative, operators could not change from offering spot and dunnage to all-expense trips. This provides some assurance that current patterns of a limited number of large parties are likely to continue.

When ranked against other perceived problems, party size is consistently amongst the lowest ranked problem, though this varies by wilderness (Monz et al. 2000). In the John Muir Wilderness, it ranked as 13th in the list of problems identified by hikers (Watson et al. 1993). Group size clearly is a perceived problem, but by a minority of visitors. Conflicts can become acute when there is an expectation in remote locations of low or no encounters with large or small horse groups. With capacity guidelines that look at remote locations differently than primary use areas, and responding with such things as limited trips, party size and stock number limits, there will likely be a decrease in perceived problems in these wildernesses.

As described in Alternative 1, large parties will tend to be associated with the all-expense type trips, with spot trips making up the next highest percentage of large parties. Dunnage parties are typically the smallest parties. In this alternative, there is a slight reduction in all-expense trips. This has the potential for fewer large parties. However, with no controls on spot versus dunnage distribution, operators could change towards more spot trips with the associated shifts in party size.

The effects of larger parties occur primarily on campsites and use trails where the larger parties have traveled through soil or vegetation sensitive to disturbance. The total number of stock and timing of the trail use has more bearing on the effect to campsites and trails than the actual party size as is described in Alternative 1.

There are arguably more experiential effects of larger party sizes. This will continue with this alternative. However, the magnitude of the problem is quite low in the context of the overall amount of wilderness lands. There will be even greater ability to avoid groups and find opportunities for solitude in these wildernesses with fewer trails open to commercial stock. The frequency of use to destinations, particularly more remote locations where generally only 1 to 4 trips a season are authorized, reduces the probability of experiential conflicts between commercial stock parties and hiking parties.

There is one potentially significant indirect effect of the destination quota on party size. Operators have indicated that if they are limited to the number of trips per destination, they will

desire to maximize the party size for those trips. For example, some indicate they would turn down a party of two and wait for a larger party in order to maximize income. This is a possible strategy; however, to have an operator turn down a trip in wait for a larger party is contingent on the market and the interest of large party customers. Since there is no indication there is a demand for large party groups, it seems unlikely operators would turn down smaller parties. It is also possible that pricing structure will change from a “price on the number of people or stock” to a “price for a destination.” In addition, the majority of the destination quotas are not set at the lowest level of use and do not create real scarcity compared to current levels of use to these destinations.

Additional site-specific party size limitations insure protections where there is not adequate capacity for large groups. By preventing a large party from camping where the site capacity is not suitable, or where the recreation category may not be consistent with a large group, there will be site-specific protection of the solitude and naturalness qualities of wilderness character. This comes at some expense to unconfined freedom qualities of wilderness character. The impact to this quality would be minor and short-term since other locations will likely be available and the party is not categorically excluded from the wilderness.

As in the discussion of party size effects in Alternative 1, there are experiential effects to wilderness character. These effects tend to be short-term and negligible to moderate depending on a person’s perception. Given the limited occurrences of large parties and the ability to control additional impacts at areas not suitable for large parties, the effects of maintaining the wilderness-wide party size would be negligible to minor wilderness-wide, with some people benefiting and others perceiving an adverse impact of the large group.

Campsites

Designated stock campsites would have the effect of concentrating stock related impacts at a limited number of locations. All commercial pack stock trips that hold stock overnight would be required to stay in a designated site. By containing the size of these sites, expansion would be prevented, thereby having a beneficial effect to the wilderness character qualities of naturalness.

Although there may be fewer impacted sites, intense stock-related impacts would exist at these designated campsites. Repeated use of fewer sites may further soil compaction and vegetation loss. Over time, these sites could see an increase in tree mortality if improper tying to trees were to occur. Other effects of the concentration of use would be wood depletion (where downed wood is available and campfires are allowed), human waste deposition concentration, and the general appearance of a highly used site. The effects would be moderate to major at the local scale, and minor at the wilderness scale. Most effects would be offset with ongoing management of the site to prevent adverse effects from being anything more than negligible.

By designing the features and managing for the expected use, most adverse effects would be mitigated. Determining appropriate access would reduce any trail related impacts associated with the site. With containment to existing historically used sites, improved access, site design for access, and stock holding areas, there would be an overall improvement to stock camps and an assurance that commercial stock camps do not proliferate. This would have experiential benefits to other visitors as well as clients of commercial packers. The direct effects of reducing the size of camps, improving access, and setting sites further back from lake and stream banks will also result in positive effects to social and experiential qualities of wilderness character.

Campfires

Alternative 2 – Modified proposes boundary changes to the elevation fire closure in eight areas. Because firewood is available at these locations, there are minor effects on the environment. Some of these locations are at the 10,000 or 10,400-foot elevation. Camping locations at the same destination are either in or out of the closure, making the closures somewhat ineffective. This combined with an assessment that firewood is available, results in few effects to naturalness. Commercial pack stock operators will be encouraged to collect firewood in areas of abundant availability well below the elevation closure to reduce potential effects of firewood scarcity over time at these elevations.

Trail Suitability

The effects of trail suitability determinations in this alternative will be beneficial to the trails identified as closed to commercial stock, adverse to the public that are prohibited from their use, and adverse to the public who may want to see less stock on fewer trails.

Eighty-nine (89) miles of system trails are identified for closure to commercial stock. These trails were determined unsuitable based on resource conditions and an assessment that continued and repeated commercial stock use would have unacceptable adverse effects on the trail. In these areas, there would be fewer impacts with the removal of the disturbance source. The effects may not go away, or in some cases may not be reduced, in the short-term, but the prevention of further degradation is a beneficial effect to both the naturalness qualities of wilderness character as well as some public's experiential qualities. Other people will feel adverse effects to the unconfined recreation qualities from being restricted from traveling on these trails. These effects, both the beneficial and the adverse are short-term minor effects to experience with long-term beneficial effects to the naturalness qualities of wilderness character.

Use trail approvals are consistent with the destination quotas and use levels. As with many of these topics, some publics are benefiting from restrictions while others are adversely affected, experientially. The resources will likely receive long-term beneficial effects at the local and wilderness scale from the removal of disturbances in locations where the risk of further degradation by pack stock disturbances are high.

Cumulative Impacts of Alternative 2 – Modified

Past, present, and reasonably foreseeable future levels of visitor use (backpacking, day use, and private equestrian use), when added to the commercial use levels prescribed in this alternative, will have minor long-term adverse effects to the naturalness and experiential qualities of wilderness character. Most of the wilderness will have high opportunities for solitude. Unconfined recreation is slightly diminished for all users with the use of a restrictive visitor use permit system that has been in place for over thirty years. Commercial pack stock visitors will have additional restrictions over that of the non-commercial visitors as the locations of service are directly regulated.

The developed and untrammeled qualities of wilderness character are not additionally affected with any of these actions. No cumulative effects occur to these wilderness character qualities. Past uses (structures, dams stocking, grazing, mining) have major long-term impacts that current uses and proposed actions in this alternative cannot measure up to.

Locations where trail impacts are severe may be the result of many years of use and/or lack of regular maintenance or reconstruction. These trail impacts are often the result of poor or no trail design (many shared trails evolved by from the need of the users needs, not by design). Trails located in meadows and riparian areas can cause excessive erosion. This can be exacerbated made worse by stock use, and can requires substantial physical mitigations. Removing one causal agent of erosion, such as commercial pack stock, may not do much more than slow the rate of deterioration.

The proposal to allow increases in day rides, when added to the day hiking and overnight use levels, can at the local levels have an adverse cumulative impact at the local levels to a visitor's experience, opportunities for solitude, or a sense of naturalness. These effects are short-term and in some locations moderate in intensity but local in scale of the impact.

There may be some minor cumulative effects to the naturalness quality of wilderness character with the past, current, and proposed use of drift fences, the sanding of passes, and other means to facilitate commercial stock use. Maintaining a minimal number of smaller structures (drift fences) of minor size for resource protection may have minor adverse effects to the undeveloped wilderness quality. When viewed collectively with the various structures from past uses, remnants of past recreational impacts and current proposed allowable uses of commercial pack stock activities, very few areas may have an appearance of human occupation and improvements. This effect may be long-term and range from negligible to moderate intensity relative to a person's perceptions.

There would be no irretrievable or irreversible adverse effects from this alternative, since a strong element of the alternative is managing for conditions and adapting techniques, controls, and regulations to achieve the desired conditions. A monitoring component identifies indicators and thresholds for when to take adaptive measures. This strategy is embedded in this alternative to provide the assurance the Forest Service needs to modify and manage over time to prevent any irretrievable losses to the wilderness resource.

Alternative 2

Summary of Alternative 2 – Modified Wilderness Resource Effects

Overall, impacts to wilderness character with this alternative will be at a moderate intensity at fewer site-specific locations than Alternative 1. Impacts to a visitor's experience would be short, particularly at popular destinations and on primary trails. While some impacts to natural conditions such as locally severe trail impacts may be longer term, they are not likely to have permanent adverse effects. Some long-term adverse effects to wilderness character may result at specific sites because of trail development decisions. Trails lose their primitive characteristics with improvements and development to facilitate uses. The same action (trail development) that may occur over the long-term would enhance ecological and natural qualities of wilderness character.

There would be no regional, long-term adverse impacts. Beneficial effects in this alternative include the improved wilderness character of many destinations where impact sources (pack stock) are removed. However, there will still be sources of impacts. It is expected the severity of the impact will be reduced over the short and long-term. Some visitors that rely upon commercial pack stock support would be permanently affected by closure of these areas.

- Wilderness character will be moderate in high use corridors and high in most all other areas.
- Ecological impacts are concentrated and contained. The extent of impact is less than Alternative 1.
- Campsites will be contained at sites suitable for holding stock, limiting the area of impact from stock camps. There is likely to be improved conditions at stock camps.
- There are spatial controls but limited temporal controls. Daily and seasonal stock numbers provide moderate temporal controls.
- The use of internal controls will reduce the freedom for commercial pack stock operations to go where they or clients desire. Packers' freedom of movement and campsite selection will be substantially limited in this alternative.
- Site-specific party size limits will insure the campsite capacities are not exceeded, eliminating the potential for new impacts from expanding sites.
- Campfire use can create equity and compliance issues. Compliance issues lead to ecological impacts of depleted wood sources, scaring of soil, rock, and trees by campfires.
- Opportunities for solitude will probably increase by limiting areas of pack stock operations and the frequency of their use. Spatial spikes in use will not occur which will lead to a high probability that more remote locations will remain remote and lightly used by pack stock.
- System trail assignments lead to the potential for higher level of development than is currently on the ground. This may detract from wilderness character in some locations, but generally will align with the designated recreation category.

Analysis

Use Levels

In this alternative, use levels will remain similar to current levels at the Wilderness Scale. The significant difference is in the use of an internal, spatial control (the destination quota) which more directly controls the extent of the pack stock use. This alternative, unlike the trailhead quotas of Alternatives 1, 3, and 4 controls the frequency of use at destinations. The replacement of trailhead quotas with destination quotas is the most significant aspect of this alternative for wilderness effects. The determinations for use trails—identification of trails not to be used by commercial stock, locations of party size limitations, and locations where stock camps are designated—works in combination with destination quotas to achieve a reduction in effects to wilderness character compared to the No Action Alternative.

Destination quotas provide site-specific spatial controls on commercial pack stock operators. Since these quotas were derived based on an assessment of the capability of each destination, the destination is managed for a determined allowable level of use. There is a much higher consistency with the desired condition of the destination when the number of trips or frequency of use to the destination is controlled. Visitor solitude, while not guaranteed everywhere all of the time, has a higher probability of not being affected by commercial pack stock operations,

particularly at the more remote locations since the number of times the packer can go there is limited. Trailhead quotas do not offer this level of control over destination use.

In addition to the actual destination having higher wilderness character, the trails accessing the destination also benefit from the control on frequency of use. Under this alternative, the approval for use is specifically considered in the level of use. The level of use is often the factor for reducing or maintaining a certain trail maintenance level. There are continued effects on these trails, but the effects are minimized by limiting the number of trips to a level considered consistent with the capability of the trail.

There is an effect on the commercial pack stock operator's ability to travel when, where and how often they want to. This is an effect on their freedom of use and the public they serve and diminishes the unconfined recreation opportunities of a wilderness experience. The allocated trips to each destination is within the range of current (2001-2004) trips. Since the overall level of trips is consistent with existing use levels, if a party is denied access to the destination they desire they can go to another location. While the overall amount of use remains relatively constant, the effect of controlling this amount so use occurs at suitable levels by destination will have a beneficial effect on wilderness qualities of some public's experience and to the natural characteristics of wilderness, since areas will be protected from overuse.

Those seeking to have few or no encounters with commercial pack stock will be affected by the use levels in this alternative in about 9 percent of the wilderness. Opportunities for solitude will be outstanding in most locations in these wildernesses, most of the time. There will be locations where pack stock use is intense. These locations will be in areas where the effect of this use on the physical and biological resources is contained and concentrated as to have less of an extent of impact.

There is intent in this alternative to find opportunities (locations) for growth in commercial services within desired conditions for the area and resource capability. Any allowances for expansion of services from the last few years of reduced use would occur only where suitable and capable of sustaining the use. No new impacts would be expected. At locations with conditions such as poorly located or degraded trails or low camping capacities, the intensity of commercial pack stock use is proposed for reduction from the highest level of use in the past three years.

By counting dunnage trips that use less than five stock as half a trip, an incentive is provided to use less stock. Currently in Alternative 1 – No Action, there is no incentive to use less stock; in fact reduction of service days by 20 percent per the 2001 Court Order seemed to be an incentive to use more stock to make up for reduced clients. Providing five trips to destinations not identified by the user allows for occasional use of areas for regular use or for incidental use exceeding a particular quota. Five additional trips to approved destinations could have additional effects to other visitor's solitude or incremental effects to the naturalness quality if the pack stock causes any additional impact to trails, campsites, or grazing resources on this additional trip. Although possible, it is not likely, that the occasional additional use would have more than negligible effects on character qualities at the wilderness scale.

Alternative 2 establishes daily and seasonal stock quotas to act as a control feature for the total amount of commercial pack stock use so it does not substantially increase from current levels in Alternative 1. Daily and seasonal stock quotas make sure that growth in commercial pack stock services will be in number of clients rather than number of stock. This provides some incentive

for operators to decrease the ratio of the number of stock per person. Because it is the number of stock, not the number of people, that have the most effect on the condition of the resource (DeLuca et al., 1998 and Monz et al., 2000), there would be an opportunity for these businesses to survive and serve more visitors needing their services without a direct growth in stock and the associated impacts. Figure 4.2 compares the allowable stock numbers of Alternative 1 and 2.

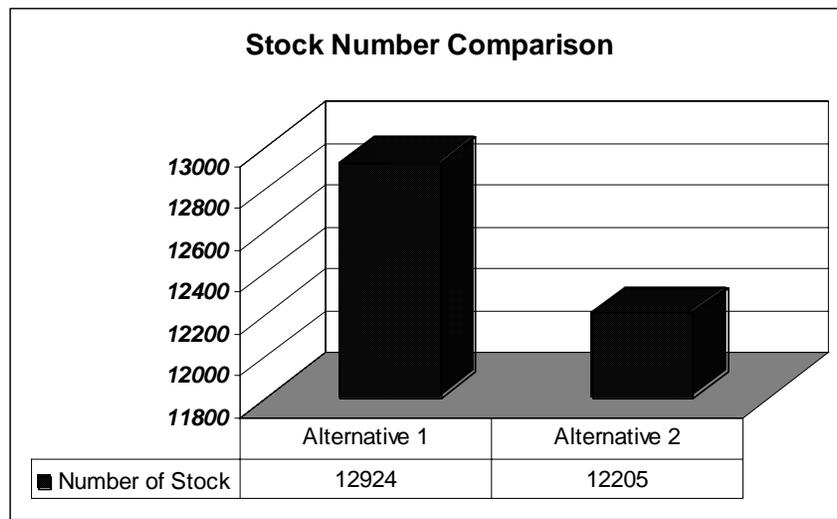


Figure 4.2 Stock number comparison Alternative 1 and 2.

Daily stock caps are not tied to trailheads but are tied to overall commercial stock use in the wilderness on a daily basis. In the absence of direct temporal controls, this daily cap becomes the means by which spikes in use are capped. With the daily cap derived from recent use, there would be the same temporal dispersion of use as Alternative 1 (trailhead quotas). It is highly unlikely that without trailhead quotas, all commercial pack stock use on any given day would utilize a single trailhead within their primary operating area. Most commercial pack stock operators are probably will not service clients into one location as this may adversely affect future business.

This alternative provides commercial pack stock operators flexibility to respond to year-to-year business fluctuations and client destination requests. It is not likely that an operator will use all the trips assigned to them each year. The overall stock number limit provides the cap on use. At most, if more trips were taken, they would be taken with less stock, again, providing incentive to service more people. Some years destinations may never get used, other years some destinations receive maximum use.

The identification of primary operating areas would reduce overlapping commercial stock operations. Currently there are 18 analysis units where 2 operators have recorded use; 10 units where there are 3 operators with recorded use; 8 units where there are 4 to 6 operators; and 3 units where there are 7 operators with recorded use. Approximately 36 destinations show overlap of two or more operators providing spot and dunnage. This alternative would reduce the number of locations of spot and dunnage overlap to 20 destinations.

The 2001 Wilderness Plan did not address operating areas. For the past few years, some packers have trucked stock to trailheads and areas where they had not historically operated. With the court reduction on service days, some operators spent more time in the adjacent National Parks.

The effect of assigning primary operating areas to those operators at a base facility will reduce overlap. Primary operating area, combined with destination quotas, will guarantee that growth in operations occur in sustainable locations and not increase multiple operators duplicating services. There are also limits, and in some cases reductions, in traveling trips, thereby curbing the trend towards more overlap that is occurring in Alternative 1.

There is a positive effect on the resources and services when a commercial pack stock operator is familiar with the destinations, grazing, trails, and use patterns. When operators frequent specified locations, business operations tend to become routine and result in camping, grazing, and watering of stock in the appropriate locations. For those operators using seasonally employed wranglers, this familiarity can also aid in these employees knowledge of the area: where to drop clients, the time it takes to get from one place to another, the ability of the animals, and limitations of trail conditions. When an operator uses an area that they are not familiar with there is a higher chance for unexpected, even unintended impacts based on the lack of knowledge of the area and its capability and history.

The allowances for a small amount of commercial llama use, (500-service day allocation) for east side entry, would possibly have no noticeable effect. The service will be provided from a variety of high-use trailheads, with itineraries managed through annual operating plans. When the llamas operate in areas where commercial pack stock use is moderate to high, there will be a need for coordination to ensure that conflicts between stock and llamas are minimized. Currently, a small level of private llama use occurs and commercial pack stock operators are familiar with methods to minimize conflict.

A small-scale commercial burro operator would not likely have any additional effects on resources. This operation takes one long trip a year. As long as the itinerary is coordinated and grazing regulations are adhered to, there would be little effect. Often the trips begin on the Inyo National Forest and go into Sequoia-Kings Canyon National Park where the National Park Service regulates the use.

Day Rides

Proposed day-ride levels will moderately increase (25 percent) wilderness-wide from Alternative 1 – No Action. The locations where increases will occur are Recreation Category 3 areas where overall use levels are high yet day-ride allocations have been low. In the two areas where commercial day-ride levels are high, and contribute to crowding and loss of wilderness qualities (Inyo portion of Ansel Adams Wilderness), the day rides are capped at existing levels.

The primary effect of this increase will be some minor to moderate adverse effects on experiential qualities of wilderness. These adverse effects will be short-term in duration, and minor in scale, affecting a very small portion of the wilderness. As in Alternative 1, the commercial day rides occur in the first ½ mile to 6 miles of the wilderness. The use would occur on highly developed trail systems. Other than some minor contribution to overall trail deterioration with this relatively low level of stock use, effects would be negligible to the natural conditions of these wildernesses but moderately adverse effects to solitude.

Party Size

The direct effects of the wilderness-wide party size (15 persons and 25 stock) will mostly be the same as the effects described in Alternative 1. Spot and dunnage trips tend to be smaller party

size than all-expense trips. In this alternative, there is no possibility that operators could change from offering spot and dunnage to all-expense trips. This provides some assurance that current patterns of very few large parties are likely to continue.

As described in Alternative 1, large parties will tend to be associated with the all expense type trips, with spot trips utilizing the next highest percentage of large parties. Dunnage parties are typically the smallest parties. In this alternative, there will be no change, actually a reduction in all-expense trips. This has the potential for fewer large parties. However, with no controls on spot versus dunnage distribution, operators could change towards more spot trips with the associated party size. The seasonal stock limit will control this from being a very significant pattern change as they are limited seasonally to the number of stock.

The effects of larger parties occur primarily on campsites and use trails or trails that may travel through soil or vegetation that is sensitive to disturbance. The total numbers of stock and timing of the use has more bearing on the effect than the actual party size as is described in Alternative 1.

There are arguably more experiential effects of party size, and will continue to be to some extent, in this alternative. The magnitude of the problem is quite low in context to the overall amount of wilderness lands and there will be even more ability to avoid groups and find opportunities for solitude in these wildernesses with fewer trails open to commercial stock in this alternative.

There is one potentially significant indirect effect of the destination quota on party size. Operators have indicated that if they are limited to the number of trips per destination, they will need to maximize the party size for those trips. Some indicate to maximize the income they would turn down a party of two to wait for a larger party to serve. This is a possible strategy; however, it is also contingent on the market and the availability of the number of large of party customers to have an operator turn down a trip in wait for a larger party. Since there is no indication that there is a demand for large party groups, it seems unlikely that operators would turn down clients. In addition, the majority of the destination quotas that were set are not set at the lowest level of use and do not create real scarcity compared to current levels of use to these destinations. There are a number of exceptions where use is limited to destinations; this may be the case, but if the destinations were not suitable for a large party, it would be subject to site-specific party size limitations.

Additional site-specific party size limitations insure protections where there is not adequate capacity for large groups at destinations. By preventing a large party from camping where the site capacity may not be suitable or the recreation category may not be consistent with a large group there will be protection of the solitude and naturalness qualities of wilderness character locally. This comes at some negligible expense to unconfined freedom qualities of wilderness character. The impact to this quality would be minor and short-term, since other locations will possibly be available and party size is not categorically excluded from the wilderness.

Like in Alternative 1's discussion of party-size effects, there are experiential effects to wilderness character. These effects tend to be short-term and negligible to moderate depending on a person's perception. Given the limited occurrences of large parties and the ability to control additional impacts at areas not suitable for large parties with site-specific limitation, the effects of maintaining the wilderness-wide party size would be negligible to minor wilderness-wide, with some people benefiting and others perceiving an adverse impact of the large group.

Campsites

Designated stock campsites would have the effect of concentrating stock related impacts at a limited number of locations. All commercial pack stock trips that hold stock overnight would be required to stay in a designated site. By containing the size of these sites, the expansion of these would be prevented, thereby having a beneficial effect to the wilderness character qualities of naturalness.

Although there may be fewer impacted sites and the extent of impact will be limited, intense stock impacts would exist at these designated campsites. Repeated use of fewer sites may further soil compaction and vegetation loss and over time, these sites could see a proliferation of dead trees, if improper tying to trees were to occur. Other effects of concentration of use would be wood depletion where downed wood is available and campfires are allowed, human waste deposition concentration, and the general appearance of a highly used site. The effects would be moderate to major at the local scale, and minor at the wilderness scale. Most effects could be offset with good design and on going management of the site to prevent adverse effects from being anything more than negligible effects locally.

By designing the features and managing for the expected use, most adverse effects would be mitigated. Determining appropriate access would reduce any trail related impacts associated with the site. Containment to existing historically used sites, the improved access, site design for access and stock holding areas there would be an overall improvement to stock camps and an assurance that commercial stock camps do not proliferate. This would have experiential benefits to other visitors as well as clients of commercial packers. It is expected that the direct effects of reducing the size of camps, improving access, and setting sites further back from lake and stream banks will also result in beneficial effects to social /experiential qualities of wilderness character.

Campfires

Alternative 2 proposes to allow commercial pack stock operators to pack in wood and charcoal and use a fire pan to provide campfires for their clients in those areas where campfires are currently prohibited. Those visitors not associated with commercial operators who are camping in a campfire closure area may have a decrease in their wilderness experience. There may be the tendency for those seeing campfires in closed areas to assume that campfires are allowed and cause more gathering of wood in areas known to be scarce in this resource. In the long-term, it may become easier to gain compliance with the campfire closures. Fire pans will be used and ash will be packed out, so there would be no residual evidence of campfires and, therefore, no campfire rings to induce future visitors to have a campfire. This may, however, generate or add to a sense of inequity between user groups, creating an adverse effect to the experiential qualities of wilderness character. The experiential effects would be minor to moderate locally and short-term; however, adding to the already tension of the hiker-stock use conflict may have long-term effects.

Trail Suitability

The effects of trail suitability determinations in this alternative will be beneficial to the trails identified as closed to commercial stock, adverse to the public that are prohibited from their use, and adverse to the public who may want to see less stock on fewer trails.

Seventy-three (73) miles of system trails are identified for closure to commercial stock. These trails were determined to be unsuitable based on resource conditions and an assessment that continued and repeated commercial stock use would have unacceptable adverse effects on the trail or destination. In these areas, there would be fewer continuing impacts with the removal of a source of the disturbance. In the short-term, the effects may not go away or be reduced, but the prevention of further degradation is a beneficial effect to both the naturalness qualities of wilderness character as well as some public's experiential qualities. Other publics will feel adverse effects to the unconfined recreation qualities from being restricted from traveling on these trails. These effects, both the beneficial and the adverse are minor short-term effects to experience with long-term beneficial effects to naturalness qualities of wilderness character.

Use trail approvals are consistent with the destination quotas and use levels. As with many of these topics, some publics are benefiting from restrictions while others are adversely affected, experientially. The resources are expected to receive long-term beneficial effects at the local and wilderness scale from the removal of disturbances in locations where the risk of further degradation by pack stock disturbances are high.

Cumulative Impacts of Alternative 2

Past, present, and reasonably foreseeable future levels of visitor use (backpacking, day use, and private equestrian use), when added to the commercial use levels prescribed, will have minor long-term adverse effects to the naturalness and experiential qualities of wilderness character. Most of the wilderness will have high opportunities for solitude but unconfined recreation is slightly diminished for all users with the use of a restrictive visitor-use permit system.

The developed and untrammeled qualities of wilderness character are not affected with any of these actions. Past uses, (structures, dams stocking, grazing, mining) have major long-term impacts that current uses and proposed actions in this alternative cannot measure up to. No cumulative effects occur to these wilderness character qualities.

Locations where trail impacts are severe may be the result of many years of use or lack of regular maintenance or reconstruction. These trail impacts are often the result of poor or no trail design (many shared trails evolved from the need of the users needs, not by design). Trails located in meadows and riparian areas can cause excessive erosion. This can be exacerbated by stock use, but is not fixed without substantial physical mitigation. Removing one causal agent of erosion such as commercial pack stock may not do much more than slow the rate of deterioration.

The proposal to allow increases in day rides, when added to the day hiking and overnight use levels, can have an adverse cumulative impact at the local levels to visitor's experience, opportunities for solitude, or a sense of naturalness. These effects are short-term and in some locations moderate in intensity but local in scale of the impact.

There may be some minor cumulative effects to the naturalness quality of wilderness character with the past, current, and proposed use of drift fences, the sanding of passes and other means to facilitate commercial stock use. Maintaining a minimal number of smaller structures (drift fences) for resource protection may have minor adverse effects to the wilderness quality of undeveloped. When viewed collectively with the various structures from past uses, remnants of recreational impacts and current proposed allowable uses of commercial pack stock activities, some (very few) areas may have an appearance of human occupation and improvements. This

effect may be long-term and range from negligible to moderate intensity relative to a person's perceptions.

Alternative 3

Summary of Alternative 3 Wilderness Resource Effects

Overall, impacts to wilderness character with this alternative will be moderate intensity at fewer site-specific locations than Alternative 1 but more locations than Alternative 2. Impacts to a visitor's experience would be short-term, particularly at popular destinations and on primary trails. There would be a higher risk of destinations becoming more impacted over the long-term than in Alternative 2 with an external versus internal control. These would likely be long-term minor to moderate local impacts.

While some impacts to natural conditions such as locally severe trail impacts, may be longer term, they are not expected to have permanent adverse effects. Some long-term adverse effects to wilderness character may result at specific sites because of with trail development decisions. Trails lose their primitive characteristics with improvements and development to facilitate uses. There would be more occurrences of this than in Alternative 2. The same action (trail development) that may occur over the long-term would enhance ecological and natural qualities of wilderness character.

Beneficial effects in this alternative include improved wilderness character of many destinations where impact sources (pack stock) are removed. There will still be sources of impacts, however, it is possible that the severity of the impact will be reduced over the short and long-term.

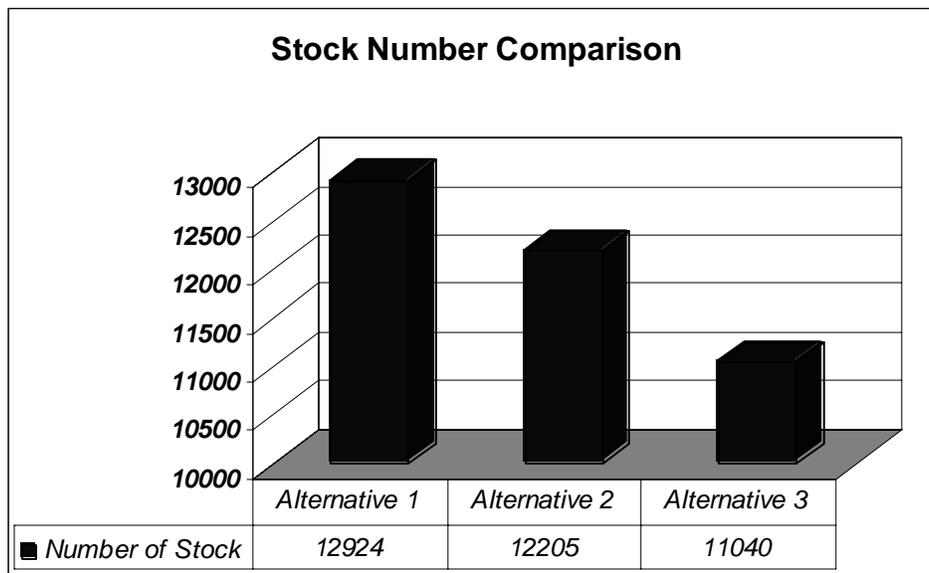
- Modified trailhead quotas allow for definitive quota space for commercial pack stock operators. Opportunities for solitude would be the same as Alternative 1. With no controls on destinations, spatial spikes in use may occur. Occurrences and frequency of occurrences at destinations may increase. Traveling trips may increase as a result of no service day control, which, if this were to occur, would lead to more encounters with stock and potential for opportunities for solitude and naturalness to be diminished.
- Trailhead quotas have a higher probability for use patterns to change than the quotas in Alternative 2. Use pattern changes can lead to new resource impacts at sites and destinations with current light use.
- Party size limits ensure the campsite capacities are not exceeded and eliminates the potential for new impacts of sites expanding at a small number of locations.
- Campfire use in closed areas creates an equity issue the same as Alternative 2, but effects are lesser than Alternative 2 because fewer locations would be affected.
- Use trail authorizations would provide some limit on the extent of operations and impacts. System trails allow for a higher level of development than Alternative 2. There may be conflicts between wilderness character and trail objectives if trails were built to standard. In some locations, needed maintenance and reconstruction could improve conditions and character of the areas.

Analysis

Use Levels

The rationing of use by daily trailhead quotas on people with seasonal thresholds on numbers of clients and numbers of stock are the essential components for controlling use levels in this alternative. Seasonal thresholds define the overall capacity of each trailhead for commercial stock operators. The effect of having an overall capacity identified is that it allows for a measuring of use and impact over time. Compared to Alternative 1, where the overall measure of capacity is service days applied wilderness-wide, this measure is more location specific and directed at the source of the impacts and the stock—not the people, the duration of people in the backcountry, or in the company of the guide (service days). However, this does not provide the same level of control on destinations as Alternative 2; with the exception of the 27 destination quotas that will be in place (see discussion below). In short, it provides more protections than Alternative 1 and fewer direct protections than Alternative 2.

Figure 4.3 Stock number comparison Alternatives 1, 2, and 3. This chart compares stock numbers that are expected wilderness-wide in Alternatives 1, 2, and 3.



As in Alternative 1, there is a higher probability for use patterns to change with trailhead quotas. Other than the 27 destinations and trail suitability determinations providing limits to destinations, commercial packers can provide service to allowable destinations as frequently as they desire or as business requires. Because of this, there may be a higher possibility that resource conditions may be affected by use patterns and changes over time as compared to the more direct controls in Alternative 2. The effects of these less direct use controls are similar to those in the No Action alternative since they are both external (trailhead quota) controls. See discussion in Alternative 1 on trailhead quotas' temporal versus spatial controls.

There will essentially be no limits on the duration of trips, as is embedded in the service day concept (Alternative 1 – No Action). Over time, service day limits had the effect of changing operations to more spot and dunnage trips to maximize service day allocations. Without this control feature there may be a trend towards more all-expense or traveling trips. Limitations on

grazing and campsite locations would ensure that if this occurs impacts of these types of trips would be limited. If more all-expense trips occur, there may be long-term moderate intensity effects to campsites and trails with more stock days in the wilderness.

Splitting out specific commercial pack stock trailhead quotas, where they were competing for quota with other outfitters and guides in Alternative 1, will have very little effect on use or resources. There may be fewer occurrences where the pack stock operator is truly limited. This may lead to a sense of inequity if the public is being limited and denied access on trailheads where the packer does not appear to be limited to the same degree. This is expected to occur on less than six trails in the planning area.

Outfitter and guide use, including the llama operator and burro operator that are proposed in this alternative, will be limited primarily by service day allocations. The daily trailhead quota established for these operators will prevent spikes in use from concurrent multiple operator use while overall capacity of outfitter and guides is controlled with the service day allocations from the 2001 Wilderness Plan. It is likely that only minor changes in use patterns or use levels will occur because of this, with no long-term effects to wilderness character.

Changing recreation category (RC) designations for 35 destinations will have very little direct effect. These category changes would align with current conditions, which are conditions that have been in place for many years. For 20 areas, this action will ensure that areas that are more remote and currently have little evidence of impact will not be allowed to change and this condition will be maintained over time. Six areas that are proposed to go from a RC3 to a RC2 also do not show signs of being a RC3 condition and would have no need to manage these areas as intensively as a RC3 implies. Eight areas will be aligned to reflect the fact that they are not and have not been as remote or pristine as the recreation category implied and in these cases, there will be no change in impact because of the category change.

Party Size

Party size limitations and effects would be the same as the proposed action (Alternative 2), a wilderness wide limit of 15 persons and 25 head of stock with limits below the maximum party size at 15 locations. There would be insurances that larger parties would not be accessing areas where capacity or capability does not allow for that party size. It is not likely that parties greater than 12 persons and 20 stock will be any different from use patterns in the past, with only 2 percent (approximately 100 groups) of all commercial stock parties exceeding 12/20.

The effects of the wilderness-wide party size are the same as for Alternative 1 and 2. The difference with this alternative comes from the possibility that operators could shift to more all-expense trips. Since larger parties occur with the all expense type trips, there could be more large parties as a result of this alternative over time, if operators change the distribution of trip types. The effects of larger parties can be seen on campsites and use trails or trails that may travel through soil or vegetation that is sensitive to disturbance. As noted in Alternative 1 and 2, total numbers of stock and timing of the use has more bearing on the effect than the actual party size.

Experientially, there could be some moderate adverse effects of a short-term nature associated with more large parties, if that were to happen. The magnitude of the problem will be low, since overall limits are still in effect. With fewer trails open to commercial stock than in Alternative 1, there are more locations where large commercial pack stock parties can be avoided.

Campsites

Campsites would be designated for all trips by pack stations where there is overnight holding of stock. These sites are the same as in the proposed action, Alternative 2. Trails would be identified to access the site in the most durable and appropriate location and would have the effect of reducing existing resource impacts associated with poor location and stream crossings. There would be a general improvement in the condition of these sites. Sites would be contained to insure that continued expansion of the impacted areas (areas of stock holding where vegetation is lost and the soil is compacted) would be limited and contained. See discussion under Alternative 2, campsites. Camping limitations would be the same with few exceptions, noted in the geographic unit section of this discussion.

The only difference with this alternative comes if, again, use patterns and the distribution of type of trips change. If more all-expense trips occur, the frequency of use of designated sites will increase. When a site gets more repeated use, there will be additional impacts of concentration of use. However, with designated site direction the site will be designed and managed and will not increase in size, there may be further soil compaction, root exposure in the holding areas. Over time there could be an increase in dead trees from soil compaction and continual girdling of trees even if each occurrence is temporary. The site will generally have an appearance of more use. Human waste concentration may become an issue with repeated use of sites. These potential impacts would not happen immediately and may take up to ten to twenty years to occur, if they occur at all. The impacts would be long-term but not irreversible as impacts can be mitigated with on going management.

Campfires

Campfires would be conditionally allowed in areas above the elevation closure, at a designated site with an employee of the pack station present. This would greatly limit the locations where campfires would be in conflict with the closure and may greatly limit the effects described in the proposed action of compliance to the closure by other non-commercial parties.

Even with reduced numbers of campfires above the elevation closure, there could likely be a proliferation of campfire rings above the elevation closure over time. This would be a result of confusion among the public about whether or not campfires are actually allowed. The proliferation of campfire rings will reduce the untrammled character of the wilderness and probably result in reductions to the natural character of the area, as vegetation is expected to be removed from living trees and bushes in this sparsely vegetated area. Perceived inequities between commercial pack operators and the generally public would create user conflict. These effects may be long-term in duration, with lasting impressions of impacts in visitors if the impacts of campfire use do increase from the current situation. The effects to the naturalness qualities of wilderness character will be of moderate intensity and short to long-term in duration if compliance issues go unresolved and wood sources are depleted.

The allowance may also increase the numbers of pack stock used for a party. To bring in firewood from outside the wilderness for a campfire will require more pack stock, possibly up to 1 or 2 more mules per trip, depending on the duration of the parties stay. With an overall cap on stock numbers there will not be an increase in the number of stock (since the overall cap is at existing levels). This effect will be negligible in the long-term since the overall cap will be in place.

Trail Suitability

In this alternative the Trail Plan upgrades the trail class on 48 trails from the proposed action. Most of the 48 trails would be changed from a TC1 to a TC2, while some are added to the system from Alternative 2 and a few are proposed being changed from a TC2 to a TC3. This may have some negative effect on wilderness character and perceptions of those visitors that desire primitive, unconfined experiences in wilderness. A higher percentage of TC2 trails may also affect opportunities for solitude in the future in areas where access may improve from current conditions that either impede access or just not draw visitors due to difficult trail conditions. These experiential effects could be long lasting in duration and of moderate intensity for some visitors seeking more primitive conditions in the wilderness.

Trail suitability determinations in this alternative are not substantially different from Alternative 2 (proposed action). Approximately 30 more miles of system trail (of 1,056 miles) is available to commercial operators in this alternative from Alternative 2, which cumulatively is not significant, but site specifically will have some short-term adverse minor effects on solitude, crowding and potentially use conflict between user groups.

Sanding on passes (by line officer approval) allowed in this alternative will reduce the natural and untrammelled qualities of wilderness character. Sanding does not allow nature to be the primary force acting upon the wilderness. It may lead to some effects on the trail system where soft, wet soils could be trampled at a higher rate than dry, firm soils. This could effect wilderness experience and ecological values at site-specific locations and cause long-term adverse effects of moderate intensity associated with the early access to areas (wet areas) that may be vulnerable to impacts.

Use trails provide more access in this alternative than in Alternative 2 with approximately 17 more trails approved of 190 use trails considered. Overall, this is not a substantial change, a less than 10 percent difference. However site specifically, increased access may affect the character of some locations if pack stock operators were to change use patterns and frequent these locations. Without limits on most locations (i.e., destination quotas) and with limits only on entry, there could be use pattern changes that would lead to more use at destinations that currently do not get much use and this could affect the wilderness experiences of others. More use of these less developed and unmanaged use trails could have minor to moderate effects to naturalness if increased visibility of faint trails occurs over time. Soil compaction and vegetation loss effects could be long-term in duration.

Cumulative Impacts of Alternative 3

Overall, there would be no long-term adverse effects of major proportion to any of the qualities of wilderness character as a result of the proposed actions in this alternative. No significant changes to wilderness character are expected to occur wilderness wide, though there may be locally moderate adverse effects, there are primarily locally moderate beneficial effects from these actions, that when added to the other uses, other adjacent landscapes, and past actions, do not constitute significant effects.

When viewing the proposed actions of Alternative 3 in conjunction with current uses and past actions of trailhead quotas from the public there is then the potential for a cumulative effect of moderate intensity from on both experiential (solitude) and naturalness qualities of wilderness character. The actions of splitting out a specific pack station quota and managing multiple quotas

for different user groups could negate the actions of the 2001 Wilderness Plan for reducing spikes in use. With multiple user groups accessing their own quotas, spikes in use would probably occur more often than in Alternative 1.

Cumulative beneficial effects to naturalness qualities of wilderness character are at the expense of moderate intensity impacts to freedom and unconfined recreation. The past actions of 30 years of management, combined with these additional actions have led to a highly restrictive management regime for commercial pack stock operators and the public. Additional party size limits, use trail prohibitions, grazing restrictions and campsite limitations, combined with past actions such as food storage requirements, campfire prohibitions, and trailhead quotas, all contribute to a highly regulated wilderness experience for all users. This has the effect of providing some protection to visitors from overcrowding while at the same time limiting visitor freedom, a highly prized wilderness value.

There are a number of layers of restrictions on pack stations in this alternative. Some actions reverse past actions and create a less restrictive environment for operating (such as campfires use, no service day requirement). Some actions are additional restrictions (party size, trail suitability determinations) and these past and present actions have a cumulative effect on the ability of the operator to conduct the business that on the surface appears to be authorized. The effects accumulate to the point of making it more difficult to operate and while there may be long-term beneficial effects to the naturalness qualities of wilderness character there are adverse effects to the public ability to use the services of a pack station as a result of the multiple layers of restrictions.

Over time if seasonal client or stock thresholds are reached, there may be a reasonably foreseeable action to either further limit use or to increase thresholds. Since this would be the result of a thorough analysis of the conditions of the areas of operations and their capability to sustain more use or the existing use, it is reasonable to expect that any additional use would occur with full assurance than no change in resource conditions would result. It is not likely that these thresholds would be reached for a number of years, if ever.

Alternative 4

Summary of Alternative 4 Wilderness Resource Effects

Overall, impacts to wilderness character with this alternative will be moderate intensity at fewer site-specific locations than Alternative 1, 2, and 3. Impacts to a visitor's experience would be short-term, but could be greater at popular destinations and on primary trail compared to Alternatives 1, 2, and 3. While some impacts to natural conditions such as locally severe trail impacts may be longer term, they are not likely to have permanent adverse effects. Beneficial effects in this alternative include improved wilderness character at many destinations where impact sources (pack stock) are removed. There will still be sources of impacts; it is expected that the severity of the impact will be reduced over the short and long-term.

- Trailhead quotas provide an external control for limiting use. Quotas are decreased in some areas, which has a probability—but not a guarantee—of improving the conditions of internal destinations. Without direct, internal controls the frequency of use is not controlled.

- With a reduction in people serviced and controls on people, not stock, there is a potential for stock numbers to increase.
- Compared to other alternatives, there are fewer use trail authorized and this greatly reduces area of operation and reduces possibility of new impacts in more remotes areas that use trail access. Pack stock is concentrated in fewer areas.
- The extent of impact is greatly reduced in this alternative. Intensity of impacts may be higher in locations of concentrated use.
- Opportunities for solitude are less on primary trails and corridors where stock use is concentrated.
- Party size limitations would reduce encounters between large commercial stock parties and other visitors.

Analysis

This alternative has fewer direct adverse effects to the environmental components of wilderness character. With trailhead quotas (external control, see discussion in Alternative 1 and 3 on external controls and spatial and temporal effectiveness) there are fewer direct controls, which results in fewer direct consequences. Consequences become a matter of probability, which is more difficult to determine or predict. Secondly, Alternative 4 actions have fewer, but in many ways more potent effects on commercial pack stock operations because in general, it greatly limits the area and extent of commercial pack stock operations in the project area. By limiting the area and extent of commercial operations there will likely be further concentration of this type of use into fewer areas. With concentration of use there may be effects of intensive impacts in fewer areas.

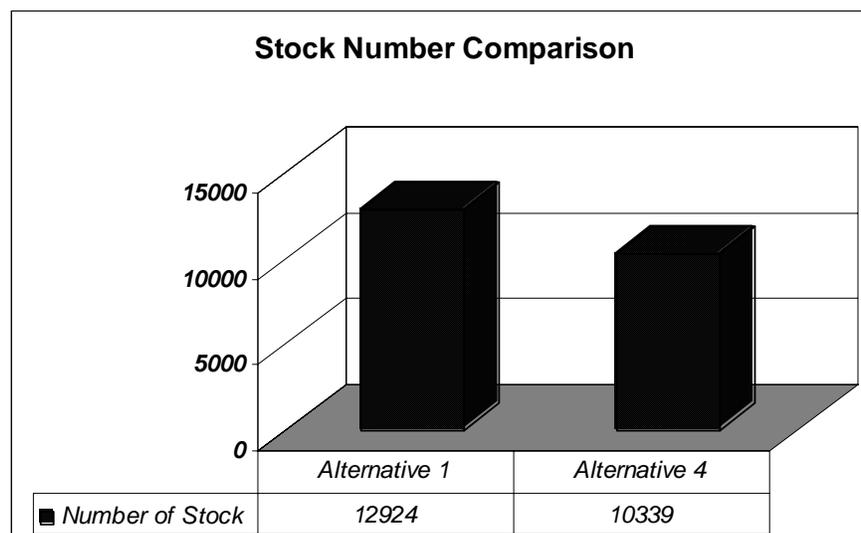
Use Levels

This alternative will reduce the overall level of commercial operations by approximately 20 percent below those prescribed in Alternative 1, No Action by reducing the allocation of service days. Service days measure people and the duration of the client's time in the wilderness with an outfitter or guide. Service days do not measure or control stock numbers. The effect of reducing service days is that some operators will have over time, a higher ratio of stock per client. This is evidenced by the 2001-2004 commercial pack stock use comparisons where some operations tally sheets indicate that more stock was used per client to compensate for the reduction placed on people being serviced (Inyo National Forest tally sheet data 2001-2004). So while an overall cap is placed that is lower than current it is likely that there may not be a corresponding difference in stock numbers wilderness-wide.

With fewer areas available to commercial operators, there will be more stock on fewer trails and more stock at fewer destinations in this alternative. The primary control mechanism in this alternative then becomes limitations on where the stock can go and trail suitability. This will result in more intensive impacts in fewer areas. This may reduce the adverse effects to natural conditions of wilderness and improve more areas where stock will no longer have a disturbance to vegetation and soils on trails and at campsites. It will also probably result in more crowding and some corresponding loss of solitude and moderate long-term effects to some visitors (clients of pack stations) visitor freedom and unconfined recreation opportunities.

Commercial pack stock use is rationed by daily trailhead quotas on people. Some trailhead quotas are proposed for lower than current quotas based on resource concerns in areas accessed by the trailhead. Trailhead quotas are most effective as timing (temporal) controls rather than site-specific (spatial) controls and based on a probability that ecological impacts will be reduced if overall numbers are reduced. It is expected that improvements to the destinations that were intended for the reduced quota will see limited beneficial effects in the short-term unless the commercial stock is entirely prohibited from the area. That is because the quota only limits the entry, not the frequency of the use to destinations. It is the type, timing, and frequency of the use more than the overall amount of use by trailhead that affects impacts to campsites and trails.

Figure 4.4 Stock number comparisons Alternatives 1 and 4



Trailhead quota availability will likely be a substantial limiting factor for commercial operators. With lower quotas, the quota will possibly be filled more regularly. As described in the effects of Alternative 1, just having a small amount of quota available may limit access for a party. This effect will happen more often than the effects described in Alternative 1, and are likely to affect the operators to the point where service days cannot be used. This will have long-term moderate adverse effects to visitor freedom and recreational opportunities for the clients and potential clients of pack stock operators. By making access difficult, the public whose experiences are diminished by pack stock use will see moderate beneficial effects to their wilderness experience.

Overall, use levels will be lower than Alternatives 1, 2 and 3 and there will be a probability that lower use will have beneficial effects to wilderness character. With many more locations closed to commercial stock, there will be higher concentration of commercial stock at fewer locations and the overall extent of impacts by commercial pack stock will be greatly reduced. There will be minor to moderate impacts to naturalness wilderness wide, with some locations seeing increased impacts while others seeing a reduction in impacts.

Day Rides

Day ride allocations would be reduced from those prescribed in Alternative 1 at locations where the potential for social or resource conflicts exist. This would result in some minor reductions in

encounters with commercial stock, in some locations, since day rides are not a major use currently, little change would be noted wilderness wide.

Party Size

Reducing the party size from 15 persons and 25 head of stock to 12 persons and 20 head of stock will affect less than 6 percent of commercial pack trips. Some operators have a higher number of large parties and will be affected more than other operators will. It is probably fair to estimate then that a small portion of the commercial pack stock use would be affected by the party size change.

Because this alternative would not allow commercial operators the practice of “borrowing” trailhead quota from the following day to accommodate groups larger than six on some trailheads, group size would, in effect, be reduced further still. It is predicted that this would have a far more significant effect on party size than the wilderness-wide limitation. Of the 55 trailheads with commercial pack stock daily quotas, 39 (or approximately 70 percent) of the trailheads servicing the project area would not be available for a group of 12 commercial pack stock clients at any time. In all probability this would significantly reduce the opportunity for larger groups to utilize commercial pack stock services in the planning area. Other wilderness visitors would still be able to borrow available quota from the following day to provide for either larger groups or multiple small groups to enter a particular trailhead.

It should be noted though, that Cole and others (1987) suggest that in order to have a significant improvement on social or ecological resources, party size would have to be reduced substantially (to 10 persons or less). This would be occurring on a local basis with the trailhead quota determining party size. This more directly affects areas accessed by low quota trails, which should correspond to meeting management objectives for more pristine conditions (Recreation Category 1 areas) and higher opportunities for solitude.

Limiting large parties can lead to beneficial effect on solitude and experiential values of wilderness. Some people prefer to encounter one large group rather than multiple small groups throughout a day. However the research does not definitively find that a certain number of stock, such as 8, 12, or 20 stock, is the threshold for experiential values. It is well documented that stock parties are known to have more potential impact on the environment than hikers to both accelerated erosion and vegetation damage (DeLuca et al., 1998). Research has suggested that group size limitations may be important for horse and mules (Monz et al., 2000).

Other actions in this alternative (such as prohibiting commercial pack stock on many trails) address the threats to ecological components of the wilderness resource better than party size reductions. The use impact relationship where light or low levels of use generally cause the initial and most persistent impacts (Cole et al.) is countered, in this alternative, by a combination of party size reduction, designated sites, and limited use trail approvals. In this alternative, many of the remote lightly impacted locations would not be authorized for commercial pack stock use. Use trail approvals are significantly fewer in this alternative than in alternatives 1, 2 and 3; with only 44 approved use trails compared to 110 in Alternative 3, 100 in Alternative 2, and 103 in Alternative 1. Many of these use trails access the more remote and less impacted locations.

Research findings suggest that party size limitations can be most effective for reducing or preventing ecological impacts in remote, lightly impacted portions of wilderness (Monz et al., 2000). This is consistent with research of Cole and others that describe the curvilinear

relationship between use and impact in regards to ecological impacts. Where use and pre-existing impact levels are high, party size changes will probably be minimal. In undisturbed locations however, large groups can have a significant impact to soil and plant communities and possibly other resources such as heritage resources. It is well documented that stock parties are also known to have more potential impact on the environment than hikers to both accelerated erosion and vegetation damage (DeLuca et al., 1998). However, research has also shown that a reduction of stock use to almost zero is required to significantly reduce the impact stock have on accelerating erosion. According to Hendee et al. (1990) “Numerous studies have concluded that [ecological] impacts on trails and campsites are unlikely to be greatly diminished merely by reducing [stock] use, unless use levels are cut to almost nothing. Reducing [stock] use can help minimize social and ascetic impacts (horse user-hike conflicts, manure, and so on), but other less drastic measures can also be taken.”

Campsites

Commercial pack stock use-patterns are also limited by designated campsites. There will be no discretion or flexibility to camp or drop clients at new locations. No new campsites will have a long-term beneficial effect wilderness wide on the preserving the natural characteristics of wilderness. Limiting the locations of sites will prevent proliferation of impacts into new locations and concentrate the impacts of stock camps and drop camps where loading and unloading of stock takes place. There will however be moderate long-term effects on freedom and unconfined recreation to the clients of commercial pack stock, by eliminating the flexibility and spontaneity.

There may be conflicts in use at designated campsites with fewer sites available. One hundred and fifty five locations are identified for camps, 59 as stock camps, and the remainder as locations where spot and dunnage parties can be serviced. This greatly limits the geographic extent of commercial pack stock operations. When the numbers of locations are fewer, and a site is occupied by another packer or by the public, there may become conflicts of supply and demand. This will probably require intensive management over the long-term.

The sites that will get used will get repeated use. Overtime these sites will likely show signs of deterioration. Soil compaction and vegetation loss will occur and though the stock camps will be confined and managed to avoid expansion, the effects of concentration will be evident. There may be an increase in dead trees as a result of soil compaction, human waste concentration will occur. These effects are similar to those described in Alternative 2 and 3, however with fewer sites; the concentration effects will be somewhat greater.

By reducing the geographic locations and extent of commercial operations, especially eliminating use of sites in remote areas and currently less impacted, the effect may be to protect and insure that further degradation from commercial packs stock operations does not occur. Those areas however would continue to be available to the public (both stock users and hikers, and non-commercial pack stock users. Wilderness visitors (including physically challenged those with special needs, and some of the elderly and very young) who prefer or depend on pack stock support would be limited to fewer choices for locations compared to Alternatives 1, 2 and 3.

Trail Suitability

With 159 miles of trails identified as Not Suitable for Commercial Stock, almost twice as much as the Proposed Action – Alternative 2, which is the next highest mileage not available for

commercial use, many locations will be inaccessible to commercial stock. Clients however, once they have ended the service provided by pack stock, however, would have no restriction on hiking to these areas. Although the freedom to use stock into these locations is restricted, travel by foot by the clients is not. Many clients use the stock to get to the destinations and often travel by foot once there. There would be a minor adverse effect to some clients of pack stations.

With fewer trails accessible to commercial pack stock, the extent of commercial pack stock use is limited. Use patterns will change and this may have some adverse effects on some areas that will see an increase in use. The areas that remain suitable for commercial pack stock use would experience some increase in use. Some of the areas where use was light due to current patterns that disperse use, could become more affected both from the natural characteristics and experiential with some loss of solitude as more pack stock use occurs.

There would be long-term beneficial effects to natural characteristics of wilderness in all the areas where commercial pack stock is prohibited, and a corresponding adverse effect to the experience of visitors that are restricted.

The system trail inventory, with a higher percentage of trails maintained at the TC1 and 2 level, will have more primitive characteristics than the trail system of Alternative 1, 2 and 3. Trail development is minimized in this alternative and this will bring about long-term beneficial effects to the trammled, undeveloped, experiential, and natural qualities of wilderness character, wilderness wide. Locally, there may be trails that are under maintained or developed for the use levels, as use patterns are less predictable in this alternative.

Cumulative Impacts of Alternative 4

Past action of maintaining commercial stock on existing trails and subject to trailhead quotas achieved through the 2001 Wilderness Plan greatly limited the geographical extent of commercial pack stock operations. This alternative provides additional controls that further reduce the locations where these commercial services can be provided and the amount of commercial service. These limitations would have a moderate adverse effect on unconfined type of recreation for those who choose or need the assistance of commercial pack stock services. There would be a beneficial long-term effect to the wilderness resources with the elimination of one source of disturbance.

Past actions of reducing the extent of trails and cross-country travel (2001 Wilderness Plan) greatly reduced the areas where commercial pack stock use could occur. With additional restrictions to commercial pack stock operators greater opportunities for solitude may occur in identified areas due to commercial pack stock limitations; but because no other wilderness visitors would be restricted from using those areas, an increase in opportunities for solitude would not likely be realized.

No major long-term effects to any quality of wilderness character wilderness wide occur as a result of implementing this alternative. There are cumulative effects of additional restrictions on top of decades of incremental restrictions on both the public and the commercial pack stock. Cumulatively, with past, present and proposed actions of this alternative, moderate intensity impacts occur wilderness wide to visitor freedom and unconfined recreation opportunities.

Alternative 5

Summary of Alternative 5 Wilderness Resource Effects

In this alternative, commercial pack stock use would be eliminated. Without commercial pack stock there would be a reduction of encounters and less crowding between parties—especially on the primary trails—leading to an improvement to the experience of hiking visitors.

Impacts associated with commercial pack stock use would diminish over time but may persist as sites, trails, and use trails will still receive public use. The majority of visitation would continue but some visitors that choose to use pack stock for their experience will not be able to find that opportunity.

In this alternative, minor to moderate impacts would occur locally and wilderness wide with continued visitation. The intensity of these impacts would diminish over the short to long-term. Moderate impacts that were associated or partially attributable to pack stock would likely diminish in the long-term (10-20 years). There would be beneficial affects to wilderness character with the reduction of site-specific impacts and increased opportunities for solitude that would occur by reducing overall wilderness use by 10 percent. There would be adverse impacts to a large sector of the public that desires or depends on pack stock support for their wilderness experience.

Analysis and Cumulative Impacts

Use Levels

Currently, between 5,000 and 7,000 visitors are serviced by commercial operators, which amount to 7 to 10 percent of overall use in the 2 wildernesses. Under this alternative no commercial pack stock use would occur. There would be no visitors accessing the wilderness with pack stock commercially. Less than 500 visitors would still access with private stock and the remainder of the visitors would access the wilderness by foot. The demographics of visitors would change to favor the more fit and experienced. Those less fit, less experienced, with special needs, some elderly, and others desiring to experience the historical/cultural aspects of pack stock use in these two wildernesses would be far less likely to access these federal lands without the support of commercial pack stock.

More significant than the number of people would be the number of stock. Approximately 10,000 commercial stock access the two wildernesses currently. With no commercial stock on the trails, there will be a noticeable change in these areas. Stock has been present and a constant use type in these wildernesses since prior to their designation in the National Wilderness Preservation System. With no commercial stock on the trails, there would be less conflict between hiker-stock user group and a substantial reduction in stock related impacts to campsites and trails.

There would be some loss to wilderness character with the elimination of commercial pack stock use. Wilderness and wilderness values are largely rooted in the early recreation use in the mountains where travel was primarily by horseback and pack stock. The 1964 Wilderness Act emphasizes the values of primitive and unconfined recreation use. Tremendous support for the Wilderness Act was provided by recreation stock visitors as a way to protect these lands for this type of recreation. This is not to say that the National Wilderness Preservation System was

created for one user type over another, but that there are various ways to value and enjoy wilderness. With this in mind, the 1964 Act probably did not intend to exclude one type of use, but rather recognized the values of primitive recreation, including riding and pack stock use.

The opportunities for solitude in these wildernesses would possibly increase. This would be more evident and noticeable at destinations and in corridors where commercial pack stock operate. Primary trails where pack stations are located would have a noticeable change in solitude and encounters. Encounters with pack stock will be rare in places where they are currently moderately frequent during July, August, and early September. Although there will be less encounters with stock parties in these primary corridors, there would continue to be frequent encounters with backpackers and day hikers. With the removal of stock, there may be an increase in backpackers. Those hikers and backpackers that have avoided areas where pack stock use is high may plan more trips than they currently do.

Since the vast majority of the wilderness is not visited by commercial pack stock, and commercial operations are concentrated in a relatively small part of the overall project area (9 percent), there would be minor long-term benefits at the wilderness scale to natural characteristics of wilderness. Experiential qualities, however, would be affected as both pack stock use and other visitors tend to be concentrated in the same area. This concentration of use often leads to conflicts between user groups.

Campsites

The majority, if not all of the campsites used in conjunction with commercial pack stock operations will continue to get used. It is expected that the same destinations will continue to receive high levels of use with or without commercial pack stock use. Destinations that packers favor will see less use and at some destinations, there will be a noticeable change with long-term beneficial effects to naturalness with the elimination of a major source of disturbance. These will be addressed in the geographic unit scale. Campsites will likely not improve significantly since they will continue to receive use and impacts have already taken place. Only with additional management would campsite rehabilitation, containment, and improvement to the site take place

Party Size

Party size for the public will continue to be 15 persons and 25 stock. It is not likely there would be any groups that reach the 25 stock limit. Private stock visitors generally travel in small groups. However, this alternative would not limit non-stock commercial outfitters who travel in maximum group sizes. Fewer encounters with large parties would occur and this may improve the sense of solitude for visitors and have short-term beneficial affects to the experiential qualities of wilderness.

Trail Suitability

Improvement to trail conditions and the visitor's experience on trails would probably occur over time. This would improve the character of the area in that trail conditions do affect a visitor's experience and stock impacts to trails are evident and noticeable in these wildernesses. With trails not needing to be maintained for heavy stock use, more primitive trails would likely be more prevalent than they are today. Trails that are more primitive would probably improve some aspects of a visitor's wilderness experience.

Geographic Scale

Ansel Adams East – Alternative 1

Analysis

In this alternative the northern units, Glacier, Bloody Canyon, and Gibbs are managed for low use with single quota trails. A case-by-case approval is needed for Bloody Canyon. Although use is not prohibited in these units, there has been no commercial pack stock in these areas, with the exception of one trip to Bloody Canyon in the late 1990s by a commercial operator. It is not likely that commercial stock use would occur in the future due to the condition of the trails and lack of desirable destinations for pack stock or pack stock support. Although it is possible in this alternative for commercial stock use, it is not probable.

Commercial stock use will be very low in the Parker unit. Day rides will occur up to the wilderness boundary but will not go into the Ansel Adams Wilderness. The day ride allocation is not specific to trailheads so it is possible that day ride use could increase into Parker if the packer chooses to change their current pattern. There could be effects to solitude. Impacts would be concentrated on existing trails and there would be negligible effects to natural conditions of wilderness character if day rides would increase.

Rush Creek will continue to receive a very high level of commercial stock use in this alternative. Over 300 commercial stock a year will travel through the Rush Creek corridor and 700-800 stock will circuit between multiple destination in the Rush Creek unit, primarily Alger Lake, Clark Lakes and along Rush Creek between Gem and Waugh. Stock numbers could increase in this alternative since the only mechanism for stock numbers is the 110-herd limit for the packer at Silver Lake. The ratio of commercial packer clients to total use is one of the highest in the planning area at 34 percent. Though this number is relative to the total use and Rush Creek receives only moderate public use, commercial stock will be noticeable in the drainage.

With this high level of stock use, there will be experiential impacts between hikers and stock users. Visitors in this drainage are likely to have multiple encounters with pack stock and the trail. The high level of manure and the pulverized tread can have an effect on a visitor's experience.

Alger, Clark, Davis, and Waugh Lakes will continue to receive a high concentration of commercial pack stock use. This operator has and will probably continue to operate with designated camps at these and other identified locations, though it is not required. The effect of this is to allow intensive impacts at a limited number of camps. These stock camps may show expansion over time, but the effect of limiting the stock to these designated sites will prevent widespread impact of multiple stock camps and stock impacts throughout the drainage. Upper Rush Creek will continue to be an area of high commercial pack stock with multiple operators.

Donahue Pass, with its access to Yosemite National Park, will draw operators who conduct traveling trips from trailheads to the south. Competition for campsites and grazing resources has the effect of increasing the potential for new sites to be created when multiple operators converge. Davis Lake is a destination with a designated stock camp used primarily by the operator out of Silver Lake. The site will receive moderate to high use with possible expansion in total area but will generally contain the intensive impacts of repeated stock use. Grazing resources near Rodgers Lake show signs of impacts that have developed in a very few years, the

effects of trailing stock to the grazing area and wrangling them back to camp in the morning have had local adverse effects on the riparian conditions and effect natural characteristics of the area. This demonstrates that new impacts to an area develop quickly, but as research indicates, these impacts will likely remain stable now that they have reached this condition (Cole 1987).

Use is currently authorized to Upper Davis Lake but little evidence that commercial stock use occurs. With this being an option in the future, there could be further impacts to the lightly visible trail and the alpine lake destination if stock use were to increase. Marie Meadow is a designated site that gets less use now that the campfire closure has prohibited campfires at this site and this pattern will probably continue, with Marie meadow receiving fewer stock trips and the campsite and grazing area will over time show less impact. Use is allowed to Marie Lake by commercial pack stock in this alternative but is currently not occurring and is expected not to change in the future.

The Thousand Island /Garnet Lakes area is also an area of very high commercial stock use. Multiple trailheads can access this area and the effect of placing trailhead quotas on the commercial pack stock have been minimal since there are multiple access points and it is unlikely that the combined quota space would limit access for the commercial operator. Spikes in use still occur, especially on weekends and holidays. In addition, with no direct internal controls all use can converge on Thousand Island or Garnet Lakes from these multiple quotas. Both these locations are also subject to multiple pack station operators' use. Traveling trips are not managed to avoid conflicts at campsites or grazing areas and there could be multiple large commercial stock parties at these destinations at the same time. Garnet Lake is used intensively by the commercial packer at Reds Meadow. Noticeable resource effects to the old John Muir Trail between Garnet and Thousand Island, which is being approved for use as a use trail affects wilderness quality with the active continued degradation that is occurring and associated stock holding camp along the trail.

Shadow corridor and Ediza Lake both receive a high level of commercial stock use in this alternative. The commercial trailhead quota acts more like a destination quota here and, therefore, has a more direct effect on reducing the spikes in use that occurred prior to the 2001 Wilderness Plan. Still, effects of commercial transportation services to Ediza Lake are caused by lack of trail design to the only camping area north of the inlet to the lake. While frequent commercial stock use plays a part in contributing to the resource impacts of this trail, lack of management is a bigger contributor. Continued use at current levels will maintain the condition until it is fixed. Stock camps in the Shadow corridor get used each year. Poorly located stock holding areas (close to water) and trailing impacts are noticeable and will likely persist for a time in this alternative. Trail impacts to Laura Lake are noticeable and the number of trips to this location has been low but could increase with the freedom that only external controls provide for destination selection. Other more remote destinations that are available to the operators in this alternative include Cabin Lake, Nydiver, Clarice, and Altha (Thousand Island unit) yet the operator is currently not utilizing these destinations. With even low levels of use to any of these destinations, new impacts could emerge.

Minaret unit has a trailhead quota where commercial stock use continues to fluctuate year to year. The highest recorded stock use since 2000 was 200 stock in 2003. As in most other areas of Ansel Adams East, service day caps and trailhead quotas have not limited stock numbers. Use will probably continue to be moderate here, packers can access Deadhorse Lake, a remote

location, yet there is no evidence of stock use. Impacts could quickly emerge if stock were to use this area, as no trail is visible even though it is currently listed on the system.

Multiple destinations will continue to get used by commercial pack stock in the King Creek unit with a high level of stock. All-expense trips to Fern, Anona, Ashely, Holcomb, and Superior have led to affected stock campsites. These sites will continue to degrade without management. Trailing impacts, exposed roots in the stock holding areas, trash left behind, and mutilated trees from holding stock are evident at these destinations. A campsite with these attributes was closed to commercial stock use in 2000, and more could be closed in the future without improvements. Current direction in this alternative does not directly effect a change in this condition.

Crater Creek will continue to receive moderate stock use, primarily trips that are traveling through. Use could increase here since no direct trailhead quota controls the level of use. Areas where traveling trips occur are subject to more use level changes. Grazing resources can draw more use into the area as well.

Cumulative Impacts

The dams at Waugh, Agnew, Gem, built in the early 1900s, are and will continue to be non-conforming uses in wilderness. The presence of these structures diminishes the wilderness character of the area. The presence of the structures, the on going maintenance needs, and the fluctuation of the water levels have an effect far greater effect on wilderness character than the recreational uses in this area. The dam exemplifies one of the few situations in these wildernesses where there are major, long-term adverse effects to the untrammled and undisturbed qualities of wilderness character,

Public use in the Reds Meadow area has a growing cumulative effect on wilderness resources in this region. Developed campgrounds and the development of the town of Mammoth Lakes attract visitors that seek wilderness opportunities, especially day use. The level of day use, (not controlled) has a short-term moderate adverse effect on solitude with crowding and considerable encounters with visitors seeking fishing, hiking, running, sightseeing opportunities within the 10-15 miles of trailheads in this area. Minor long-term effects to naturalness can occur over time locally with the development and deterioration of social trails for fishing access and popular stopping areas where vegetation loss may occur. Areas where this concentration of multiple user groups is particularly noticeable and more severe in effects are Duck Pass (Lakes Basin), Parker Lake, Shadow, Ediza, River trail, High Trail, Mammoth pass (Red Cones).

Use shifted more to Davis from Marie Meadow after 2001 because Davis is just under the elevation fire closure. This has had a beneficial effect to natural and experiential qualities of wilderness at Marie meadows with the reduction of disturbance. Minor adverse effects to experiential qualities occur at Davis with use that is more frequent and consequently fewer opportunities for solitude by other visitors.

Past site-specific closures have affected use and impact distribution. The closure to camping and campfires at Ediza Lake has concentrated camping at the inlet of the lake. This has concentrated impacts to this one area, which has led to a reduction in the extent of impacts around the lake but may have led to some loss of solitude and unconfined recreation. Not establishing a system trail to the camping location has led to a trail that is poorly located and not adequately designed or built to sustain the use. This trail shows some severe impacts for a short distance but is the only access to the campsites.

In the 1960s and early 1970s, the Shadow Lake and Shadow Creek Corridor above the lake received a high concentration of use and impacts. Impacts were severe in the riparian corridor. A camping closure at Shadow Lake and along Lower Shadow Creek was put into effect in the 1970s. A significant effort to remove campsites and fire-rings greatly restored the area to a more natural condition. The action dispersed camping to locations higher up in the drainage but greatly improved the riparian corridor from Shadow Lake to the John Muir Trail junction. The Shadow Lake and corridor closure occurred prior to limits on use and once limits were put in effect, they considered the closure in the capacity of the area. There have been noticeable improvements in the Shadow Lake and creek corridor because of these actions combined with current use pattern controls achieved through quotas on all users. Day hikers remain uncontrolled and a growing use in this area. Impacts associated with day hikers are mostly social, with a potential to increase crowding.

A campsite at the inlet of Holcomb Lake was closed to packer use in 2000 due to severe impacts. This had the effect of displacing use to the other side of Holcomb Lake, but greatly improved the inlet area. Substantial recovery of the access (creek crossing) was noted in 2003 because of removing the disturbance.

Ansel Adams East – Alternative 2 – Modified

Analysis

In this alternative, the overall number of trips for spot and dunnage are increased from Alternative 1 by 60 trips over 39 distinct destination areas. This equates to a potential for 30 additional 2-way services (30 additional parties serviced and distributed over 39 locations) and an estimated 60- to 80-day season. For perspective, although not likely to occur, at the average it increases by one additional party per destination. For growth to be realized it would have to occur with the same level of stock use and be temporally dispersed by the stock at one time in the wilderness. More probably, the use would be similar to current and past levels, but would be limited in areas where capacity or other resource concerns were identified.

Increased trips, if they occur, will occur primarily at six locations the interdisciplinary team determined could sustain a higher level of use. These locations include Parker Lake, Alger Lake, Rosalie/Gladys Lakes, Minaret Creek, Fern Lake, River Trail, and the King Creek zone. Three areas, Lost Lake, Crest Creek, and Lion Point are managed for use during hunting season, based on availability of state game tags. No one destination would see an increase of more than eight trips, which equates to four parties serviced in to and out of a location. The effects to these locations would be minimal, with essentially up to 8 days of experiential effects, and probably between 4 and 30 more stock at these locations, if the use were to occur. All these locations lack vulnerability and risk factors for physical and biological impacts. The effects would be minor in intensity and extent of impact and short-term.

These increases are balanced by some significant decreases in use in some locations. Areas where use will be reduced include Superior Lake, Emily Lake, Clarice Lake, Ediza Lake, Ashley Lake, Deer Creek and Laura Lake, Thousand Island Lake and Garnet Lake. No spot and dunnage is allowed at Island Pass in this alternative. Superior, Ediza, and Laura will be monitored and if trail conditions improve incremental increases may occur over the length of the permit. The effect of these reductions will be the number of stock at the locations, and fewer associated impacts of stock on trails. At Thousand Island Lake, there will likely be a minor reduction in

crowding as a result of the reduction in commercial pack stock trips. The effects of these reductions in use and corresponding impacts will be long-term, moderate in intensity and will have minor to moderate improvements to the quality of the wilderness character at these locations.

Overall, in this geographic unit, there will be a decrease in all-expense trips. All-expense trips remain the same for the Rush Creek packer. This packer currently runs primarily all-expense trips between designated camps. There will continue to be heavy stock use, up to 1,000 head of stock on this trail a season, most of that in July and August, with an intense peak the first two weeks of August. Designated camps at Alger Lake, Clark Lake, below Waugh Dam, Waugh Lake, Marie Meadows, and Davis Lake will continue to see use. The condition of these sites will likely not change and they are already considerably denuded of ground vegetation, soils are compacted and the areas of use including holding areas are well defined. The perimeter of these sites will be contained. Access to the Waugh Lake site will be stabilized to prevent further erosion. By doing this, the site will be hardened and stabilized becoming capable of handling the level of use prescribed.

Conditions in the Rush Creek drainage are expected to remain the same. No additional adverse effects to wilderness character are expected.

Packers that travel through the area from Mono Creek are reduced from their recent high by up to 15 trips. These types of trips typically access Yosemite National Park via Donahue Pass. There will be a net reduction in trips accessing the Park and there may be improved conditions at campsites and grazing area as a result. The beneficial effects of this reduced use will likely be moderate with less frequent use of sites. As a result, there would generally be fewer encounters with pack stock on this corridor, with minor increases in opportunities for solitude, since other users will still frequent the area.

Packers may adjust by accessing the Park to the west and coming back through Upper Rush. This is not likely, but without further controls on use in the Park, this may occur.

Thousand Island Lake and Garnet Lake could see slight reductions in use. The operator who frequents Garnet Lake with all-expense trips is being reduced in their all-expense trips. In addition, grazing that is typically needed and associated with the all-expense trips will be eliminated. It is likely that there will be less packer activity at these destinations. Only one stock camp will be approved at Garnet Lake and the camp and grazing along the use trail from Garnet Lake to Emerald Lake will not be authorized for packer use. The possible effect of fewer all-expense trips, as well as the direct reduction in spot and dunnage trips to Garnet Lake, will combine to create an overall reduction in stock related impacts at this location. Over time, with a major source of disturbance removed, the conditions of this trail, meadow, and stock camp will improve the natural conditions; however, that will take up to twenty years unless management actions are taken to facilitate restoration.

Thousand Island Lake will remain a high use area for pack stock. The level of use is consistent with its designation as a Recreation Category 3. There will be no growth in services to this area. Most packer trips here are spot and dunnage via the High Trail, so use on that trail will remain at levels similar to today, about 700-800 stock a year.

Badger Lake could see a slight, probably unnoticeable increase in packer use. Opportunities for solitude are low to moderate. The location is not a desirable location for because most of the

public prefers to go to the spectacular and scenic Thousand Island Lake. Stock use at this destination is probably more suitable than at Thousand Island as sites are hardened and screened. The designation of a stock camp here would further protect the total area from campsite expansion and reduce the proliferation of stock camps that has occurred with past use. With grazing being limited to 19 stock nights, there may be fewer trips holding stock than is occurring currently.

In the Shadow–Ediza Analysis Unit, use will remain similar to current levels, with up to 300-400 stock per year. There will be a slight reduction in stock numbers to Ediza Lake. This high use area will remain high use and the prescribed packer use is consistent with the Recreation Category 3 desired conditions. There will be low opportunities for solitude along the main corridor, but some of the outlying areas, such as Iceberg, Cecile, Laura, Cabin and Nydiver Lakes will have moderate to high opportunities for solitude and very few encounters with commercial pack stock. Trail impacts between Iceberg and Cecile Lakes will continue even though stock use will not be authorized and has not been the contributor to the current condition. The condition of the Iceberg Trail will likely not improve until substantial rehabilitation work occurs.

Use in the Minaret Analysis Unit will be similar to current client and stock levels. The effect of this will be continued minor to moderate intensity impacts at very few sites in the unit. Most of the impacts will be experiential and limited to those visitors that find stock encounters undesirable. These impacts will be short-term and unlikely to occur more than 20 days a season. Areas such as Deadhorse Lake, where stock will be prohibited, will have improved opportunities for solitude and no further commercial stock impacts.

In the King Creek Analysis Unit, use will be distributed to areas that can sustain the stock use. Fewer trips to Ashley Lake will probably have a beneficial effect to the experiential qualities of the lake, with the non-commercial pack stock visitors having higher opportunities for solitude. Clients can travel to these lakes easily from the King Creek corridor, and the effects of fewer stock impacts at the lakes will have minor to moderate long-term beneficial effects to natural conditions and recreation experiences.

Cumulative Impacts

The high level of continued commercial use combined with high private day and overnight use will not improve opportunities for solitude at many locations, including Thousand Island Lake, Garnet Lake, Shadow Lake, Ediza Lake, and along the Pacific Crest and John Muir Trails. However, by reducing commercial pack stock use at Thousand Island Lake, Garnet Lake, and Ediza Lake in particular, there will be an overall reduction in adverse effects of pack stock contributing to the other effects of public use at these locations.

The type and level of visitation (public and commercial) has been high for over thirty years. Past actions in the late 1970s and 1980s including the limiting of overnight use (see Alternative 1 Cumulative Effects); site-specific closures to camping and campfires, and grazing limitations have all helped to reduce physical impacts, improving the natural character of the area. These actions also diminish the freedom and unconfined nature of a wilderness experience. The multiple actions of this alternative, (grazing restrictions at Garnet, trail restrictions at Ediza, designated campsites and direct controls on how many trips to each location) will likely result in moderate improvements of conditions by insuring sites are not overused and impacts are

concentrated and contained. However, these same actions also contribute to the gradual and continued erosion of the qualities of unconfined types of wilderness recreation.

Holcomb Lake has improved in the past few years by closing the packer site at the inlet. This site still has evidence of heavy past use but the stream channel adjacent to the camp has improved considerably. Continued improvement would occur with this alternative by not allowing use to the site or to the grazing area (beyond the campsite). It is expected that the incision through the meadow will not recover without physical mitigation, even with removing commercial pack stock use.

As stated in Alternative 1, the dams at Waugh, Agnew, and Gem Lakes are a non-conforming use in wilderness. The presence the structures, the on-going maintenance needs that will continue in this alternative and the fluctuation of the water levels have a diminishing effect far greater on wilderness character than the recreational uses (see Alternative 1 discussion).

Public use in the Reds Meadow area has a growing cumulative affect on wilderness resources in this region. Developed campgrounds and the development of the Town of Mammoth Lakes attract visitors that seek wilderness opportunities, especially day use. The level of uncontrolled day use has an affect on solitude and crowding within the first 10-15 miles of trailheads in this area.

Cumulative Effects Conclusion

There are no adverse cumulative effects as a result of any of the actions in the Ansel Adams East in this alternative. If anything, the cumulative effects of multiple activities are reduced in this alternative through the reduction of commercial pack stock use at locations of concentrated public use (e.g., Thousand Island Lake).

Wilderness character qualities of untrammled and undeveloped are adversely affected by the water storage dams (Waugh, Agnew, and Gem Lakes) with no comparative effects or cumulative effects to these qualities by the actions in this alternative. The scale and level of physical impact from these dams greatly diminishes the recreational impacts of commercial pack stock and public use in these areas.

Minor long-term cumulative effects to a visitors unconfined recreation opportunities are possible to the commercial pack stock visitor in this alternative. Past actions of closures and restrictions combined with actions prescribed in this alternative do create a cumulative effect. The actions that contribute to this effect however, remove any potential for cumulative effects to natural conditions by managing and manipulating the level and intensity of commercial pack stock use throughout the geographic unit.

Ansel Adams East – Alternative 2

Analysis

In this alternative overall number of trips for spot and dunnage are increased by 75 trips to 43 distinct destination areas. This growth in number of trips does not equate to growth in number of stock. Overall, stock numbers will remain the same as No Action. Increased trips, if they occur, will occur in locations that either are managed for high use destinations, or can sustain a higher level of use. These include allowing for incremental increases to Anona (+1), Fern (+2), King Creek (+4), Minaret (+1), Badger (+1), Summit (+2), Alger (+4), Clark (+1), Rosalie (+2),

Shadow Creek (+4), and Thousand Island (+2). More significant increases are allowed for Deer Lake (+5), Johnston (+6), Waugh (+5), and Island Pass (+5). These increases are balanced by some significant decreases in use. Areas where use will be reduced include Superior (-6), Emily (-8), Gem (-8), Clarice (-4), Ediza (-6), and Laura (-3). Superior, Ediza, and Laura will be monitored and if trail conditions improve, incremental increases may occur over the length of the permit.

Overall, in this area there will be a decrease in all-expense trips. All-expense trips remain the same for the Rush Creek packer. This packer currently runs primarily all-expense trips between designated camps. Packers that travel through the area from Mono creek are reduced from their recent high by over 15 trips. These types of trips typically access Yosemite National Park over Donahue Pass. There will be a net reduction in trips accessing the Park and there may be improved conditions at campsites and grazing area as a result. The beneficial effects of this reduced use will likely be moderate with less frequent use of sites. There would be fewer encounters with pack stock generally on this corridor as a result, with minor increases in opportunities for solitude, since other users will still frequent the area.

Packers may adjust by accessing the Park to the west and coming back through Upper Rush. This is not expected but without further controls on use in the Park this may occur.

Conditions in the Rush Creek drainage will likely remain the same. No additional adverse effects to wilderness character are expected.

There will continue to be heavy stock use, up to 1,000 head of stock on this trail a season, most of that July and August with an intense peak the first two weeks of August. Designated camps at Alger, Clark below Waugh Dam, Waugh, Marie Meadows, and Davis Lake will continue to see use. The condition of these sites will possibly not change and they are already considerably denuded of ground vegetation, soils are compacted and the areas of use including holding areas are well defined. The perimeter of these sites will be contained. Access to the Waugh site will be stabilized to prevent further erosion. By doing this the site will be hardened and stable and capable of handling the level of use prescribed.

Thousand Island Lake and Garnet Lake could see slight reductions in use. The operator who frequents Garnet on all-expense trips is being reduced in their all-expense trips. In addition, grazing will be eliminated that is typically needed and associated with the all-expense trips. It is possible that there will be less packer activity at these destinations. Only one stock camp will be approved at Garnet and the camp and grazing along the use trail from Garnet to Emerald will not be authorized for packer use. Over time, with a major source of disturbance removed, the natural conditions of this trail, meadow, and stock camp will improve. However, that could take up to twenty years unless management takes actions to facilitate restoration.

Thousand Island Lake will remain a high use area for pack stock. The level of use is consistent with its designation as a Recreation Category 3. There will be no growth in services to this area. Most packer trips here are spot and dunnage via the High trail, so use on that trail will remain at levels similar to today, about 700-800 stock a year.

Badger Lake could see a slight, probably unnoticeable increase in packer use. Opportunities for solitude are low to moderate. The location is not a desirable location for most of the public as most of the public goes on to the spectacular and scenic Thousand Island Lake. Stock use at this destination is probably more suitable than Thousand Island as sites are hardened and screened.

The designation of a stock camp here would further protect the total area of the campsite from expanding and reduce the proliferation of stock camps that has occurred with past use. With grazing being limited to 19 stock nights, there may be fewer trips holding stock than is occurring currently.

In the Shadow-Ediza unit, use will remain at current levels, with up to 300-400 stock per year. The common destination is Ediza Lake and use to this destination will be reduced until trail conditions improve to the camp location at the inlet of the lake. Until this improvement occurs, stock use will be reduced by 4 trips a year or up to 50 fewer stock. This high use area will remain high use and the prescribed packer use is consistent with the Recreation Category 3 desired conditions. There will be low opportunities for solitude along the main corridor but some of the outlying areas, such as Iceberg, Cecile, Laura, Cabin and Nydiver Lakes will have moderate to high opportunities for solitude and very few encounters with commercial pack stock. Iceberg-Cecil trail impacts will continue even though stock use will not be authorized and has not been the contributor to the current condition. The condition of the Iceberg Trail will likely not improve until substantial rehabilitation work occurs.

Use in the Minaret unit will not change from current levels; however, it will be distributed differently. Use will not be allowed to Emily until the trail is improved. This may be up to ten years out, possibly longer. In the interim public use will continue and there will be high opportunities for solitude. When, and if, packer use resumes to Emily there will be no more than eight trips authorized. A designated stock camp will contain impacts and the expansion of the site. The capacity at the lake is low and other parties camped there would be within sight and sound of another party. There will be no change to other destinations in Minaret. Packers have identified Deadhorse Lake as a destination; however, there is no recorded use. In this alternative use would be denied, thereby increasing the chances that Deadhorse would remain pristine with very high opportunities for solitude. The public can and will continue to be able to access this destination and it could receive more use by the public over time. The character of the destination may change over time if use patterns were to change, however it is not likely that use patterns of the public will change and prohibiting commercial pack stock use increases the chance that no change will occur.

In King Creek, use will distribute to areas that can sustain the stock use. Up to 500 stock have used the area in the past and it is predicted that that number will decrease to 300 stock a year with this alternative. Trips to Superior Lake will be reduced from 14 to 8 until the trail is improved. When the trail and the campsite are contained, packer use will be allowed to resume. Use to Anona and Ashley will need to be monitored to insure conditions do not deteriorate with allowing the current use leave to continue. Campsite improvements would occur by implementing standards for designated sites. At Fern Lake, a party size limit will insure that the size of campsites do not increase. The lake has a low capacity for campsites. By limiting the party size, opportunities for solitude will increase. This small lake is infrequently used by the public because it lacks some of the outstanding character that other destinations in the vicinity have. It is therefore an appropriate location for packer use by reducing conflicts with other visitors.

Holcomb Lake will have up to six trips a year. A relocated site will insure that past impacts do not persist. It is doubtful that a trail will be rerouted to the upper grazing area and packer use will probably be light. The probability that further change would occur is low. Public use is moderate to this destination, altogether there will be moderate opportunities for solitude, and conditions will likely continue to improve.

Deer Creek is identified for increases in use in this alternative. The area receives primarily only pass-through use by the public and is a good location for packers to avoid conflict with the public. Although the prescribed use effectively increases the potential for packer, it is not a highly desirable area. It will probably reach the quota only in response to hunting season requests and game quotas for the unit. This is not likely to occur on an annual basis, but perhaps once every few years at most.

Cumulative Impacts

The high level of continued commercial combined with high private day and overnight use will not improve opportunities for solitude at many locations, including Thousand Island Lake, Garnet Lake, Shadow Lake, Ediza Lake, and along the Pacific Crest and John Muir Trails. This type and level of use has been high for over thirty years. Past actions of limiting overnight use (see Alternative 1 Cumulative Effects), and putting in place site-specific closures to camping and campfires, and grazing limitations, have all helped to improve the natural character of the area by reducing physical impacts. Such actions also can diminish the freedom and unconfined nature of a wilderness experience. Additional actions of the alternative, the grazing restrictions at Garnet, trail restrictions at Ediza, designated campsites and direct controls on how many trips to each location all will likely result in gradual improvements of conditions by insuring sites do not get overused and impacts are contained and concentrated.

Holcomb has improved in the past few years by closing the packer site at the inlet. This site still has evidence of heavy past use but the stream channel adjacent to the camp has improved considerably. Continued improvement would occur with this alternative by not allowing use to the site or to the grazing area (past the campsite) until or unless a more appropriate trail location is identified. It is expected that the incision through the meadow will not recover without physical mitigation, even with removing the commercial pack stock use.

As stated in Alternative 1, the dams at Waugh, Agnew, and Gem are a non-conforming use in wilderness. The presence of these structures diminishes the wilderness character of the area. The presence the structures, the on-going maintenance needs that will continue in this alternative and the fluctuation of the water levels have an effect far greater on wilderness character than the recreational uses (see Alternative 1 discussion).

Public use in the Reds Meadow area has a growing cumulative affect on wilderness resources in this region. Developed campgrounds and the development of the town of Mammoth Lakes attract visitors that seek wilderness opportunities, especially day use. The level of day use not controlled and has an affect on solitude and crowding within the 10-15 miles of trailheads in this area.

Ansel Adams East – Alternative 3

Analysis

In this alternative, trailhead quotas and stock and client thresholds will limit overall numbers of people but not specifically to any location. This increases the probability for use pattern changes. It is possible that where currently stock numbers are low, there could be a shift in patterns and commercial stock use could increase at site-specific locations. This has the potential to change the character of some destinations particularly those that are low use and currently show few resource impacts.

Areas where single quota trails regulate use will have a higher potential for commercial stock use to be maintained at current levels. No stock use will be authorized to Glacier, Gibbs, and Bloody Canyon Analysis Units except on a case-by-case basis. While no commercial stock use currently goes to these locations, commercial stock use is currently not prohibited. With a stock number of zero, it effectively prohibits future use except a rare possibility of infrequent use. There is a very low probability that use patterns in these areas will change or that any effect to the character of these areas would occur. These areas are low use and opportunities for solitude are very high. Public use is limited by low quotas, which protect these areas from use pattern changes by the public as well.

In this alternative, Rush Creek stock numbers remain consistent with average current use for Rush Creek. It is not likely that the character of the area will change from present conditions with this alternative. Growth in services can only occur within the seasonal limitation on stock numbers. Daily limits will prevent high spikes in use but will generally allow current patterns to continue. This will mean that use will generally be concentrated in a five-week period from the end of July thru the first week of September. The Rush Creek drainage is mostly within a Recreation Category 3, and use will remain high, with a continued commercial stock around 35 percent of total use. Encounters with commercial riding and pack stock will be frequent along the primary trail corridor. The only use trail approvals will be for hunting access in Crest Creek.

A party size restriction at Weber Lake will be implemented with this alternative, same as the proposed action, 10 persons and 20 stock. This will insure that campsites do not increase in size, as camping is currently limited with small capacity sites. Stock holding would be allowed with a designated site identified. It is possible that with stock holding there would be an increase in impacts and a larger area of impact at Weber. There could be diminished opportunities for solitude and minor to moderate adverse impacts to natural conditions at the lake with an increased area of impact. No grazing is associated with this destination so it is likely that the destination will be used primarily for spot and dunnage services. The area will continue to be depleted of firewood unless packers pack in firewood for clients. If wood is depleted it could be site specifically closed to fires in the future. Special allowances at stock camps in this alternative would result in inequities described above.

Upper Rush Creek destinations, Davis Lake and Marie Lake could receive more use than presently occurs. Use to these destinations currently is a part of full service trips with associated grazing. This pattern will probably remain. Campfires, which are currently prohibited at Marie, will be allowed at the stock camp with wranglers present. Allowing campfires will have the potential to cause conflicts between user groups and non-compliance by the public though generally no other campers are near the Marie Meadow campsite.

The Upper Rush unit will continue to be a location of overlapping pack stations. Overlap that occurs in trips accessing Yosemite National Park will continue unless the park makes a determination to reduce this use. Whereas these trips were reduced in the Proposed Action, there would be no controls on this since levels of use are managed at the trailhead, by seasonal stock numbers and no service day allocations would effect the length of the trip and no internal controls would affect the spatial movement of the service once they have entered the wilderness. Unless Yosemite National Park was to control the use over the boundary, there would be a possibility that use would increase along this corridor. This trail is highly developed and would possibly support the use although maintenance and reconstruction would need to increase. Encounters between hikers and stock may be more frequent if traveling trips increase but it is

currently a high use corridor and would be consistent with desired experiential conditions of a Recreation Category 3. Pressures on grazing resources would be likely if all-expense trips were to increase. If packers were to pack in feed as a substitute for grazing, more stock would be needed to support the operation. At this point, the seasonal stock numbers may become a slight deterrent for this use.

River High Analysis Unit will continue to have a high level of stock use. Use will be primarily accessing destinations in the Thousand Island Analysis Unit and to a lesser extent Summit Lake and Clark Lakes where some occasional overlap in operators will continue. Encounters between stock and hikers (day and overnight) will be frequent, especially late July through August. Occasional use during hunting season will be authorized to San Joaquin Peak. This use would be infrequent and would likely not have any effects on solitude. Opportunities for solitude would continue to be high off trail and would possibly stay moderate to low on the trail with this alternative. This is consistent with a Recreation Category 2.

Thousand Island Analysis Unit is accessed via the River High Analysis Units where stock numbers remain high, with a combined limit of 830 head of stock via the closest trailheads. Again, here there will be opportunities for overlapping operations as described above due to the popularity of trips accessing Yosemite National Park. Stock camps at Thousand Island and Garnet Lake will concentrate that use and grazing will be limited so operators will either choose to pack in feed choose to reduce these types of trips. If competition for camps and/or grazing resources exists or becomes accentuated a future action may be to limit the number of operators traveling to Yosemite. Opportunities for solitude will be low to moderate, as they are currently, at these locations. The scenic qualities of these locations tend to minimize expectations for solitude or pristine experiences.

Allowing commercial pack stock to Altha Lake may have some impacts over time. The trail is steep, narrow and the capacity at the destinations is very low. Opportunities for solitude may be diminished if use were to increase to this area. If use remains low and infrequent it is expected there will be no change.

Shadow Ediza unit will be managed for 280 stock nights a season from the Shadow trail. This is a 20 percent reduction in stock from recent high years (365 stock in 2002). Some additional use may occur as a result of traveling trips circuiting through adjacent units, entering the High trail and exiting via the John Muir trail that accesses the Shadow Ediza unit. Use will concentrate in the Shadow corridor and Ediza but has the potential for shifting some use to Nydiver Lake, Cabin Lake without direct controls on those destinations. The Nydiver system trail is proposed to be upgraded in this alternative to TC2. The cumulative effect may be to facilitate more commercial stock use and public use to Nydiver. This may affect the wilderness character of the area, which presently is remote and experiences very low use, and is a Recreation Category 1. Laura Lake would be limited to two trips a year, thereby insuring that the trail deterioration is limited. Use to Clarice would be prohibited in this alternative, reducing the potential for this trail to facilitate use and change use patterns by either the public or commercial pack stock. Pack stock use to the upper reaches of this drainage will be closed, including to Iceberg Lake and above Ediza. Trail impacts will likely continue at these locations until needed restoration work is done. This is not expected to occur for 10 to 15 years. The identification of two stock camps in this corridor will improve existing sites that have on occasion been used to hold stock and are not suitable. The site at the junction of the John Muir Trail will be identified for spot and dunnage or full expense trips with no holding of stock. Only one site in this drainage will be used for the

overnight holding of stock. All other services will be spot and dunnage. This may reduce the opportunities for traveling trips or all-expense trips to be utilized in this area. With this area being a heavily used location for day hiking and backpacking, this will help reduce crowding. There will still be low to moderate opportunities for solitude as a result of the combination of high commercial stock, day hiking, and backpacker use.

Minarets Analysis Unit will maintain a low to moderate level of stock use. Seasonal stock totals from the JMT north and Minarets trailheads total 240. This is slightly higher than reported stock numbers the past few years, but amounts to a 15 percent potential increase. This area is suitable for increases as the capacity for camping is high; crowding is low as use levels are low compared to surrounding analysis units. There would be one stock camp designated in this corridor where any overnight holding of stock in the drainage would take place. Concentrating use would insure that impacts would not be extensive. Use would be concentrated along the main trail corridor, which is designed and durable for stock use. It is possible that this drainage would receive some overflow use resulting from traveling trips that need an alternative stop to Thousand Island, Garnet Lakes, and Upper Rush Creek.

Stock number limits in the King Creek Analysis Unit will reduce stock levels from recorded use levels the past few years. This reduction is less than 10 percent. Multiple destinations are accessed from the Beck and Fern and Minaret trailheads and even with stock limits in place on each trailhead, use can shift to another trailhead (i.e. from Fern to Beck) to access the other destinations. This will allow use to shift trailheads without necessarily having a direct effect on the intended destinations.

Party size limitations will be implemented for the commercial packer at both Fern and Anona Lakes. Both these destinations have limited capacity for camping and with 10 persons/ 20 head of stock limit it will insure that sites do not expand and impacts are contained. Stock camps at Ashley, Anona Holcomb, and Superior will also contain impacts associated with holding stock in the backcountry. Under the current management regime (Alternative 1 – No Action), stock camps could be created and multiple stock camps at these locations are possible. At Superior Lake, the designation of a stock camp and the implied access standards will improve the current access trail issues at the inlet of Superior Lake. This short use trail to the campsite will likely be improved and made durable within the first few years of implementation.

Access to grazing at Holcomb (particularly on the south side of the lake) poses many constraints for sustainable pack stock use as the trail goes through a meadow to access the grazing. Relocation of the trail is neither feasible nor likely to occur. This will affect the packer's ability to graze in the analysis unit and may lead to packing in feed or an adjustment in type of service provided to more spot and dunnage and less full service trips requiring the overnight holding of stock.

Cumulative Impacts

The presence of dam structures at Waugh, Gem, and Agnew diminishes the wilderness character of the area. The presence of the structures, the on going maintenance needs, and the fluctuation of the water levels have an effect far greater on wilderness character than the recreational uses in this area. (See discussion in Alternative 1, Ansel Adams East, Wilderness Resource).

Public use in the Reds Meadow area has an increasing cumulative effect on wilderness resources in this region. Developed campgrounds and the development of the town of Mammoth Lakes

attract visitors that seek wilderness opportunities, especially day use. The level of private day use, (not controlled) has an affect on solitude and crowding within the 10-15 miles of trailheads in this area. Actions in this alternative do not increase day rides for commercial pack stock, despite the demand. The effect will be to insure that commercial stock use does not contribute to crowding and diminishing the wilderness experience. Present use is not controlled in the same way and, contributes to moderate adverse cumulative effects on solitude and to the natural conditions. (See discussion in Alternative 1, Ansel Adams East, Wilderness Resource).

Past site-specific closures in the region have affected use and impact distribution. This alternative would prevent further dispersal of use into areas not already impacted and suitable for pack stock impacts. It is not expected that impacts would become more intense or extensive in this alternative however, they will persist at locations where use has already caused impacts. Such impacts are minor long-term, local effects to natural conditions.

Many past management actions in the Shadow Lake area to respond to high levels of private and commercial use going back forty years (see Alternative 1 – cumulative effects). Nothing in this alternative would reverse the trend towards continued improvement and recovery.

A campsite at the inlet of Holcomb was closed to packer use in 2000 due to severe impacts. This had the effect of displacing use to the other side of Holcomb, but greatly improved the inlet area. Substantial recovery of the access (creek crossing) was noted in 2003 as a result of removing the disturbance. Commercial pack stock use would continue to be prohibited at the campsite in this alternative and use of the trail to access grazing would be prohibited insuring that the trail impacts do not deteriorate because of the commercial stock use. The trail will need physical mitigation to recover natural conditions.

Ansel Adams East – Alternative 4

Analysis

At four of the six commercial trailheads, accessing destinations in the Ansel Adams east region the quota is slightly reduced. This, combined with the 20 percent reduction in service days will reduce the overall amount of commercial pack stock throughout the season and possible more than 20 percent if access is being limited during the peak season. Commercial use will either spread into July and September, or be reduced if this shoulder season cannot be utilized. As a result, there will be minor beneficial local effects to solitude and probably only negligible beneficial local effects to natural conditions with the implementation of this alternative, since other uses will continue to have some degree of disturbance to the same areas.

Shadow, the High Trail, JMT North, and River Trail trailheads are reduced by a total of 14 persons a day collectively. Without direct controls on where this use disperses to, the controls will have a positive effect on the destinations that most need the improvements. Thirty-two destinations will be authorized for commercial pack stock services, compared to the only limitations in Alternative 1, 2, and 3 being achieved by trail suitability determinations. These destinations will likely receive more use with crowding and low opportunities for solitude. Most of these locations are in settings where the desired condition allows for more intensive management in Recreation Category 3 and along main trail corridors of Recreation Category 2. This would be within the standards and guidelines for these areas. By concentrating the impacts, there would be a loss of some experiential wilderness values at these relatively few locations.

There will likely be improvement to the destinations where commercial stock currently occurs and ecological impacts will be diminished over time with the removal of commercial stock.

Only two use trails would be approved compared to eight in Alternative 2 and Alternative 3 and twelve in the No Action, Alternative 1. Many bypasses and access to grazing would no longer be approved. The biggest effect would be to limit access to locations that are currently more remote and less impacted, thereby achieving a beneficial effect of protecting these from receiving disproportionate impacts that may occur with even low levels of stock use. Destinations such as Clarice, Cabin, Nydiver, Sullivan, Upper Davis Lake, and Marie Lake are examples of these types of locations.

Cumulative Impacts

See discussion in Alternative 1 – Cumulative Effects Ansel Adams East on Waugh, Gem, and Agnew dams. Any beneficial effects to wilderness character (solitude, natural conditions) will be limited in comparison to the adverse long-term effects to wilderness character (untrammelled, natural, and undeveloped) that occurs with the presence of these structures.

Present non-commercial use levels will contribute to effects in the same areas where use is being prohibited, reduced or where the commercial pack stock use is allowed to continue. The added effects will be negligible to minor adverse local effects to solitude and natural conditions.

With commercial pack stock use being concentrated at fewer locations, it is possible that the other user groups disperse to new locations to avoid camping where heavy commercial use is occurring. Destinations such as Thousand Island, Garnet, Ediza, and Shadow will continue to see high levels of overnight and day use, and day use levels are expected to increase in this region due to the ongoing development of the Town of Mammoth Lakes.

The additional restrictions in this alternative on where commercial pack stock services can go, the substantial food storage requirements in this area, and the considerable limitations on campfires that were put in effect with the Wilderness Plan all contribute to an overall loss of freedom and unconfined type of recreation that wilderness visitors desire.

Trips to Yosemite National Park may increase without corresponding regulations on use from the Park. Increases in trips may equate to increase in impacts if use occurs in new locations or expands existing impacts.

Although commercial stock use will be prohibited at many destinations currently used by the operators, private stock use is not being limited nor is public hiker use into these areas. It is possible that use patterns from these user groups could shift over time and impacts associated with moderate levels of hiker use to remote locations such as Clarice and Marie, could lead to both ecological impacts and loss of solitude and changes to the existing wilderness character. Low levels of private stock use, particular at vulnerable times in the season, (e.g., early season) could have as much if not more of an impact than low levels of commercial use.

Ansel Adams East – Alternative 5

Analysis and Cumulative Impacts

The northern portion of this analysis unit currently receives no commercial pack stock use. The remainder of this unit receives moderate to high commercial pack stock use currently. The high

stock numbers currently recorded in the Rush Creek, Thousand Island Analysis Units will be eliminated in this alternative, and only light stock use may occur. However, due to the very steep trail from Silver Lake to Agnew Lake with precipices and drop offs, it is not expected that many private stock parties will travel in this area.

Cumulatively, there will be a moderately noticeable change in recreation impacts and use levels in this geographic area as the majority of the use is private hikers, “thru” hikers on the JMT/PCT and day hikers. However, there will be some location specific effects that may be noticeable and measurable.

Thirty three percent of the use on the Rush Creek trail is commercial pack stock use. With the elimination of this use, the lower Rush Creek area would likely receive very low use and opportunities for solitude would be very high. However, the low wilderness character due to the manmade dams would not change and overall experiential values would be only partially affected with the elimination of commercial pack stock.

Upper Rush Creek would likely see little noticeable difference, as stock encounters are only moderately frequent. This area does see overlapping operators that travel through on the JMT/PCT on their way into Yosemite. This area receives a very high amount of visitor use traveling on the JMT/PCT but very light use on trails stemming from the JMT. This condition would not change in this alternative.

Thousand Island and Garnet Lakes will see slight effects to overall use levels and impacts as a result of eliminating commercial pack stock. The highest year of recorded use in the past four years showed 70-90 trips to Thousand Island by primarily one commercial operator, just under 300 people and 700 head of stock. This is a high level of stock and with elimination of commercial pack stock, there would be a noticeable experiential difference, primarily in the month of August, when much of this use takes place. Thousand Island is used as a stop on traveling trips by one other operator, which provides some overlap operation. This level of use is a small percentage of the overall use at this very popular destination.

The River and River High units are primary used as travel through to destinations in Thousand Island and Shadow/Ediza. Encounters with commercial stock use are currently very high especially in the month of August. This is a crowded area with day hikers, backpackers, and pack station operations. There would be a noticeable difference in the number of encounters with stock in this area. Trails would not need to be constructed to as high a level as currently constructed. There would be very little effect to campsites in this area since this is only a pass-through area.

The Shadow/Ediza unit will decrease from just over 300 head of stock per year to none. The character of the area will improve in regards to trail conditions. Trails will not need to be built to a very high standard and may over time be more primitive, and less substantial in their development features which would enhance the character of the area, by providing a more primitive experience. Cabin Lake and Laura Lake will likely become more remote with higher opportunities for solitude. Ediza and Shadow Creek Corridor will remain very popular with high use from the non-stock visitor.

Minaret unit will decrease from 50 to 100 visitors a year serviced by commercial pack stock and under 200 stock used in conjunction with this service to none. Pack stock does not go to Minaret Lake but stops just below the final switchbacks to the lake, so impacts at the lake will likely not

be changed. One stock site in the corridor that is used by the packers may improve over time, but generally, there will not be a noticeable change. Encounters with commercial pack stock are relatively low in this area and a change would be only slightly noticeable to a very few visitors if commercial pack stock were eliminated. Trail development would not be needed in the future and the trail may revert to a more primitive condition.

Currently packers primarily use five destinations in this unit: Superior, Ashley, Anona, Holcomb, and Fern. Less than 200 visitors a year are serviced by commercial pack stock and 300-500 stock are used in conjunction with the service. These destinations receive light use by other visitors and would become more remote with the absence of the commercial service. Campsites at these destinations would also improve, particularly at Anona and Superior, where large sites with stock holding facilities would become more contained as campsite work is done to restore and minimize the disturbed area. This would likely take a number of years to see any noticeable difference, but with the removal of the disturbance, natural restoration would begin to occur the first year. Very little private stock use occurs at these locations. Sites that are currently used by the packers would be contained but maintained for stock use. The size of the site could be greatly reduced and still accommodate private stock parties.

Very light commercial stock use occurs in the Crater Creek unit. Less than 100 stock and people are serviced by packers. The Deer creek area is the primary destination and with the use and impacts currently very light, the noticeable effect of eliminating this use would be minimal. Encounters with stock parties are infrequent currently and the experiential effects of this change would be minimal to most visitors.

Campsite impacts will improve in some locations. The sites used by commercial pack stock for holding stock overnight will decrease in size; soil disturbance and vegetation loss will be diminished and over time may recover to a near natural condition. It is not expected that these sites will receive much continued use by the general public and not in a manner that they are currently being use. Stock holding areas are neither desirable nor suitable for tent sites or communal areas for camping. In particular, sites at Shadow Creek, Garnet Lake, Rosalie Lake, Anona, Superior, Holcomb, Davis Lake, Marie Meadows, Clark Lakes, and lower Rush Creek may see noticeable improvements in campsite conditions.

Ansel Adams West – Alternative 1

Analysis

Commercial pack stock use will be concentrated in 10 of 19 analysis units in this geographic unit. Most use is concentrated in the northern portion of the unit. Commercial pack stock use is authorized for all the trailheads in this geographic unit, but little is likely to occur in nine of the analysis units. Fuller Buttes, South Fork, Arch, Onion Springs, Lower Mono Creek, and Hot Springs units would only be used by commercial packers for some hunting and occasional day use rides. Use is so infrequent that impacts will not be noticeable unless the commercial packer chooses to change their use into these locations. This is not expected since there is no attraction or popular destination that may draw this use.

In general, trailhead quotas for this geographic unit will be utilized less than 10 percent of the days/season of use. Because trailhead quotas combine with service day limitations for commercial pack stock operations in this alternative, it is highly unlikely that commercial pack-stock use patterns will be altered substantially within this region.

The Chiquito Analysis Unit is and will continue to be used only as a travel route to destinations in Yosemite National Park. No stops or day rides occur within the project area. Use is controlled by the trailhead quota of 35 persons a day including both commercial and non-commercial use. In 2003 the quota, which is shared by all users, was reached only 1 percent of the days in the use season.

The Jackass Analysis Unit would probably continue to receive low levels of commercial stock use even though a specific commercial quota of eight persons a day is identified for the packer. Full commercial quota was reached on 10 percent of days in the 2003 season, which is almost entirely attributable to non-stock commercial use. The packer will likely use their service day allocation on more preferable and popular locations. Yet the possibility does exist in this alternative for more use to occur and for flexibility for the packer to use Jackass more than they currently do. This is likely only to have minor long-term local effects to natural and experiential conditions, if it were to occur, with the potential for new impacts to be created with campsite use and more crowding than currently.

Staniford Analysis Unit will continue to see moderate levels of commercial stock use. The trailhead quota specifically for commercial pack stock (Fernandez Trailhead) is eight persons per day. In 2003, the commercial pack stock quota was fully utilized 14 percent of the season. This trailhead accesses many popular destinations. The 2001 Wilderness Plan identifies a portion of the unit as a Recreation Category 3. Because trailhead quotas limit use to this unit, it is unlikely that historical commercial pack-stock use patterns would shift to the areas identified as Recreation Category 3 in such a way as to substantially alter the existing conditions adversely. For example, the plan would allow for more use by all wilderness visitors at Lady, Vandenburg, and Staniford Lakes based on the definition of Recreation Category 3. Opportunities for solitude could be diminished over time at Lady, Vandenburg, and Staniford Lakes. The multiple trailing into Staniford Lake with a substantial cutoff trail used by the packer to access sites at Staniford Lake would probably continue since no existing system trail can provide access to these camps. Chittendon, a remote destination with no evidence of stock use or impact is available for packer use in this alternative, and minor to moderate impacts to solitude may occur if use were to increase in this area, given the low capacity of the destination.

The Lillian Analysis Unit will continue to see moderate to high stock use with this alternative. The trailhead quota specifically for commercial pack stock (Fernandez) is eight-persons per day (in addition to eight persons per day for any commercial use through the Walton trailhead). In 2003, the commercial pack stock quota was fully utilized 14 percent of the season on the Fernandez quota. Because trailhead quotas limit use in this area, it is doubtful that historical commercial pack stock use patterns would shift to currently lightly used areas like Flat, Monument, and Fernandez Lakes. Stock camps at Flat Lake and the multiple stock camps at Fernandez Meadow will likely continue to show a high degree of development and expansion over time.

The Triple Divide Analysis Unit will continue to have a low level of commercial stock use. Less than 20 people and 50 stock have used the area with commercial operations the past few years. This area is also accessed by the Fernandez trailhead (eight commercial pack stock clients/day) and the Walton trailhead (eight any commercial clients/day). Impacts would persist both at the stock camp at Anne Lake and in the grazing area north of Anne.

Sadler Analysis Unit has the highest level of stock use in this geographic region and up to 300 commercial pack stock per year will continue in this alternative. Most of the use is concentrated at Sadler Lake even though multiple destinations are accessible to the packers in this alternative. The trailhead quota specifically for commercial pack stock (Isberg) is nine persons per day. In 2003, the commercial pack stock quota was fully utilized 11 percent of the season. Pack stock services could disperse to Joe Crane and Isberg Lakes but will be at the demand of public and are not predictable. Stock camp impacts at Sadler and Joe Crane would persist in this alternative.

Use will continue to disperse in low to moderate levels throughout the Bridge Crossing, Iron Creek, Cargyle, Cassidy, and Junction Analysis Units. There will be low levels of people serviced by commercial packers and low to moderate stock numbers associated with the use. It is expected that no additional trails or campsites will be used and impacts therefore are not expected to increase to any measurable degree with this low level of use.

Cumulative Impacts

The past action of camping closures has had the effect of dispersing use and impact to other areas while directly improving the closed sites. The full closure to camping at Rainbow Lake for example, may have displaced use to Flat Lake where some concentrated impacts are noticeable. Rainbow has recovered with considerable re-vegetation of the shores where camping impacts had been. Lillian, as noted is now receiving intensive impacts in the area not closed to camping.

Cattle grazing in the Lower Mono area will continue to impact the natural and untrammelled characteristics of wilderness in this area, even though an increase in commercial stock use or private use is not expected.

The structures in place that dam the waters of Lillian, Rutherford, Chiquito, and McClure have an effect on wilderness character of the area. These structures impede the natural processes and represent human development within the wilderness. Most do not currently serve any function. This development has minor long-term adverse effects on wilderness character (natural, untrammelled, undeveloped) at these locations, but is minor relative to the dams in the Ansel Adams East.

At Lillian Lake, the combination of current commercial use (pack stock and hiking operators), public use, camping restrictions, and the dam at the outlet do have a cumulative effect on the wilderness character of the destination.

An effect on Yosemite National Park by the pack station use and public use occurs from the Chiquito trailhead. Use from this trailhead enters the Park and concentrates in the South Fork of the Merced River drainage, mostly Chain Lakes and Royal Arch Lake. The trailhead quota that has been in effect for about ten years has reduced the potential for spikes in use and may be improving the social conditions at the destinations in the Park as a result. Actions by the National park Service to cap use has been consistent with the 2001 Wilderness Plan.

There is a considerable amount of non-stock commercial outfitter guide use in this region. It is common for these permitted non-stock outfitter guides to utilize commercial pack stock operators to provide food supplies and search and rescue services. In most cases, non-stock outfitter use authorizations would continue to be authorized on an annual basis. Some of these outfitter guides qualify for 10-year permits.

Wood resources at Rutherford Lake are scarce and depletion of scarce wood resources may affect ecological processes. A reasonably foreseeable action may be to site specifically limit campfires at this location based on scarcity of firewood.

Ansel Adams West – Alternative 2 – Modified

Analysis

Overall, in this region up to 266 trips to 28 discrete destinations or zones would be managed for commercial pack stock use. As with all other locations, it is not likely that destination quotas would be reached on a recurring annual basis. Some destinations might reach their limit, but others would not reach their limit. With stock limitations (stock at one time in the wilderness) there is an effect of limiting the use of stock to levels consistent with current and past use levels. Only in areas where no known concerns existed or where risks were low for unacceptable stock related impacts was use increased above use levels experienced under current management. Many locations in this region were capped or even reduced to encourage an upward trend in resource condition. These are listed below.

Overlap in commercial pack stock services will remain minimal. Three operators use this region with some traveling trips from additional operators 1-2 times/year. Some years there are no traveling trips. These traveling trips access the region by way of Yosemite National Park. If use is allowed to increase in the Park over time, this pattern might change, but that is not likely. Some overlap will continue to occur but is mostly limited to the Chiquito Analysis Unit. The majority of the region will have only one operator for the destinations.

In the Staniford Analysis Unit, two destinations would receive a moderate amount of commercial stock use. A reduction in use to Lady Lake will likely have the effect of maintaining moderate to high opportunities for solitude. With limited capacity for camping and outstanding experiential qualities and setting, the reduced use will ensure that impacts that are more intensive do not occur over time. Commercial stock use is increased at Vandeburg Lake in order to concentrate impacts at a less vulnerable and more sustainable location. Impacts at Vandeburg will be locally intense with moderate effects to solitude, physical resources, campsites, and trails. The Vandeburg and Lake areas will be changed from a Recreation Category 3 to Recreation Category 2, which appropriately reflects the current use and observed impacts. This change will ensure that the current experience levels will be improved or at least maintained.

Staniford Lakes will continue to see moderate use and the potential for minor to moderate effects to solitude with the limited camping potential and campsites being within sight and sound of each other. The effects of continued moderate use will be minor effects to the physical resource, as the campsites are well defined and suitable for moderate levels of use. Access to the campsites will remain awkward as no access from the south and east end of the lake is authorized. This will reduce the effects of trailing stock through steep terrain and riparian vegetation and improve the natural qualities at the destination.

Chittendon, with its trail suitability determination that limits use to the lake, will maintain high opportunities for solitude. Use limitations on the commercial pack stock will have beneficial effects on the trail and destination by preventing stock related impacts to the limited capacity destination with high risk factors (riparian).

The Lillian Analysis Unit will have moderate to high levels of use concentrated at Lillian Lake. There will be low to moderate opportunities for solitude as a result of limited camping imposed by a camping closure around a portion of the lake. Although the effects of commercial stock use at Lillian Lake may be moderate intensity, the other destinations (Flat Lake, Monument Lake, Fernandez Meadow, and Fernandez Lake) in this area will receive only occasional and light commercial stock use. In these locations there will be moderate to high opportunities for solitude with commercial stock use having only minimal effect on those conditions. Stock use will be most noticeable on the trail, and trailing impacts may have the most effect on a visitor's experience. Even so, this level of experiential effect is minor to moderate compared to other portions of the wilderness. Opportunities for solitude while camping, other than at Lillian Lake, will be high.

Triple Divide (Anne Lake and Rutherford Lake) will have low levels of commercial stock use. These areas are light public use and packer facilitated use will likely not change the character of these two locations. A prohibition on campfires at Rutherford Lake will reduce impacts associated with gathering firewood and have beneficial impacts to natural conditions by increasing the potential for scarce dead and downed material to add nutrients to the soils. Campsite impacts are noticeable because of the limited number of places to camp. This will not change. Limited pack stock use will prevent contributing to camping impacts.

With direction to limit trips to Sadler Lake, allowing continued use or increase use to McClure Lake, the impacts at Sadler Lake may be reduced. Moderate effects to opportunities for solitude and natural conditions will be present at Sadler Lake with continued commercial pack stock use. The existing impacts will be mitigated by designating an appropriate campsite and rehabilitating the existing site. This will have moderate beneficial effects to natural conditions at the lake. The destination quota for the Joe Crane unit would be capped at existing levels. This scenic destination could become more popular over time and impacts to solitude or experiential qualities may be affected if use were to increase. The location has limited camping and campers are within sight or sound of each other. Any effect to solitude because of the commercial pack stock use would probably occur only four to eight nights a season.

Cora Lake Analysis Unit would continue to experience high use. This use would be mitigated by commercial pack stock campsite management needed to reduce the heavy impacts associated with camping. Commercial pack stock is a small percentage of this use. Capping commercial use would aid in maintaining wilderness character, but will not guarantee wilderness values will be unaffected with continued high non-outfitted public use. Chetwood unit is a location where growth in commercial pack stock use could be realized. It is a suitable location for stock but does not contain the scenic qualities many wilderness visitors desire.

The Cargle Analysis Unit would continue to receive light use and moderate to high opportunities for solitude would be preserved.

Light and infrequent commercial pack stock use would continue in Bench Canyon, Iron Creek, Bridge Crossing, Fuller Buttes, South Fork, Arch, Onion Springs, Lower Mono, and Hot Springs Analysis Units. The only recent recorded commercial pack stock use has been to pass through these areas and that will likely continue. Prior to 2001, there has been infrequent camping use in some of these areas. The effects of this use are considered minor adverse effects to physical conditions (particularly trails) and short-term. With non-commercial public use very low in this areas effects to the experiential qualities (solitude, use conflicts, crowding) would be minimal.

Cumulative Impacts

There are no cumulative adverse effects as a result of this alternative in the Ansel Adams West Geographic Unit. Past actions of camping closures at Lillian, McClure, and Sadler Lakes have led to a concentration of use into small areas around the lakes. The additive allowances for commercial use at these destinations will not contribute to any additional affects above those already present, specifically a loss of solitude while camping and a sense of crowding at these destinations. The past camping closure at Rainbow Lake has caused a dispersal of use and impacts to Flat Lake, and continued commercial pack stock use is allowed for in this alternative. The dispersed use resulting from the closure may have had an adverse effect on Flat Lake. Increasing use and camping impacts at the lake are evident. The action in this alternative to designate a stock camp for use will reduce the impacts of camping at Flat Lake, not contribute to more effects.

Cattle grazing in the Lower Mono area will continue to affect the natural and untrammelled characteristics of wilderness in this area, even though an increase in commercial stock use or private use is not expected.

The combined actions of closures and trailhead quotas on commercial operators (2001) added to the limitations on where camping can occur (designated campsites) of this alternative have an adverse effect on the wilderness value of providing unconfined recreation opportunities to a sector of the visiting public. It also has the positive effect, when combined with limitations on overall use levels by commercial pack stock, on the wilderness value of minimizing human influences in this region.

Allowing for continued and concentrated use in specific areas has an effect on the wilderness value of naturalness by maintaining impacts to site-specific locations. However, concentrating the use, and impact, protects less used areas in the wilderness from receiving dispersed impacts across a larger area. These areas also receive moderate levels of non-commercial use (specifically Cora, Sadler, Isberg, Lillian, Vandeburg, and Staniford Lakes). These combined uses will have a potential to maintain impacted levels at campsites and on trails. There is not likely to be an increase in the extent of the effects, but possibly just a minor to moderate increase in the intensity of impacts.

The human influence noticeable by the dam at McClure Lake, and less noticeable with the smaller water control dams at Lillian and Rutherford Lakes, has an effect on the untrammelled and undeveloped qualities of wilderness character. There are no comparable effects from actions in this alternative that affect these elements of wilderness character.

Ansel Adams West – Alternative 2

Analysis

Overall, in this region 28 discrete destinations or zones would be managed for commercial pack stock use. There would be a potential increase of 65 trips to these 28 locations. As with all other locations, it is doubtful that these destination quotas would be reached on a recurring annual basis. It would, however, allow for fluctuations of client demand. Because of the daily and seasonal cap on total number of stock per commercial operator, if the entire quota were used it would be used with the same level of stock that has currently serviced less trips. Only in areas where no known concerns existed or risks were low for unacceptable stock related impacts was

use increased above use levels experienced under current management. Many locations in this region were capped or even reduced to encourage an upward trend in resource condition. These are listed below.

Overlap in commercial pack stock services will remain minimal. Three operators use this region with some traveling trips from additional operators utilizing this region 1-2 times/year. Some years there are no traveling trips. These traveling trips access the region by way of Yosemite National Park. If use is allowed to increase in the Park over time, this pattern might change, but that is not foreseeable. Some overlap will continue to occur but is mostly limited to the Chiquito unit. The majority of the region will only have one operator for the destinations.

Much of the growth potential may never be realized. Although suitable for additional commercial pack stock operations, it is not likely that growth would occur in those areas that have not been historically desirable to visitors. For example, the Bridge Crossing and Cassidy units are low elevation, are hot and dry in the summer season, and have few, if any, water sources. Fire restrictions may even be in effect at these low elevations during high fire danger years.

In the Staniford Analysis Unit, there would be a shift in use to Vandeburg, where there is growth potential. There would be a reduction of commercial pack stock use at Staniford Lake until, and if, a trail is improved to the campsites used by commercial pack stock parties in Alternative 1. A use trail to Staniford that bypasses the system trail would be prohibited reducing the moderate trail damage now occurring. Concentrating the use may increase encounters with stock on the trail but will concentrate the impacts caused by stock travel. Improved access at Vandeburg will similarly concentrate the impacts (compared to Alternative 1, trail encounters with commercial pack stock parties are expected to increase) and generally improve the conditions in the area, stock camps will be designated and a proliferation of campsite development will be curbed. Camps here are well impacted but have many structures, including benches and tables that will be removed in the first few years as a condition of use. The campsite closure at Lillian has caused camping to be concentrated to the other side of the lake with poor trail access to these sites. Improved access will help this situation. This will have minor long-term local beneficial effects on wilderness character (natural conditions).

Limits on trips to Flat and Monument lakes will insure that use does not grow and change the character of these destinations over time. Use had been displaced from Rainbow to Flat lakes with the closures in the 1970s; impacts were also displaced. Capping use everywhere in this area will prevent displacement of commercial pack stock to new areas.

Triple Divide will see a little growth potential at Anne and Rutherford. These areas are light use and packer facilitated use will likely not change the character of these two locations. Firewood is scarce at Rutherford and may need to be addressed in the future. Camping is limited here and campsite impacts are noticeable because of the limited number of places to camp. This will not change. Packers could choose to pack firewood into this area for the clients staying here to help alleviate the need for a fire closure in the future.

Packer use in the Sadler unit would be capped at recent high levels. This unit is the most popular unit in the Ansel Adam West Geographic region for private stock users. Though commercial pack stock camps would be designated, it is unclear if a reduction in the heavy impacts associated with these camps would noticeably decline. One campsite would be closed and/or relocated if needed. Relocation would insure that the site is in an appropriate location suitable for

stock camp. The destination quota for the Joe Crane unit would be capped at existing levels. This scenic destination could become more popular over time. Limiting commercial pack stock use would aid in maintaining wilderness character and intimate setting, but will not guarantee wilderness values would not be affected over time with increased use.

Cora Lake unit would continue to experience high use. This use would be mitigated by commercial pack stock campsite management needed to reduce the heavy impacts associated with camping here. Commercial pack stock is a small percentage of this use. Capping this use it would aid in maintaining wilderness character, but will not guarantee wilderness values would not be affected over time with increased use. Chetwood unit is a location where growth in commercial pack stock use could be realized. It is a suitable location for stock but does not contain the scenic qualities many wilderness visitors desire.

Light and infrequent commercial pack stock use would continue in Bench Canyon, Iron Creek, Bridge Crossing, Fuller Buttes, South Fork, Arch, Onion Springs, Lower Mono, and Hot Springs. The only recorded commercial pack stock use has been to pass-through these areas, that will likely continue.

Cumulative Impacts

Cattle grazing in the Lower Mono area will continue to affect the natural and untrammelled characteristics of wilderness in this area, even though an increase in commercial stock use or private use is not expected.

Past actions of camping closures at Rainbow, Lillian, Cora and Sadler lakes, trailhead quotas on commercial operators (2001) combined with the additional limitations on where camping can occur (designated campsites) of this action have an adverse effect on the wilderness value of providing unconfined recreation opportunities. It also has the positive effect, when combined with limitations on overall use levels by commercial pack stock, on the wilderness value of minimizing human influences in this region. The past action (2001) of closures to campfires above the 10,000-foot elevation combined with the opening of these same areas to campfires by one user group has the effect of creating inequities in opportunities and regulations to user groups. Allowing for continued and concentrated use in specific areas has an effect on the wilderness value of naturalness by maintaining impacts to site-specific locations while protecting less used areas in the wilderness from receiving dispersed impacts across a larger area.

Ansel Adams West – Alternative 3

Analysis

Commercial stock use in the Chiquito unit will continue to pass-through the Ansel Adams Wilderness into Yosemite National Park at a use level similar to current activity.

The Jackass unit will continue to have a low level of stock use, up to 25 stock a year. Private stock use recorded in this area has been up to 20 head a year. Overall use is low to moderate but trailhead quotas in place for the public allow for growth in use consistent with a Recreation Category 2 area. Commercial stock use will be concentrated at Jackass Lake and will not likely exceed more than five trips a year. The client threshold has been set at 20 clients per season. Opportunities for solitude will continue to be moderate depending on which lake in the basin is used.

Staniford unit will be changed to a Recreation Category 2 from a Recreation Category 3. This change from the No Action will mean that over time the area will not be managed as intensively and that use levels will be kept at a level that assure that intense management is not needed which is consistent with its current condition. With use levels currently moderate, there does not seem to be a need to apply direct controls at Vandenburg or Lady Lake destinations. Use in the Staniford unit will be most concentrated at Vandenburg Lake, Lady Lake, and Staniford Lake.

In this alternative 480 stock per year can disperse from the Fernandez trailhead and an additional 25 from the Walton trailhead to Staniford, Lillian, and Triple Divide Analysis Units. Client thresholds are set at 285 and 60 per season respectively. About half of this use will be limited to the Staniford unit and half into the Lillian unit. Very low use will continue into Yosemite National Park and the effects of this use will continue to be minimal on the Park. Lady Lake will maintain a more remote setting and character than Vandenburg as it is off the primary trail, if current commercial stock levels are maintained. Up to 18 trips have been recorded in one year. Opportunities for solitude can be diminished with more than one party camped there due to the setting that has limited camping out of sight or sound of other parties. With no stock camps identified at Lady Lake, commercial stock use will be spot and dunnage only reducing the opportunity for all-expense trips to this destination that may have the potential to change the character of the destination. Vandenburg receives a high level of public use and shows moderate impacts that will persist with camping associated with the public use. Commercial stock use will contribute very little to this condition.

Staniford Lake will continue to receive a moderate level of commercial stock use that will be limited to spot and dunnage only as no stock camp is designated. Travel to the lake along a use trail that is being used in the No Action will be prohibited in this alternative. This will reduce noticeable impacts caused by commercial stock use but will require a new user trail or system trail to be identified to suitable campsites at the lake. Opportunities for solitude will continue to be moderate and at times low throughout the summer. Camping at the lake is limited and sites are out of sight from one another but not sound. It is a suitable location for larger groups, but these larger groups tend to be packed in by pack stock and have the potential for affecting solitude. This is a popular location for other non-pack stock outfitters and guides and this use will continue to be facilitated by commercial pack stock support. Chittendon could potentially receive more stock use than Alternative 2 or 4, as the trail is not identified as Not Suitable for Commercial Stock. However, commercial pack stock rarely goes to Chittendon now, and due to the nature of the trail, increased use would not be anticipated in the future. If for some reason, use did increase the potential to affect the character of the area and the opportunities for solitude with lack of direct controls could change.

Lillian Lake unit will continue to have moderate levels of commercial stock use. The use will continue to be concentrated at Lillian Lake, with lighter use at Flat Lake, Fernandez Meadow and occasional use at Fernandez Lake. Opportunities for solitude will continue to be low to moderate at Lillian. The past action of closing the northeast side of the lake to camping has had the effect of concentrating campsites in one general location within sight and sound from one another and extending a use trail around the lake, which is poorly located and not designed for any substantial level of use. With designated sites for spot and dunnage as required in this alternative, there will be less dispersing of commercial stock trailing. This has the effect of reducing noticeable impact to the character of the area that would be caused by uncontrolled stock travel to new campsites, as there is a need to find more secluded un-impacted sites than

currently exist. Flat Lake will continue to see occasional commercial stock use. A designated stock camp will improve the condition of the stock sites that have a high degree of campsite development.

Fernandez Meadow will have occasional use and with identified stock camps and grazing resources available, stock camp standards will reduce the current impacts of campsite development and expanding areas of impact from the holding of stock in various configurations at these sites. Trail impacts at the junction will persist unless future management actions are taken to relocate or improve the trail. The Fernandez Lake will continue to receive infrequent commercial pack stock use.

Commercial stock use in the Triple Divide unit does have the potential for increasing in this alternative. With the opportunity to expand traveling trips, use to Anne Lake with a designated stock camp may be desirable for all-expense trips. With grazing resources available, and the ability to pack in feed, it is possible that use at Anne Lake could increase. Opportunities for solitude would be lowered if this were to happen. The camping capacity is low with campsites not out of site or sound from one another. Rutherford Lake would have a designated spot and dunnage site only, prohibiting traveling trips from this destination.

Use in the Sadler unit would be controlled primarily by the Isberg stock quota of 510 stock per season or 310 clients. The highest amount of stock use in this unit will continue to occur at Sadler Lake and Joe Crane Lake. The designation of stock camps at Sadler will reduce current impacts occurring in the No Action alternative with highly impacted sites, high campsite development, and expanding camp area due to configurations of stock holding. However, due to the relatively high use of private stock in these areas, impacts from holding stock will continue to occur. There will continue to be moderate opportunities for solitude at these locations and when stock parties are camped a potential for a sense of crowding and loss of solitude if other parties are camped. Camping capacity is minimal and sites will continue to be within site and sound of each other. Other parties may be displaced to other locations when stock camps are present.

The Cora unit will have no increase in commercial stock use with use controlled by the Isberg trailhead. Use will probably disperse out to the Sadler and the Lake Catherine units, but without direct controls could concentrate more intensely at Cora if commercial, demands change. Campsites at Cora will continue to be highly impacted, and will likely not change because of this alternative. Opportunities for solitude will continue to be low to moderate and the setting is such that campsites are within site and sound of each other.

The Bench Canyon unit will have no commercial stock use authorized. The use trail currently approved in the No Action alternative will be prohibited, eliminating any capability of accessing Rockbound Lake with stock. This will increase the opportunities for solitude at the Recreation Category 1 destination.

Other areas accessed by the Isberg trailhead are Hemlock Crossing, Stevenson meadow and upper Dike Creek in the southern portion of Lake Catherine unit. Up to 200 commercial pack stock per year may be utilized in these three destinations. If use patterns shift between Sadler and Lake Catherine units use could increase to the southern portion of the Lake Catherine Analysis Unit. The area has very low public use and opportunities for solitude will continue to be moderate to high with this level of commercial pack stock use.

The Bridge Crossing and Caryle units are accessed by the Mammoth trailhead, which has a seasonal stock threshold of 105 stock. A significant amount of the commercial pack stock use in these areas is related to hunting. There are few attractions for the public (lakes etc.). Some of the commercial pack stock use in the Caryle unit comes from the Mammoth area, especially during hunting season. Commercial trips are occasionally taken to Junction Butte for fishing in the San Joaquin River. Overall, the opportunities for solitude remain very high in these units except during hunting season.

The Cassidy unit, including the Cassidy and Miller trailheads, will have low to moderate commercial stock use primarily to Cassidy Bridge and Miller Crossing providing spot and dunnage service only, as no designated stock camps are identified at these locations. Up to 80 stock seasonally will be allowed from the Cassidy trailhead, and 55 stock from the Miller trailhead. This will maintain conditions of low use and high opportunities for solitude in this unit.

The Junction unit will see low to infrequent commercial stock use and a high opportunity for solitude by all visitors will be retained consistent with a Recreation Category 1 area.

Use in the Arch unit will also see low to infrequent stock use and a high opportunity for solitude.

Onion Springs will have a seasonal quota of 25 stock maintaining low and infrequent commercial stock in this area. Most use will be associated with hunting and may not occur every year. The area is remote with high wilderness character, and high opportunities for solitude that will not be affected by this low allowance for commercial stock use.

Cold creek is a pass-through area with use traveling through to the Devils and Graveyard unit. The Graveyard cutoff is also used as a pass-through area with to access Graveyard Meadow, Graveyard Lakes, and Goodale Pass. Multiple trailing exists in this area due to range cattle. Day ride use is also in this area. Cold Creek will see moderate opportunities for solitude, and character will be affected by moderate to high traffic on the Goodale Pass Trail.

Lower Mono creek area is used primarily for day rides. The public uses this unit for day hikes to Doris and Tule lakes. Opportunities for solitude will remain moderate at Doris and Tule lakes, and will remain high in the rest of this area, where use by all parties is light.

Cumulative Impacts

Cattle grazing in the Lower Mono area will continue to affect the natural and untrammelled characteristics of wilderness in this area, even though an increase in commercial stock use or private use is not expected.

The resource impacts on the Graveyard Cutoff, Devils Bathtub, and String Meadow trails can be primarily attributed to the fact that they were originally constructed as four-wheel drive routes.

Ansel Adams West – Alternative 4

Analysis

In this alternative, no quotas change from Alternative 1 No action. There would be a change in the overall level of commercial services due to the overall 20 percent reduction in allocated service days. The 20 percent reduction would have no direct effect on any one location. There is the probability that the reduction would be dispersed across the destinations and that some

improvement to campsites and trails may occur with a reduction in one source of disturbance. Limits on trail use would have more effect than the reduction in overall use. Only 5 of the 18 use trails in this geographic region would be authorized for use. Three system trails are designated as not suitable for commercial stock. This limits the geographic extent of commercial pack stock operations and has a more direct effect on the wilderness than overall use reductions.

Commercial stock use in the Chiquito unit will continue to pass-through Yosemite National Park with no overnight stops. Stock numbers can be expected to be the same as in Alternative 1. If other wilderness visitor use does not change, conditions at Staniford, Lillian, Vandeburg, Anne, Rutherford, Sadler, and Cora may experience some slight reductions in crowding and produce minor to moderate beneficial short-term effects to wilderness character (opportunities for solitude).

Overlap in commercial pack stock services will remain minimal. Two operators use this region with some traveling trips from additional operators utilizing this region 1-2 times/year. Some years there are no traveling trips. These traveling trips access the region by way of Yosemite National Park. If use is allowed to increase in the Park over time, this pattern might change, but that is not foreseeable. Overlap will continue to occur mostly in the Chiquito unit. The majority of the region will only have one operator for the destinations.

No commercial pack stock clients would be allowed to camp at Monument Lake or Joe Crane Lake. This would produce short-term beneficial effects to some aspects of wilderness character (solitude, natural conditions with a disturbance source removed). It will also have adverse long-term effects to some segments of the public's ability to access these areas without commercial pack stock.

Light and infrequent commercial pack stock use (only dunnage or spot trips) would continue in Iron Creek and Bridge Crossing units. No camps or dunnage, spot or full service trips would be authorized in Fuller Buttes, South Fork, Arch, Onion Springs, Lower Mono, and Hot Springs units. As the only recorded commercial pack stock use has been to pass through these areas, this limitation should not limit clients from choice. Unless non-commercial pack stock use increases in these areas, opportunities for solitude should be high.

Light commercial pack stock use would continue in Cassidy, Cargyle, and Junction units, with less than 50 clients and 100-200 stock in each unit per season. This use pattern would continue and is not expected to effect a change in wilderness character, or opportunity for solitude.

Cumulative Impacts

Past actions of camping closures at Rainbow, Lillian, Cora, and Sadler Lakes, trailhead quotas on commercial operators (2001) combined with the additional limitations on where camping can occur, group size reduction, trailhead quota reduction, and use and system trail closures have a negative effect on the wilderness value of providing unconfined recreation opportunities.

See discussion in Alternative 1 regarding the cumulative effects of the small dams at Rutherford, Lillian, Chiquito, and McClure Lakes. The cumulative effects will be the same in this alternative.

Cattle grazing in the Lower Mono area will continue to affect the natural and untrammelled characteristics of wilderness in this area, even though an increase in commercial stock use or private use is not expected.

If other wilderness visitor use does not increase and/or wilderness ethics behaviors do not decline, this alternative would likely have a minor to moderate beneficial long-term effect on wilderness character (solitude, natural conditions). Uses will continue and one disturbance source is reduced in extent and intensity of use, but other uses will continue and actually may increase, limiting the beneficial effects of actions to one user group.

Ansel Adams West – Alternative 5

Analysis and Cumulative Impacts

This geographic unit (GU) currently receives about 10 percent of the overall commercial stock use in the two wildernesses. Most of the use occurs in the northwest portion of this GU, with very light use elsewhere. The biggest effect of eliminating commercial pack stock use would be in the northwest analysis units. Overall use by hikers and private equestrians would continue and without commercial pack stock operations, the area would see up to 3000 people in the summer months. A high proportion of the use is non-pack stock outfitters, some of which utilize the commercial packers for dunnage services. It is unclear whether some of the current non-stock outfitters would be able to continue their services to mostly young people and families without the dunnage service.

Commercial pack stock use is heaviest in Staniford, Lillian, Triple Divide, Sadler, and Cora Analysis Units. Any measurable change compared to Alternative 1 would occur site-specifically in these areas. Trails in this region are rough and are not highly developed. Trails accessing popular commercial pack-stock use sites may revert to trails that are more primitive and may have the effect of improving the experiential values in wilderness.

Vandeburg Lake will still receive a high amount of use from the public, commercial pack stock operators have reported at most four trips to this lake in recent years. Three commercial pack stock use trails in the area would no longer be used and are likely to re-vegetate in time.

Lillian Lake would likely remain as popular as it is today. Use would be reduced by 50 people and 150 stock. Although the effects to these destinations would not singularly have much affect by the elimination of pack stock, cumulatively there would be nearly 500 less stock on this trail corridor.

Light commercial pack stock use but a moderate amount of public use occurs over Fernandez Pass into Yosemite National Park. Changes to this area would not be noticeable.

In the Triple Divide unit, commercial pack stock operators currently service parties to Anne and Rutherford lakes. By eliminating a couple trips to Rutherford, there may be improved opportunities for solitude as this destination has a small capacity for camping and being open (few trees) is vulnerable to experiential disturbances. Anne Lake receives some use and a large site used by packers at the north end of the lake would likely be reduced in size and impact over time.

The most noticeable changes in this geographic unit would likely occur at Sadler and Cora Lakes. Currently about 14 trips and 140 head of stock utilize this area each summer at Sadler and similar numbers at Cora. Three large stock camps (private stock users frequent these camps as well) at Sadler show signs of impacts from stock holding and large parties. Cora Lake has some highly impacted sites (including some with evidence of stock holding). The sites have been heavily and repeatedly used by all types of wilderness visitors (only a portion of which are

commercial pack stock clients). Without commercial pack stock use, these sites would probably be reduced in size over time, and rehabilitation or naturalization efforts could lead to overall visual and ecological improvement in the area. Cora would still receive a high amount of use; by eliminating a portion of the use, some improvements would likely occur. Since most of the use occurs in August, fewer encounters with commercial pack stock may improve the opportunities for solitude at Cora and Sadler.

Destinations such as Joe Crane, Isberg Lake, and Rockbound Lake and other remote destinations would only be affected slightly by the elimination of the commercial pack stock operations since they use these areas infrequently.

Fish Creek/Convict/McGee – Alternative 1

Analysis

Pack stations will continue to use over 35 destinations in this alternative. Destinations are not controlled in this alternative so new locations could be used or shifts in intensity or frequency of use of any destination could occur over time. With shifts in intensity or frequency of use there could be localized adverse short to long-term effects to wilderness character (natural conditions) if impacts to campsites, expand, or become more severely affected. Short-term adverse effects to solitude could also occur at any destination where use increases.

In the Convict drainage, pack station use will be limited by competing for the single quota. This could however continue to allow for growth in their activities in this drainage. Shifting destinations within the drainage could lead to additional impacts. Commercial pack stock use to Cloverleaf, if it were to increase, would likely see additional erosion of the trail. Opportunities for solitude could become compromised. The existing quota of 10 will probably help maintain moderate to high opportunities for solitude generally throughout the drainage. The annual operating plan specifies that pack stock use cannot go beyond Dorothy Lake so use and stock impacts to Mildred, Bright Dot cannot occur in this alternative. Short-term minor adverse effects to solitude and longer term minor to moderate adverse effects to natural conditions are possible at Cloverleaf Lake if trail deterioration continues. .

McGee Canyon will be an area of high commercial pack stock use and very high stock numbers. Day rides in the lower portion of the canyon will contribute to additional encounters with stock parties. Use to the various destinations will likely continue to be dispersed, with regular use of the Round Lake site. Access to this site could deteriorate without any improvements required at campsites. Use to Baldwin, though occasional now, could increase with no direct controls and trail deterioration would be expected. Use to Meadow Lake (east of Golden) is prohibited and over time with removal of disturbance, the impacts of the trail will possibly re-vegetate. Access to the California Conservation Corps (CCC) camp will likely continue to degrade.

Coldwater will continue to see very high stock passing through to Duck Pass. Use to Woods Lake can occur and could increase if operators choose to either market that location or if visitor demand led to a shift in patterns. Increased use would be appropriate from a Recreation Category 3 view, but the trail and campsite would show impacts of even light stock use. Day rides will continue to contribute to the high encounters between parties and a sense of congestion. Crowding will be present throughout much of the summer season.

Purple-Bench unit will continue to have very high levels of commercial stock use as trailhead quotas (15 per day) allow for a high level of commercial stock use. The Purple Lake area will see a high concentration of use with commercial stock being a dominant presence. Use of multiple trails into camps and between camps will likely continue, and conflicts where the system trail goes through a large stock camp will continue to cause confusion in this area for the public. Grazing, though limited in the past few years from intensive site-specific management, will possibly show some recovery and then receive use again. Intensive management of the packer use will be needed into the future if the levels of use from the past continue. There will continue to be confusion with the elevation fires closure, with some sites above and some below 10,000 feet in the same area. Firewood has been scarce but the surrounding forest is productive and downed wood sources vary year to year.

Upper Fish will get moderate levels of stock use. Horse Heaven, the Lee and Cecil junction, and Tully Lake will receive repeated use, though light to moderate. The trail to Lee and Cecil will get used for spot and dunnage trips only yet this continued use will not allow for much recovery of the substantially damaged trail. Use to Tully Lake will continue with access issues that will likely not get resolved and perpetuate the multiple trails into the area. If commercial stock use levels were to increase as they could in this alternative, Tully Lake could exceed standards for a Recreation Category 1 area. Crowding and diminished opportunities for solitude would be possible with any increase in use to this destination. The stock camp at Horse Heaven will continue to have a high impact but will not likely increase in size from its present total area.

Cascade Valley will be an area of moderate stock use. Management of grazing resources at Third Crossing, Cascade Valley, and Second Crossing will greatly dictate the level of commercial stock use that would overnight in the area as opposed to just pass-through. Stock camps at Third and Second Crossings will continue to be noticeable and, especially at Third, somewhat intrusive to the visitor passing through on the trail. Crowding and encounters between hikers and stock will only be high in the Cascade Valley and Iva Belle areas. Iva Belle hot springs will continue to see degradation with pack stock contributing to the impacts by facilitating access to the area. Trailhead quotas are currently not limiting use, and commercial stock use accounts for up to 30 percent of the use in this area. Commercial pack stock use could, under current management continue to grow.

Silver Divide will continue to see a high level of commercial stock use, concentrated at Grassy Lake and Jackson Meadows. Commercial stock destinations will fluctuate over the years with some years Grassy getting more use, other years Jackson, and this past year Long Canyon. Packers tend to both adjust to the conditions of the year and competition with other packers in the area, all which vary year-to-year. There are few limits on grazing currently and management of grazing will likely respond reactively to impacts. Stock camps will continue to expand and proliferate as Silver Divide continues to be a desirable crossroads of multiple pack stations, used for traveling trips and two-day spot and dunnage trips, both requiring overnight holding of stock.

Margaret and Onion Springs will each have a trailhead quota, which could increase the use at Margaret lakes. Commercial pack stock use will probably continue to be the primary use with up to 50 percent of the use by the commercial pack station, but the overall use is very low. Destinations are not limited and pack station use could disperse to multiple destinations in the basin. Opportunities for solitude will likely be high unless the area does see use pattern changes and becomes more desirable for visitors than it currently is.

Cumulative Impacts

Past grazing of pack stock at Lee and Cecil has possibly contributed to the severe impacts along the trail corridor. Grazing was suspended in 2002 operating plans but travel to Lee and Cecil was allowed to continue. There has been some improvement with the reduction in use but impacts remain severe. The grazing suspension will likely continue under this alternative, thereby removing the potential for cumulative effects.

Past grazing of pack stock at Second Crossing was suspended in 2002 due to concerns and severity of impacts. This led to a shift to other grazing resources west of second crossing up to Cascade Valley. The shift in grazing has minor short-term adverse effects locally to natural conditions.

Cascade Valley has been closed to grazing for nearly twenty years. This closure led to dispersal to other areas for grazing, such as Grassy and Jackson. With no corresponding reduction in grazing use will shift and has possibly contributed to the impacts becoming severe at Grassy and Jackson. Continued grazing contributes to moderate long-term adverse effects to natural conditions at these meadows.

The Mammoth Lakes basin is the source of considerable day use activity that has a cumulative effect on the permitted activities including backpackers and stock users. All these uses contribute to crowding and loss of solitude north of Duck Pass and at Duck and Pika Lakes. Minor to moderate adverse effects to solitude will be a cumulative effect with on going commercial packs tock use as managed in this alternative.

The camping closure that was implemented at Purple Lake in the early 1980s had the effect of moving use from the outlet of Purple to Purple Lake. This improved the area around the outlet but may have had the effect of increased crowding at sites on the north of the lake and conflicts between pack stock and hikers camped in close proximity to each other.

The northeastern portion Fish Creek drainage is identified as the Sierra National Forest but is administered by the Inyo National Forest. This action, which has been in effect for over thirty years, has had the effect of creating discontinuity for administering the wilderness. Funding the administration of this piece of land has been low priority for both Forests and at times has not received attention or management. This has contributed to impacts not being addressed or mitigated in a timely fashion.

Fish Creek/Convict/McGee – Alternative 2 – Modified

Analysis

In Fish Creek, an estimated 1600 commercial stock were used in the past in conjunction with spot, dunnage and all-expense trips. Under this alternative, there will be a net decrease of at least 300 stock and a 46 percent reduction of the number of all-expense trips from Mono Creek to Mammoth and Yosemite. The effect of this will be fewer encounters with commercial pack stock, potential reductions or improvements of campsite impacts with fewer occurrences of use of the sites, and an overall increase in opportunities for solitude. The use that would continue would have minor to moderately intense adverse effects to naturalness (at campsites and on trails) and minor to moderate effects to recreation experiences, both would be short-term. These effects would be limited in their extent, which would be the beneficial effect of destination quotas limiting the frequency of use to destinations.

Designated campsites for overnight holding of stock will have a moderate long-term beneficial effect in areas on the Silver Divide (Grassy Lake, Jackson Meadow, Long Canyon, Olive Lake) by reducing the overall extent of impact that can occur with stock holding camps. With the Silver Divide being at the crossroads of west side and east side packers, as well as multiple packers traveling through on the PCT/JMT, the concentration of these impacts will have some beneficial effects. The concentration of impacts may create intensive effects to vegetation, soils, the potential depletion of firewood resources and human waste concentration.

In the Convict drainage, there will be two operators, both with low use. There will be a very slight reduction in use. Use will be limited to Cloverleaf Lake with a party size limit that responds to concerns on the trail to lake. Use will likely disperse to Edith Lake, which is more suitable for pack stock with many large camps that are well screened, protecting opportunities for solitude while camping. The public use is very low in the upper part of this canyon where commercial pack stock use will be authorized. There are many impacts from periods of higher use in the past. The designation of specific use trails and site-specific system trail designations should afford the area improved character within ten years. The extent of impacts will decrease and natural conditions will see a minor to moderate long-term beneficial effect.

There will be moderate to high commercial stock use concentrated within the McGee Canyon trail corridor. Lower levels of use to Baldwin Lake and moderate levels of use to Steelhead Lake and Grass Lake will contribute minor to moderate adverse effects to the trail system and minor effects to recreational experiences. Collectively this canyon will see the noticeable effects of moderately heavy stock use on trails and very few campsites. Improvements to campsite access at Round Lake, “CCC Camp,” and Big McGee Lake will occur over the first five years. The most noticeable effect will likely be experiential with encounters with stock occurring on a regular basis from mid July through August. There will have an adverse effect on those visitors who do not enjoy encountering stock and stock impacts, but will be short-term and of moderate intensity.

The same level of day rides will occur in McGee Canyon with improved turnarounds that will help reduce some localized impacts. This use will contribute to some crowding and encounters on the first two miles of trail inside wilderness, but not beyond. The effects are limited in extent and short-term, however negative the effects of day rides are to another visitor’s experience.

The Coldwater Analysis Unit is used primarily as a pass-through for commercial pack stock use. Only one destination, Woods Lake will experience overnight commercial stock use. The level of use is consistent, in fact low, for a Recreation Category 3 area. This lake has very high opportunities for solitude despite its location within a very high use area for backpackers, day hikers, and anglers. This condition, the high opportunities for solitude at Woods Lake and the high public use, will probably not change. There is a moderate to high level of day rides conducted in this area. Trails that are not stable, suitable or may further use conflicts are not authorized for day ride activities (Sky Meadow and Emerald to Skeleton). There will still be a high presence of stock throughout the basin. This is consistent with a Recreation Category 3.

The Purple-Bench Analysis Unit will continue to see high stock use. Up to 500 stock currently use this unit, mostly concentrated at Purple Lake. There will probably be up to 100 less stock in this area with the reduction of all-expense trips from Mono Creek to Mammoth, and with this reduction in overlapping operators there may be fewer encounters with stock. Designating three campsites at Purple will not change current patterns, but the sites will be contained and access

improved within five years. The current practice of using any number of use trails to travel between campsites and to grazing areas will be eliminated. Effects will be restored slowly over time. This will however increase the encounters on the main trail around Purple Lake.

The allowance for campfires through a modification of the elevation campfire closure will reduce confusion occurring presently with some sites above the 10,000 feet and others below. The area is on the borderline of the elevation closure and dead and downed wood sources vary year to year. It is possible that campfire rings will proliferate in this area. The campsite at Purple Bench, used primarily for traveling trips may get less use and the access to the site will improve.

The number of trips in Upper Fish Creek has the potential to increase but with a similar number of stock. A slight increase in encounters with stock parties is possible. This area has moderate to high opportunities for solitude and it is not expected that this increase will change the character of the area. Non-commercial use in the area is low and dispersed over a high number of possible destinations. Encounters would likely be limited to the trail.

Use will be limited to Tully Lake through a party size limit that corresponds to the capacity of the destination. This will prevent the site used by packers from increasing and will protect the area from changing character if use patterns were to change.

Packer use to Lee and Cecil Lakes will not be authorized. Impacts to the trail system will likely improve over the next ten years with the removal of pack stock use on the trail. Opportunities for solitude will increase and should be very high. The wilderness character and experience will improve in this area.

Horse Heaven will remain a destination for packer use and the site that is currently impacted and used will probably not improve, but will not degrade. The site is well screened and opportunities for solitude will remain moderate even with occupied sites. Designated sites at Point Camp, Sheep Camp, and Hilton Camp will prevent further proliferation of stock camps. Access will improve and the sites will be contained.

Cascade Valley will have the potential for a slight increase in commercial pack stock use. This increase is identified for Cascade Valley above Iva Belle Hot Springs and for Tully Hole. Both of these areas can sustain more use as the trail access is on a primary trail. Encounters with the public may increase.

Conditions at Iva Belle will be improved by the prohibition of spot and dunnage drops at the hot springs. Spot and dunnage trips can be taken to Sharktooth Creek camp, ¼ mile below the hot springs. This will help prevent the overuse of the hot springs by not providing service directly to the site. It is expected that parties will bring less equipment, supplies, and food if they have to walk the last ¼ mile. A designated stock camp at Sharktooth Creek will formalize the use of a site that has been used for years. Improved access and site containment will lessen impacts. Iva Belle Hot Springs will continue to have high use, a small percentage of which is supported by packers. Opportunities for solitude are low and the experiential values are mixed. The area is unique and heavily impacted. Most visitors do not seek solitude or pristine conditions, but seek the modified environment of hot pools designed for soaking. This condition will not change.

Silver Divide will be an area with a high level of overlapping operations. Up to 300 stock per year currently use the area. This will likely be reduced by at least 150 stock by reducing the traveling trips through the area (mentioned above). With a condition of a one-night stay limit, the area will see only passing use and will probably improve from present conditions. With the

designation of stock camps at Grassy and Jackson, access improvement and site containments, there will be an end to the proliferation of sites in these locations. General trail conditions may improve over time with less stock but this would be minimal unless trail improvements took place. Peter Pande Lake will have limited use until the trail is improved. Opportunities for solitude will probably remain the same. There will be no effects to the high wilderness character at Peter Pande Lake, Olive Lake, Wilber May Lake and Lost Keys Lake since allowable use levels will be one to six trips a season to each of those destinations. Opportunities for solitude will be moderate to high throughout the Silver Divide except along the PCT/JMT corridor.

Margaret Lakes Basin is a very low use area. Packer use accounts for nearly 40 percent of less than 50 parties that visit the area a season. The primary location for packer spot and dunnage trips is Frog Lake, which has a limited capacity. Other visitors can easily travel further to Coyote, Fern, or Margaret lakes and avoid stock or other parties if they choose to enhance their opportunities for solitude. It is not expected that opportunities for solitude will be affected by the level of packer use in this alternative. The poor trail conditions can potentially affect the experience of visitors in the area and is not likely to improve or degrade with the actions in this alternative.

Cumulative Impacts

Non-commercial visitor use levels in these areas are moderate and dispersed throughout the geographic unit. Most of the use is concentrated along the PCT/JMT trail corridor. The commercial pack-stock use actions in this alternative will have a cumulative effect of contributing to crowding and adverse effects to solitude while traveling on the PCT/JMT corridor. The effects of encounters will be short-term and minor in intensity and overall reduced from current levels as a result of limiting all-expense trips through the area.

Cascade Valley has been closed to grazing for nearly twenty years. This current closure combined with the additional restrictions in this alternative will greatly limit the grazing resources in this area. This may lead to more packing in of feed, to support trips and a possible increase in stock numbers as a result. Stock numbers that increase in one area would have to be reduced in other areas to be within overall seasonal stock limits. The cumulative effect will have beneficial impacts to the natural qualities of wilderness by reducing impacts at individual meadows. The effects can be moderate and long-term.

In 2002, grazing at Lee and Cecil Lakes was suspended through operating plan direction. Travel to the lakes was allowed to continue. With this alternative, no use of this trail will help reduce impacts. These impacts will likely remain severe until restorative work is completed. With one substantial source of disturbance removed, the area will have the appearance of recovery and will look noticeably improved within a few years. Physical mitigation to headcuts and trail incision will be required to affect change on the hydrologic function in the riparian areas impacted by the trail.

The Mammoth Lakes basin attracts considerable day use activity that has a cumulative effect on permitted activities, including backpackers and stock users. All these uses contribute to crowding and loss of solitude north of Duck Pass and at Duck and Pika Lakes.

The camping closure that was implemented at Purple Lake in the early 1980s had the effect of moving use from the outlet of Purple to the north side of Purple Lake. This has led to crowding and conflicts between pack stock and hikers camped in close proximity to each other. Actions

proposed in this alternative will concentrate pack stock to identified campsites, and concentrate and contain sites and trails used by the commercial packers.

Fish Creek/Convict/McGee – Alternative 2

Analysis

Overall, there would be a potential increase of 57 trips to 30 destinations with this alternative. As with all other locations, it is not expected that pack station would reach the destination quotas on an annual basis, this does allow for fluctuations of client demands. If the entire quota was used it would be used with the same level of stock that has currently serviced less trips. In Fish Creek, up to 1600 stock were utilized in the past. Under this alternative, there will be a net decrease of at least 300 stock as a result of reducing the number of all-expense trips from Mono Creek to Mammoth and Yosemite by 46 percent.

Designated campsites for overnight holding of stock will be implemented which will concentrate and contain the impacts associated with stock camps and general improvements will be noticeable within 5 years. This will have a moderate long-term beneficial effect locally by reducing the overall extent of impact that can occur with the stock holding camps.

In the Convict drainage, there will be two operators, both with low use. There will be a very slight reduction in use. More importantly, use will be limited to Cloverleaf Lake with a party size limit that responds to concerns on the trail to Cloverleaf Lake. Use will shift to Edith, which is more suitable for pack stock with many large camps that are well screened which helps protect opportunities for solitude while camping. The public use is very low in the upper part of this canyon where the packers will be authorized. There are many impacts from periods of higher use in the past. With the designation of specific trails where now there are multiple and difficult to follow use trails and incomplete system trails, this area should improve in character within 10 years. The extent of impacts will decrease and natural conditions will see a minor to moderate long-term beneficial effect.

McGee Canyon will see a potential increase of 24 trips with a seasonal limit of 700 stock. The same level of day rides will occur with improved turnarounds required that would help reduce some localized impacts occurring. The increase allowance is identified for the McGee Pass Trail corridor to facilitate spot and more likely dunnage trips, which have low stock people ratios along an already highly developed and sustainable trail. With a potential for more trips with fewer stock-per-party, there may be an increase in encounters with the public. Improvements to campsite access at Round Lake, the CCC camp and Big McGee Lake will occur over the first five years. Campfires that will now be allowed will affect visitor equity issues at Big McGee and Steelhead Lakes. It will be very difficult to achieve compliance with the elevation fire closure in these areas and may lead to further depletion of natural wood sources.

The Coldwater unit is used primarily as a pass-through for commercial pack stock. Only one destination, Woods Lake is identified for light use. This lake has very high opportunities for solitude despite its location within a very high use area for backpackers, day hikers, and angling activities. This condition, the high opportunities for solitude at Woods or the high public use, will likely not change. There is a moderate to high level of day rides conducted in this area. Trails that are not stable or suitable or may further use conflicts are being denied for day ride activities (Sky Meadow and Emerald to Skeleton). There will still be a high presence of stock throughout the basin, but it is consistent with a Recreation Category 3.

Purple-Bench Analysis Unit will continue to see high stock use. Up to 500 stock currently use this unit. This will likely be up to 100 less with the reduction of all-expense trips from Mono creek to Mammoth, and with this reduction in overlapping operators there may be fewer encounters with stock. Designating three campsites at Purple will not change current patterns, but the sites will be contained and access improved within five years. The current practice of using a myriad of use trails to get from camp to camp and to grazing areas will be eliminated and will be restored slowly over time. This will however increase the encounters on the main trail around Purple. The allowance for campfires with packed in wood for clients of pack stations will most likely lead to public non-compliance with the elevation fire closure. The area is on the borderline of the elevation closure but, due to very heavy use over a long period, the wood resources are depleted, yet with the forest still productive the conditions change year to year. It is expected that campfires rings will proliferate in this area. The campsite at Purple Bench, used primarily for traveling trips may get less use and the access to the site will improve.

The destinations identified for use in Upper Fish Creek have the potential to increase by ten trips. This area has moderate to high opportunities for solitude and it is not expected that this increase will change the character of the area. Use will be limited to Tully Lake with a party size limit in place that corresponds to the capacity of the destination. This will prevent the site used by packers from increasing and will protect the area from changing character if use patterns were to change. Campfire use here may lead to non-compliance issues with the public. Packer use to Lee and Cecil will be eliminated. Impacts to the trail system will likely improve over the next ten years with the removal of pack stock use on the trail. Opportunities for solitude will increase and should be very high. The wilderness character and experience will improve in this area. Horse Heaven will remain a destination for packer use and the site that is currently impacted and used will likely not improve but will not degrade. The site is well screened and opportunities for solitude will remain moderate even with occupied sites. Designated sites at Point Camp, Sheep Camp, and Hilton Camp will prevent further proliferation of stock camps. Access will improve and the sites will be contained.

Cascade Valley will have the potential for an increase of nine trips. This increase is identified for Cascade Valley above Iva Belle Hot Springs and for Tully Hole. Both of these areas can sustain more use as the trail access is on a primary trail; however, encounters with the public may increase. Use at Iva Belle will be only slightly lowered. The current prohibition that limits pack stock to within ¼ mile of the spring will be maintained. A designated stock camp will formalize the use of a site that has been used for years, and will improve the access and contain impacts with a setback from water sources. Iva Belle Hot Springs will continue to have high use, a small percentage of which is supported by packers. Opportunities for solitude are low and the experiential values are mixed. The area is unique, yet heavily impacted. Most visitors do not seek solitude or pristine conditions, but seek the modified environment of hot pools designed for soaking and camping. This condition will not change. It is expected that over the next 10-15 years management actions will be needed to reduce impacts and/or use.

Silver Divide will see a potential increase of five spot and dunnage trips. These have been identified to occur at Chief Lake, along the PCT and Long Canyon. Four trips would be authorized to Chief Lake: this is an insignificant increase. Long Canyon would see up to four more trips. It is a remote location that is rarely visited by the public. Campsites in this canyon are suitable for pack stock as they are in forested and well-hardened locations. There is evidence of higher use levels here in the past. The opportunities for solitude may decrease but will still be

high. There may be some displacement of use on all-expense trips to Long Canyon and a reasonable foreseeable action may be to identify grazing allocations to individual operators.

Silver Divide will be an area with a high level of overlapping operations. Up to 300 stock currently use the area. This will likely be reduced by at least 150 stock, by reducing the traveling trips through this area (mentioned above). With a condition of a one night stay limit, the area will see only passing use and will improve, from present conditions. There should be at least one less packer utilizing the area because of the primary operator concept. With the designation of stock camps at Grassy and Jackson, access improvement, and containments there will be an end to the proliferation of sites in these locations. General trail conditions may improve over time with less stock but this would be minimal unless trail improvements took place. Peter Pande will have limited use until the trail is improved, and opportunities for solitude will remain the same. The destination has high wilderness character and gets low use from the public.

Margaret Lakes Basin is a very low use area. Packer use accounts for nearly 40 percent of less than 50 parties that visit the area a season. The primary location for the packer for spot and dunnage trips is Frog Lake, which has a limited capacity. Other visitors can easily travel further to Coyote, Fern, or Margaret lakes and avoid stock or other parties if they choose to enhance their opportunities for solitude. It is not expected that opportunities for solitude will be affected by the level of packer use in this alternative. The trail conditions probably have the biggest effect on the experience of visitors. Trails are dusty with sections of multiple trailing on the western slope approaching Arch rock. The poor condition of the trails is in contrast to the remote and generally low use basin. This diminishes the character of the area. This is likely not going to change with this alternative.

Cumulative Impacts

The past actions of limiting use to all users through trailhead quotas combined with limitations on commercial packers in 2001 that are being modified with this action will have an effect on the commercial pack station client's freedom of choice and the ability to attain a completely unconfined wilderness experience. The action greatly reduces the area of operation and prevents certain locations from exceeding desired conditions. The combined actions of grazing restrictions, limitation on trips and areas of use, controls on the number of stock, party size limitations, and limitations on stays in Silver Divide and Purple Lake will improve the natural conditions of the area by reducing use in areas of concern and preventing use from dispersing to new locations.

Grazing at Lee and Cecil was suspended in 2002 operating plans but travel to Lee and Cecil was allowed to continue. With this action, no use along this trail will help reduce impacts but these will remain severe until restorative work is done. With one substantial disturbance removed, the area will have the appearance of recovery and will likely look noticeably improved within a few years. Physical mitigation to headcuts and trail incision will be required to affect change on the hydrologic function in the riparian areas where the trail has had impact.

Cascade Valley has been closed to grazing for nearly twenty years. This closure combined with the restrictions to grazing in this alternative will greatly limit the grazing resources in this area. This may lead to more packing in of feed, to support trips and a possible increase in stock numbers as a result. Stock numbers that increase in one area would have to be reduced in other areas to be within overall seasonal stock limits.

The Mammoth Lakes basin is the source of considerable day use activity that has a cumulative effect on the permitted activities including backpackers and stock users. All these uses contribute to crowding and loss of solitude north of Duck Pass and at Duck and Pika Lakes.

The camping closure that was implemented at Purple Lake in the early 1980s had the effect of moving use from the outlet of Purple to Purple Lake. This has led to crowding and conflicts between pack stock and hikers camped in close proximity to each other. Actions proposed in this alternative will concentrate pack stock to identified campsites, and concentrate and contain the use of sites and trails by packers.

The northeastern portion Fish Creek drainage is identified as the Sierra National Forest administered by the Inyo National Forest. Funding the administration of this piece of land has been low priority for both Forests and at times has not received attention or management. This has probably contributed to impacts not being addressed or mitigated in a timely fashion.

Fish Creek/Convict/McGee – Alternative 3

Analysis

In this alternative, there would be a reduction in overlap from Alternative 1 in regards to spot and dunnage services. This would result from the limitation on trailhead access defined by the primary operating area guidelines that states that each trailhead quota will have identified operators based on pre-wilderness plan special use permit specifications. This will reduce overlap that has occurred since the wilderness plan as operators have trucked stock to trailheads not historically used. This type of overlap will be eliminated. Overlap that occurs because of traveling trips will not likely be reduced and may increase if operators choose to change to full-service type trips. The use pattern had shifted from full service to spot and dunnage over the last ten years. This resulted from among operational choices, from a trend towards maximizing service day limitations. With the replacement of service days to seasonal stock numbers, this could lead operators to shift towards full service trips. If traveling trips gain popularity because of this, there will be more overlap of operators, especially at locations along popular travel routes such as those from Mono Creek to Yosemite, or Mono Creek to Reds Meadow. Competition for campsites and grazing will provide some limitations to this potential trend.

At Coldwater/Duck, there would be no direct limitations on use or services to destinations north of Duck Pass (i.e., Woods Lake, Skeleton Lake). This is an area where very low stock use occurs except as a travel through to locations south of Duck Pass. This is not expected to change due to a higher demand for services beyond a short distance, but the potential is there. Destinations such as Woods Lake could be affected by increases in use. Currently it is relatively remote compared to the very high and intense use in the rest of the wilderness portion of lakes basin. Although the character of Woods Lake could change, it would be well within the standards and desired condition of a Recreation Category 3.

Purple Analysis Unit would be limited to 450 stock a year. This is a 25 percent reduction in stock numbers from past use (in 2001 over 600 commercial stock were recorded). This will respond to concerns documented of intense impacts at the primary destination associated with this trailhead, Purple Lake. At this location, a number of other actions will combine to reduce the impacts of current/historical stock use. Grazing limitations and the removal of the drift fence will reduce the loose grazing and consequently impacts associated with loose grazing. Designated sites will concentrate the impacts of stock holding. A limitation of no more than five nights a year when

not with clients at Purple will reduce grazing pressures. In addition, the prohibitions on use trails that have provided access between camps will further reduce the extensiveness of noticeable stock impacts. Essentially stock use will become concentrated at identifiable locations. The allowances for campfires by packers at designated sites with guides (wranglers) will likely lead to some non-compliance to the prohibition by the public. The area between Ram and Franklin and Virginia will be prohibited for use by packers. This is no change from Alternative 1. Virginia Lake will probably have the same levels of stock use as currently (Alternative 1).

Cascade Valley will continue to be an area with a high level of stock. With a destination quota of eight trips to Iva Bell Hot Springs impacts associated with facilitated use to this destination may be reduced. The probability of this area experiencing more use and use being facilitated into the future by commercial pack stock was high in Alternative 1. With known risk factors, not necessarily the result of pack stock use, but the result of overall high use concentrated at the hot springs, public use will continue to lead to crowding, low opportunities for solitude and noticeable resource impacts. Other destinations in this unit will receive the same levels of use and overlap will continue between operators based at Reds and Lakes Basin and those traveling through. There may be more use occurring in the east end of this unit, at Third Crossing and Cascade Valley itself. This may occur as a result of displacement from Silver Divide with the one night stay limit and competition for grazing resources. However, with grazing limits in place at all locations in this valley, there should be sustainable grazing managed over time. There may be frequent use of campsites and more encounters with stock parties than currently. This may have some minor adverse effects to wilderness character solitude, natural conditions).

Margaret lakes will have low to moderate commercial stock use, with a seasonal limit of 150 stock. Public use in this area is light, and is expected to remain so. Access to commercial pack stock will be limited to the main trail into Frog, Coyote, Bathtub, Margaret, and Rainbow. If pack stock were to frequent Rainbow Lake more than current use, there may be increased impacts along the trail corridor. Impacts on the trail corridor below Coyote to the junction of Baby Lake will continue. This is caused by grazing and by both commercial pack-stock use and the administrative use by the Forest Service. Noticeable impacts here are in contrast to an otherwise low use and low impact area and can have and continue to have experiential impacts to visitors under this alternative.

Silver Divide will continue to be a high overlap area for multiple operators. If traveling trips increase as a result of the elimination of service days this area could see more operators. There could be an increase in packing in feed to accommodate traveling trips in this area if grazing is the only or primary limitation. This may result in more stock on trails, which in turn could lead to increases in trail maintenance and heavy maintenance. Stock impacts to trails (increased dust with fine soils) have some experiential impacts to other visitors, especially hikers. This area will continue to see moderate hiker use outside the JMT trail corridor and very high use along the JMT corridor. Stock camps at Grassy, Jackson Olive, and Long Canyon will concentrate stock impacts at campsites, which may help improve overall conditions at these destinations. There may be an increase in use to Long Canyon to access grazing resources. This may change the character of this destination somewhat from the past number of years; however, use in this canyon has been higher in the past, especially in the days of sheep grazing. Use trails to Pick and Shovel Mine, Brave Lake, grazing access above Grassy, and the Goodale Pass by-pass will all be authorized for commercial pack stock use. This will continue access to most all places pack stock occurs in Alternative 1. Exceptions will be no authorizations to Peter Pande tarn and the Lake of

the Lone Indian Creek use trail. Only with some restorative work will these trails show improvement. Removing one source of impact will prevent further deterioration.

A party size limit will be implemented at one location in this alternative, a 10 person 15 stock limit to Peter Pande Lake. Stock numbers will remain low to moderate to this destination over time, with not more than four trips by commercial packers in a season. These actions will insure that campsites do not expand in size and continued trail deterioration will be minimized.

Upper Fish Creek will continue to receive moderate commercial stock use. Overlap in this area will be minimal, as it is in Alternative 1. Occasional overlap at Horse Heaven will continue but probably less than 10 nights a year will commercial packers be here, and rarely if ever at the same time. Tully Lake will have a party size limit (8 persons and 15 stock) and a limit on number of trips to the destination as well as a designated site for commercial stock use. These actions combined should insure that use does not exceed a Recreation Category 1 standard for use levels, solitude, and maintaining a high wilderness character. One access trail to Tully will also limit the impacts currently occurring with multiple poorly located trails. Access to Lee and Cecil will be prohibited in this alternative. This will help reduce the trailing impacts that have occurred in the recent past from grazing and the prohibition will include no access for spot and dunnage trips, which is a change from the No Action (Alternative 1). Red and White use trail will be available for use but may need to be monitored to insure that conditions in this recreation category do not change with this use.

McGee will maintain similar stock levels than occurring under the No Action alternative. There will be no overlap in operation in this area for spot and dunnage, a change from some occasional overlap that can occur in Alternative 1 (No Action). Some exiting of traveling trips could occur, but it is expected to be infrequent. Day ride use will be a noticeable use on the main trail on the first 4 miles from the trailhead. Some crowding and frequent encounters will be likely with the level of day rides approved in this alternative. Stock access to Steelhead Lake will continue to cause some deterioration of the trail until this trail is improved to support this use. This will continue to have some experiential affects on visitors who may expect more pristine conditions off the main trail. Eliminating commercial stock on the Baldwin Mine trail will help reduce further trail deterioration, and is consistent with the Recreation Category 1 designation.

Convict drainage, accessed via Laurel Lakes will see a reduction in use as a result of implementing this alternative. The trail will remain a single quota trail where commercial operators will need to compete with the public. In addition, there will be a limit of 80 stock per season to this area. Under the No Action, there has been as much as 100 stock per season since 2001 and over 200 stock per year prior to the implementation of the Wilderness Plan. In addition, there will be party size limits at Cloverleaf Lake that will allow the maximum persons but only eight stock. This will help maintain the trail condition and prevent further deterioration until improvements to this trail are made. There will also be a limit of four trips to Cloverleaf Lake a year, insuring that the conditions of a Recreation Category 1 are not exceeded. There will be no more than 18 trips into all other destinations in this drainage. If all 18 trips were taken, they would have to be with very small stock numbers and not exceed the 80 seasonal limits. This will mean that there will be either few trips a year with larger numbers of stock (relative) or more trips with less stock. In both cases (and both will surely happen given the demands of the year), there will be a limit on growth and services provided by pack stock into this drainage. This will help maintain a low Recreation Category 2 status to the area.

In this alternative, Geneveive, Dorothy and Edith lakes will be changed to a Recreation Category 2 from a 1. These areas show signs of heavy use in the past, and except for Cloverleaf, they were incorrectly categorized from the intention of the 2001 Wilderness Plan. However, the use levels established in this alternative will help keep it at a low Recreation Category 2, which is reasonable given past use and the capability (capacity and setting) of this area.

Cumulative Impacts

The past actions of sheep and cattle grazing have had effects on the resource conditions in this area. Current use, both grazing and recreation visitor use (commercial and non-commercial) contribute only slightly more affect than what occurred historically. It is likely that use and impacts, though still noticeable through out this area, have been greatly reduced over the year because of on-going management actions. Past actions include camping closing at Purple and Duck lakes outlets, removal of a boat rental facility and service at Duck Lake, and closing Cascade Valley, Second Crossing and Lee and Cecil to grazing. These actions in addition to those proposed in this alternative greatly limit the extent of commercial activities in this portion of the wilderness.

With a reduction in available grazing from current reported use, a reasonably foreseeable action may be that annual operating plan decisions are made to allocate grazing to individual operators prior to the season to insure that competition for grazing does not exceed standards. The effect of this would be further regulation and administrative monitoring requirements to insure that standards are not exceeded.

If Red and White use trail were to become more defined or resource impacts develop, a reasonably foreseeable action would be to discontinue this approval.

The Mammoth Lakes basin is the source of considerable day use activity that has a cumulative effect on the permitted activities including backpackers and stock users. All these uses contribute to crowding and loss of solitude north of Duck Pass and at Duck and Pika Lakes.

Fish Creek/Convict/McGee – Alternative 4

Analysis

Access via trailheads on the Inyo National Forest will remain similar to the No Action with the exception of reduced trailhead quota on Fish Creek for commercial pack stock. With the 20 percent reduction in service days, overall use will be reduced by 20 percent but not likely across the board at the locations. Without direct controls, some locations could receive more use than is currently occurring if use patterns shift or destinations become more desirable. The portals to this geographic region are few relative to the size of the region. Four trailheads, Fish Creek, Duck, McGee, access the Fish creek drainage from the north and east. Graveyard and Mono can access the area from the South. Use therefore can disperse out much more and the potential for less control at destinations in this region will be higher. The primary control for the extent of the commercial stock use is the trail suitability determinations and campsite designations.

The Margaret Trailhead directly accesses Margaret basin. Similarly, the Convict Trailhead directly accesses Convict basin. In these locations, there will be more direct influence of the trailhead control than in the other locations.

Thirty locations are identified for commercial pack stock services in this region. These locations are dispersed throughout the region and only the more remote locations off well-maintained system trails are unavailable to the commercial stock. High opportunities for solitude and high wilderness character will be protected in areas such as Tully Lake, Lee Cecil, Red and White Lake, Ram Lake, Cloverleaf, Rainbow Lake (Margaret area), and Peter Pande, that are available for commercial use in Alternatives 1, 2 and 3. Trails that access these destinations will likely show less sign of use and impact with the reduction of one major user group. Although use may not have been frequent at these locations, the potential for light, continued use that could lead to experiential and resource effects will be eliminated.

Destinations that are vulnerable to increased use and still available to commercial stock in this alternative include Pika Lake, Virginia Lake, Olive, Long Canyon, Lost Keyes. Increase use is not a given at these locations but without direct controls on the frequency or use by pack stock and only an external control that controls people, not stock there could be some changes in patterns. Lost Keyes, in a Recreation Category 1 would need to be closely monitored to insure that if use increased here that standards and guidelines for experiential and resource factors are maintained.

The thirty locations will probably see moderate to high levels of commercial stock use and opportunities for solitude will be low.

All-expense trips will likely be reduced with fewer grazing resources available and the effect of reducing service days may result in maximizing service day allocations with fewer all expense type trips and a shift to spot and dunnage type trips.

Cumulative Impacts

The past actions of sheep and cattle grazing have had effects on the resource conditions in this area. Current use, both grazing and recreation visitor use (commercial and non-commercial) contribute only slightly more affect than what occurred historically. It is expected that use and impacts, though still noticeable through out this area, have been greatly reduced over the year because of on-going management actions. Past actions include camping closing at Purple and Duck lakes outlets, removal of a boat rental facility and service at Duck Lake, and closing Cascade Valley, Second Crossing and Lee and Cecil to grazing. These actions in addition to those proposed in this alternative greatly limit the extent of commercial activities in this portion of the wilderness more so than any other Alternative other than Alternative 5.

The extent of commercial pack stock operations will be noticeable reduced and combined with past actions will contribute to loss of visitor experiences while at the same time having a beneficial effect on natural conditions by removing a disturbance source in many more areas of the wilderness.

With a reduction in available grazing from current reported use, a reasonably foreseeable action may be that annual operating plan decisions are made to allocate grazing to individual operators prior to the season to insure that competition for grazing does not exceed standards. The effect of this would be further regulation and administrative monitoring requirements to insure that standards are not exceeded. The cumulative effect to the resource would be beneficial and long-term.

The Mammoth Lakes basin is the source of considerable day use activity that has a cumulative effect on the permitted activities including backpackers and stock users. All these uses contribute to crowding and loss of solitude north of Duck Pass and at Duck and Pika Lakes.

The past action of designating a large portion of the Fish Creek drainage as a Recreation Category 1 (2001 Wilderness Plan) combined with the limitations on the geographic extent of commercial operations in this alternative, will both enhance and insure that wilderness character and high opportunities for solitude (two critical wilderness values) are protected. These two actions also greatly limit opportunities in this region for recreation by those who desire or need pack stock support. Clients of packers will have fewer opportunities for solitude and unconfined recreation with this alternative in the Fish Creek area which otherwise offers a vast resource of settings and attributes for the wilderness visitors. With commercial pack stock clients concentrated in areas where there is also heavy hiker use, these locations will require intensive management or else they will quickly show signs of degradation from heavy concentrated use. Locations that will be vulnerable to these cumulative impacts would be Purple Lake, Cascade Valley, and Duck Lake. Some visitors, those not dependent on pack stock, will likely receive disproportionate benefits of this alternative.

Fish Creek/Convict/McGee – Alternative 5

Analysis and Cumulative Impacts

This geographic unit currently has a very high level of commercial stock use. This is compounded by the fact that it is the area with the most overlap of packer operations. Up to 7 packers conduct some of their operation in the Silver Divide unit and 3 to 5 operators have recorded use in Upper Fish, Cascade Valley and Purple units. By eliminating all packer use there would be a noticeable change in the character of this area. Encounters with pack stock by visitors would be reduced to only a few private parties a year. Overall, use would be decreased by approximately 15 percent. Trail conditions would improve and the need to construct highly developed trails would be greatly reduced.

By eliminating the intensive packer use at Purple Lake, with up to 500 head of stock, the character of the area would change. Three very large packer camps with associated stock holding areas would no longer be needed. It is expected that at least one site, and possibly two, would be used as stock camps. The size would be reduced since private stock parties are smaller than commercial stock parties. The disturbance to soils and vegetation at these sites would be reduced over time. It is reasonable to expect that some restoration measures would take place over time by field staff that would help expedite some recovery at these sites. Deer Camp would possibly be removed or at least greatly contained due to its close proximity to water. The proliferation of use trails in this area, (used to access camps and grazing) would no longer be used and would eventually become naturalized. There would be no encounters with packers and stock by the hikers and private stock parties and no competition for campsites at Purple, which at times has been an issue since this is a popular stop over for through PCT/JMT hikers. A closure to camping at the outlet of the lake has had the effect of pushing the camping to around the lake, which has led to competition for sites as well as some crowding and a generally low level of solitude in this area.

Virginia Lake receives less packer use at the destination; however, it is possible to encounter traveling commercial pack stock parties on this trail. Campsites at Virginia would most likely not be restored or managed differently than today.

Cascade Valley has numerous destinations used by packers and has been a location where recreational grazing has occurred. Past actions have closed some meadows to grazing to allow for recovery. These closures would likely remain; however, there would be little need to continue them since commercial grazing would be eliminated and very little private stock use occurs. In lower Cascade Valley, at Fish Creek or Iva Belle Hot Springs, there are significant effects of high recreation use. Packers contribute somewhat by providing spot and dunnage services to the area. By eliminating the packer use, there will be little to no effect or improvements in this area and overall use will continue to high and highly congested. Opportunities for solitude are low at this location but high elsewhere in the unit. The intense camping impacts at the hot spring would continue, with highly compacted soils, vegetation loss, and a greatly modified environment with hot pools having been created to enhance the site for soaking.

Margaret Lakes receive very low use by both the public and packers. Less than 200 people a year visit the area, about 25 percent of which is packer use. By eliminating this use, the areas would have very high opportunities for solitude with the most improved solitude at Frog Lake, which is the popular destination for packers. Most of the rest of the Margaret Lakes basin receives very light packer use and the conditions, experientially and resources would not change with the No Action alternative.

Convict Analysis Unit receives its packer use via the Laurel Lake trailhead at the north end of the basin. The main trail up Convict Canyon has been closed to pack stock due to a bridge that was washed away by a flood, rebuilt once, washed away again, and never rebuilt. There are many day hikers in this area but few get beyond Mildred Lake. Packer use has been concentrated at Geneveive and Edith lakes and a lesser extent Dorothy and Cloverleaf lakes. Eliminating packer use would show improvements at campsites at Geneveive. Most other locations would not be improved unless some management actions were taken. This area not being a high profile area, may not receive future actions and any recovery would probably be slow over time hastened by the lack of continued disturbance. The trail to Cloverleaf Lake may improve over time as it receives light but continued pack stock use and has some unstable sections through riparian that show some degradation. Without pack stock on this trail annually, and with little chance that private pack stock would travel to this destination, the trail may improve. Opportunities for solitude would be improved slightly, but because this area receives light use to begin with, the effects would not be noticeable.

McGee Creek has moderate packer use, with up to 500 head of stock traveling through the canyon a summer. There would be a noticeable change from today with no encounters with stock. Stock travels and down the trail almost daily in August, when visitor use is at its peak. This packer use is over 20 percent of total overnight use in this area so the effect would be noticeable. The trails would not need to be built with as much structure and features to sustain the hiker use. Hiker use would remain the same or possibly increase slightly. Current quotas on the public allow for more hiker use than is currently occurring.

Upper Fish Creek is accessed primarily but not exclusively from McGee Pass. Packer destinations in this unit include Lee Creek, Tully Lake, and Horse Heaven. Both Lee Creek and Horse Heaven have established stock camps where overnight holding of stock and/or grazing

takes place. The impacts on the trail to Lee Lake, which may be substantially due to grazing access from the packer camp to the lake, will be greatly improved when pack stock is removed from the trail. A recent action that suspended the grazing activity showed a reported improvement in the condition of the trail within one year of removing this use. The site used at Horse Heaven would remain as a stock camp for private parties but the extensive drift fence would not be needed and would probably be removed. The site used a Tully Lake is only moderately impacted but is in a good location. The use trail that is used to access the site by packers would no longer be needed and could be restored.

Silver Divide, with the heaviest concentration of commercial pack stock use in the region, would show the most effects of eliminating packer use. The heavily impacted destinations, Grassy and Jackson, mostly impacted by grazing and large packer camps would gradually recover. With substantial restoration work, the sites could be contained. The holding area, which is not as compacted as the main camping area, may recover quicker but efforts would be needed to rehabilitate these sites. It is not expected this would be done for a number of years, if at all, so any recovery would be slow. Trails, especially the Minnow creek trail which by mid season can be extraordinarily dusty and with loose churned soils from pack-stock use would be more compacted with the absence of commercial stock. Generally, the areas of Silver Divide that receive the most non commercial use—the JMT/PCT—would show no change and the western part of the Silver Divide area would have higher opportunities for solitude and less noticeably impacted sites. Peter Panda trail, which is highly eroded and unstable, would likely be relocated and a less obtrusive trail would be needed than if pack stock use were to continue to access the area.

Mono Creek/Rock Creek – Alternative 1

Analysis

In this alternative, much of this geographic unit will see moderate commercial stock on the primary trails with very high, intensive commercial stock along the Upper Mono Creek Trail and Hilton lakes drainage. Stock numbers would be high overall in this region and could increase to over 2000 stock from an average of 1500 stock. This could happen if trailhead quotas filled more regularly and service day allocations were to be at Wilderness Plan levels. With the ratio that has occurred the past two years the stock numbers could swell to over 2000 a year in Hilton and the upper portion of Mono Creek. This could lead to moderate adverse effects and to opportunities for solitude in some locations such as Fourth Recess, Pioneer Basin, and Hilton lakes. Depending on timing of use, behavior of user groups there could be minor to moderate adverse effects to natural conditions if sites expand or impacts become more intensive.

Tamarack Basin, managed with a commercial quota of eight persons a day could see increased use if client demands or marketing shifts use. Various use trails are used by the commercial packers, which contribute to confusion with some trail impacts quite noticeable. Campsites could proliferate if use was to increase and, if stock holding were to become more common, stock camps could increase the overall impacts in the area. The commercial packer has indicated a desire to increase use in this area, including for overnight holding of stock to meet desires of clients to experience stock. An otherwise low use area could change in character from current use patterns if this shift were to occur.

Little Lakes Valley allows for a commercial quota of 10 persons a day. The current packer use is very low, with up to 10 trips a year and 60 people. This could shift to a much higher number; up to 600 people (commercial) could easily be allowed through the quota. This would take place with a shift away from another area such as Hilton or Mono Pass, or a shift away from traveling trips by the operator at Rock Creek that currently does a substantial number of traveling and all-expense trips, which utilized more service days. A shift away from traveling trips to spot and dunnage could allow the operator to utilize areas such as Tamarack and Little Lakes Valley, which currently does not get the commercial stock use. Crowding and congestion would become even more severe in Little Lakes Valley if this was to occur.

Morgan Lakes utilizes the Little Lakes Valley trailhead quota but currently gets no more than one to 2 trips a year. There are a number of stock camps that look as if they have not been used in years, and many impacts remain from the mining era (stumps, debris, and wide trails). Use could shift here with only controls at the trailhead, but increased use could probably occur without additional impacts to the area.

Hilton Lakes will continue to receive very high stock use. Trailing of stock in and out of the drainage for daily trail rides by guests at base camps will probably continue and will accelerate deterioration of the trail resources and make the impacts of stock use quite noticeable. This will continue if stock camps are not defined. Use between stock camps occurs as the result of large parties that are broken into smaller parties to comply with the party size regulation yet still group together during these periods. This practice is expected to continue. The traffic and at times intensive activity caused by the type of commercial stock activity that occurs here (multiple large parties, day riding from the base camps with riding stock coming in and out daily) can contribute to a diminished wilderness experience for those seeking solitude. Access to the upper basin would continue and conditions at Third and Fourth lakes would remain moderately impacted at campsites and noticeably deteriorated trail conditions. Multiple operators would continue in this area, with the dominant use by one operator.

The Mono Creek corridor, west of Mono Pass will be a high commercial stock use area. Multiple large stock camps will continue to get frequent use and impacts will continue to be moderate to severe at the stock camps; the sites will expand over time. There will probably continue to be confusion to the public traveling in this vicinity. A cause of this confusion is access to the stock camps, which often look like the primary trail and when followed takes a visitor into a stock camp, and considerable multiple trails and short cuts. Without any improvements to the primary trail, short cutting will continue and the trails will continue to deteriorate and cause experiential impacts to all visitors. The loose grazing that occurs throughout the Mono Creek corridor will have experiential effects on other visitors that may not enjoy the stock through camps and the noise from bells around their necks that often occur near the camps.

Golden Lake is available for packers to access. The trail shows severe impacts that will persist with continued use of any type. Golden has not been a recorded destination of packers. Identified as a trail class two, it currently does not meet standards of that trail class and would take considerable development to bring it up to standard, which could facilitate more use than currently is occurring. The destination has limited opportunities for camping out of sight, sound of others camped, and increased use could lead to diminished opportunities for solitude.

Pioneer Basin will have similar effects as Mono Creek. As an interior destination, the Mono Pass trailhead does not directly control the use. Use also comes into this area from the west, primarily

the lower Mono trailhead. Severe multiple trailing and severe use trail impacts may not be contained by allowing the use to continue. Large stock camps will likely continue to expand in total area over time. The use trails to the upper basin and lakes (10,900 are currently approved for use) will likely continue to cause impacts. All identified packer-use trails are available. If these trails were to get more use, widespread impacts could be evident throughout the basin. With no direction to contain the use trail or campsite impacts these impacts will continue and proliferate.

Hopkins is an interior destination used for both overnight stay on traveling trips as well as destination trips. Use could increase here in this alternative with no direct controls. The stock camp at Lower Hopkins Lake will likely expand and other sites could receive commercial use in the future if the primary site becomes too impacted.

Commercial stock use into both Laurel and Second Recess has been non-existent the past few years from lack of trail maintenance and the difficulty that created for stock users to travel on these trails. If these trails were to receive the maintenance that is prescribed, commercial stock use could easily be re-established in these drainages. Use could disperse from other concentrated areas such as Pioneer Basin and Hopkins and be distributed more evenly. This would reduce some of the potential experiential impacts of concentrated stock use. It may also require increased maintenance and management of more sites and trails. By dispersing impacts over a wider area, there would be a wider extent of less severe impacts.

Commercial pack stock use in the Silver Peak unit will be pass-through use for traveling trips and spot and dunnage use to Mott Lake. Stock could camp at multiple locations, Pocket Meadow, Silver Pass Meadow, or Silver Pass Lake Meadow. Loose grazing of stock in this area will continue with effects to visitor experiences. Use to Mott Lake from commercial pack support would be regulated by the Mono Creek trailhead single quota, which accesses multiple destinations and is not a direct control; the effect would be at least the possibility of increased use to Mott Lake if the trail were to be maintained at the prescribed level. Opportunities for solitude will be low throughout the summer along the trail and low to moderate at Mott Lake with limited camping opportunities out of sight and sound of each other.

There will be a high concentration of use at Lower Graveyard Lake with low opportunities for solitude and a high level of commercial stock use and stock support. Use could be authorized into the upper basin and with that, the trail could deteriorate even further. Few good sites exist and those that do would likely increase in size and impact with continued use. Use to Arrowhead and Feather lakes is controlled by the same trailhead as to Graveyard lakes. This allows for continued use and potential increased use to these destinations in the future. Arrowhead can sustain more use but even a light increase to Feather Lake would change the character of the area with the lake having few durable sites for camping, particular with pack stock or pack stock supported.

Bear Ridge would remain a pass-through area with very little chance of any harmful effects even if use were to increase.

Volcanic Knob could receive considerable more use with only the indirect control of the trailhead quotas. Traveling trips could frequent the destination more as grazing resources are available and it is convenient location for an overnight stop. This could have short-term adverse effects to opportunities for solitude and be in conflict with the status as a Recreation Category 1 area.

Cumulative Impacts

Past actions in Pioneer Basin to close to pack stock grazing has allowed for some recovery of the meadows and with actions of this alternative, continued recreation by hikers and stock (private and commercial) there will be only inadvertent impacts to these same meadows by other use (fishing, camping, hiking). Recovery will continue and these actions will not cause any additional adverse effects to natural conditions as they are recovering.

There is a high density of use trails in Pioneer Basin from years of recreational use. This is probably the result of both the lack of past action to maintain the system trail as well as a continued popularity of the basin by the public and commercial pack stock. The high density of use trails, and some associated damage including multiple incised trails, will continue under current allowances.

Mono Creek, Hopkins, Second Recess, and Third Recess all show signs of lack of trail maintenance in the past ten to twenty years. Commercial pack stock use contributes to the condition in these areas, but public use and lack of management has played a big contribution as well. The cumulative effect of this is some severe trail erosion, very rough and dusty trails all of which combine to have an affect on visitor's experience. It is expected that this will continue under current management until adequate trail work is undertaken. There is short-term minor to moderate adverse effects to a visitor's experience with the noticeable impacts to trails throughout the area.

Little Lakes Valley receives a high volume of day use. With developed campgrounds adjacent to the wilderness boundary and resort facilities along the access road to this wilderness boundary, the area draws hundreds of visitors a day into Little Lakes Valley during the summer months. No regulation of day use is in place, yet the relatively small level of backpacking and pack stock use is regulated. Access to classic mountaineering routes (Bear Creek Spire) also draws a type of user into the area, and many of these routes experience low-level impacts on the climbing and access routes and some crowding.

Hilton Lakes was the location of multiple structures and facilities that were removed after the 1964 Wilderness Act was passed to comply with wilderness standards. Impacts from an earlier period of heavy use are not very evident but some impacts such as highly compacted areas and a log jam at the outlet of Davis Lake from debris from old structures demolished by the U.S. Forest Service remain on the landscape. The area has significantly improved wilderness character from the time it was designated wilderness. Continued use by pack stock will continue under this alternative and although intense, is arguably less affecting than conditions that pre-existed the Wilderness Act.

Mono Creek/Rock Creek – Alternative 2 – Modified

Analysis

Commercial stock use would be concentrated in approximately 22 discrete areas of the potentially hundreds of destinations in this geographic unit. There is a significant reduction in the extent of commercial pack stock operations in this geographic unit. The result of this is to concentrate stock use impacts and prevent the expansion of impacts into new areas in the unit. There would be moderate commercial stock use at these destinations. The use prescribed at each

destination is consistent with the recreation category and the capacity and setting of the destinations.

Of the 22 areas where spot and dunnage trips occur, five of these would have two overlapping spot and dunnage operations and in two areas, there would be three overlapping spot and dunnage operations. The primary area of overlap from all-expense trips would be in Mono Creek, with occasional overlap in other areas. The effect of this would be some potential for higher encounters with stock and diminished experiential qualities for those that do not care to encounter stock. The area is also used intensively for all expense and traveling trips, which will contribute to encounters. These types of trips are reduced from current levels in this alternative so there would likely be a reduction from current levels in encounters with stock parties in the Mono Creek corridor.

The proposed action will allow some growth to the Tamarack area. This area is currently low use with a high percentage of that use by the commercial packer. This is not expected to change with the allowances for growth. There are a number of suitable camp locations for moderate to large groups. The sites are well screened to protect opportunities for solitude. Some day use occurs but it is likely that wilderness character (solitude and natural conditions) will remain high in this basin due to the low levels of use.

Little Lakes Valley is a high use area with a relatively low level of commercial stock use. This alternative will allow for some growth to Ruby, Long, and Chickenfoot Lakes. Use to Gem Lake will not be authorized because it is a destination where camping is limited and impacts from heavy use by day hikers and backpackers are noticeable. Campsites for spot and dunnage drop sites would be established at these locations to mitigate the impacts of trailing to camps and to prevent a proliferation of campsites and trails used by the packers. There would be long-term beneficial effects of eliminating commercial stock use to Gem Lakes; however public use, including high levels of day use, will continue.

Morgan Lakes would remain low use and little effects of pack stock use would be noticeable. Day rides are authorized on the Morgan Lakes Trail but do not occur very often. This additional use would not cause any change in character to this area.

Commercial pack stock use in the Hilton Lakes area would be reduced slightly, and the Recreation category assignment would change from a Recreation Category 2 to a Recreation Category 3. The effect of this would be that the uses would be managed more intensively and consistent with Recreation Category 3. There may be more signing and concentration of use and impact. There would still be three operators in the area, but most of the use occurs with one operator. Use to the upper basin would be reduced by up to 70 percent. Maintaining lower levels of use in the upper basin will prevent further degradation that might otherwise occur if use (and subsequent impact) is allowed to increase to destinations under a trailhead quota scheme.

The designation of stock camps, and limiting travel to use-trails that access campsites, would likely represent an improvement in the Hilton Lakes area by reducing trailing and campsite impacts. The trailing of stock between campsites on use trails would be prohibited. The lower basin (Davis and Second lakes) would remain low to moderate in wilderness character. Opportunities for solitude and high wilderness character would be insured above Third Lake.

The number of all-expense trips that pass-through from Mono Creek north from Mono Pass is reduced to 16 trips a year. This will greatly reduce conflicts between hiking and stock parties and

improve the experiential conditions for backpackers. It will limit opportunities for recreational experiences with commercial pack trips. This effect will be long-term and adverse to the commercial client.

The Mono Corridor in the Fourth Recess Analysis Unit will have designated camp sites for all-expense trips in established, existing sites. With the design of these sites, including the establishment of appropriate access, there will be a reduction in confusion that currently exists between system trails and trails accessing stock camps. Identifying one route will greatly reduce trail impacts and improve the experiential conditions in the canyon. These sites will also be contained to prevent further expansion. Establishing and designing the site will improve the overall condition of these sites. There will be long-term beneficial effects to natural conditions from containing the impacts. The extent of impacts will be reduced in these areas in the long-term.

Also in the Fourth Recess Analysis Unit, there will be an improvement in Third Recess Canyon through the elimination of pack stock into this basin. The trail condition will not improve without some level of trail maintenance, reconstruction, and restoration. However, by eliminating the commercial pack stock, further deterioration of the trail may be limited. Clients of pack station will still be able to travel by foot to Third Recess. Opportunities for solitude may be improved in this area. Over time, and with mitigation, natural conditions will improve along the trail corridor.

The general conditions in Pioneer Basin will be improved through containment of pack stock operations to a limited number of trails and campsites. Many miles of use trails were identified by the operators in this basin. In this action, there will be only one trail maintained to the upper basin and one trail to the second lake. All use trails and short cuts will be prohibited from use. The overall reduction in the number of use trails will have a positive effect on the character (natural conditions and solitude opportunities) of the area. Two established stock camps at Mudd Lake will improve the overall condition by containing stock related impacts in the suitable areas near Mudd Lake. Non-pack stock visitors will likely have more opportunities to select sites that are not used or impacted by pack stock.

Use into Hopkins drainage will be limited to eight trips a year. This allows for a slight increase from a high of six trips in 2001. Use will be limited to lower Hopkins Lake with prohibited access on the use trail that loops to the upper basin. With this prohibition, the trail may improve but private stock will continue to use this trail. Opportunities for solitude will remain the same in this area and are generally considered moderate to high. Camping is concentrated at the lake, which has limited capacity. One stock camp will be identified to help mitigate a conflict at this location. Opportunities for solitude will be low when stock parties are present here. The overall reduction in traveling trips between Mono Pass and Mammoth will likely translate to a reduction in the number of trips to this location, thereby maintaining and or slightly improving the opportunities for solitude at lower Hopkins Lake.

Very light and limited use will occur in the Laurel and Second Recess Analysis Units. Most of the use in Second Recess unit will occur in the Mono Corridor on a primary trail. Slight increases (from 7 to 10 trips) are being proposed which will not greatly change the character of this area. Laurel will remain lightly used only if all-expense trips are managed to avoid significant increases in use. Stock is prohibited above the stock camp below Laurel Lake. This will insure that opportunities for solitude remain high at Laurel and Grinnell Lakes. With the absence of stock impacts in these locations, the character of this area will also be high.

Use in the Silver Peak Analysis Unit will be reduced by the overall reduction in traveling trips from Mono Pass north. The use in the analysis unit is on the PCT/JMT trail with associated grazing. In addition, trips to Mott Lake will be limited to the existing number allowing no growth in use to Mott Lake. Mott Lake is a popular destination with limited camping and in August can have low opportunities for solitude. This proposal will maintain these conditions. By establishing a stock camp at Mott Lake it may encourage overnight holding of stock in an area that currently only receives spot and dunnage use. This may change the character of the destination slightly. It is not expected that it would receive much of this type of use.

Use into Graveyard Analysis Unit would be limited to 50 spot and dunnage trips a year. The current high is 55 trips in the past three years. The trail to Arrowhead and Feather Lake is hard to follow and shows no signs of current use. Use at both lakes is low and opportunities for solitude are high. A recreation category change at Feather Lake (from a Recreation Category 2 to a Recreation Category 1) along with specific limitations of trips to Feather Lake will insure that the pristine qualities of this low capacity destination are not impacted by commercial pack stock use over time.

Use at Graveyard Lake would remain near current levels. Conditions would not change and would be maintained with this action. Use would however be limited to the lower lakes and opportunities for solitude at the upper lakes would be improved by the limits on packer use.

Services in the Devils Analysis Unit would be allowed to increase to up to eight trips a year from the four that are currently occurring. The primary destination here is Devils Bathtub Lake. This is also an easily accessible and popular day use area for both hikers and stock.

Bear Ridge would remain primarily a pass-through area to access the JMT/PCT from Lake Edison. Use will not likely increase and stock numbers on this trail will stay the same as the past few years. Public use on this trail is very light with less than 30 parties a year. Pack station use will stay at similar levels, up to 35 parties taken in a year via Bear Ridge. Total use in this area will remain light and effects from commercial pack stock use will be minimal.

Volcanic Analysis Unit will remain very low use for packers, and most of the use will be to support the State of California Department of Water Resources to supply the snow survey cabin and site in Volcanic meadow.

Cumulative Impacts

In the Hilton Creek drainage, past actions including the removal of structures, reduced maintenance of the trail to the upper basin, limitations on the packers such as prohibiting camping on the peninsula, agreements between the Forest Service and the packer to not hold stock overnight in the drainage, have all led to fewer opportunities for commercial pack stock. Overall impacts have been reduced by many of these past actions. When the additional actions of this alternative are in place, there will be a cumulative effect of greatly reducing the extent of human influences in the drainage. This will have beneficial effects to some visitors experience and natural conditions by reducing the overall extent of impact. It will also have adverse effects to those visitors that are prohibited or limited in their use and enjoyment (unconfined recreation) of the area via the commercial pack stock services.

A similar effect occurs in Pioneer Basin. Actions in the past have closed the area to grazing. Lack of maintenance of the system trail has led to the creation of multiple user trails to access various portions of the basin. This action alternative will greatly reduce to the areas where

commercial pack stock services can occur and the extent of commercial stock impacts. By prohibiting the use of most of the use trails, and all of the use trails where noted resource concerns existed, many of these trails will show signs of recovery. Identifying two system trails should facilitate a reduction in use trails. There is substantial work needed to bring the trails to standard, when that work is completed, there should be a noticeable improvement to the character of the basin.

Deferred trail maintenance in Mono Creek, Hopkins Creek, and Second Recess Canyon has similar cumulative impacts as described in Alternative 1. Continued commercial pack stock use contributes to the condition in these areas, but public use and lack of management has proved to be a big contribution as well. The cumulative effect of this is some severe trail erosion and very rough and dusty trails, all of which combine to have an affect on visitor's experience. It is likely that this will continue under Alternative 2 - Modified until adequate trail work is undertaken. With the noticeable impacts to trails throughout the area, there is short-term minor to moderate adverse effects to a visitor's experience. There will be localized moderate to sever effects to natural conditions along these trail corridors until trail work improves the conditions.

It is expected that over time trails in the Mono Geographic Area, specifically on the Sierra National Forest, will be improved. Improvements to the trail system will greatly reduce the visual and experiential impairment noticeable throughout the Mono Creek corridor. In particular, trail conditions to Mott Lake, Mono Creek trail, Pioneer Basin, Second Recess Canyon, and Third Recess Canyon all would be improved with future trail projects. These projects could change the character of places like Third and Second Recess if they are built to facilitate visitor use.

Little Lakes Valley receives a high volume of day use. Hikers, anglers, climbers, and sightseers combine to create crowding and adverse effects to solitude. With developed campgrounds adjacent to the wilderness boundary and resort facilities along the access road to this wilderness boundary, the area draws hundreds of visitors a day into Little Lakes Valley during the summer months. No regulation of day use is in place, yet the relatively small level of backpacking and pack stock use is regulated. Activities outside the wilderness boundary have a cumulative effect on solitude and natural conditions as the intensive use causes trailing and multiple trailing impacts and impacted sites along the trail corridor. Gem Lake receives a high volume of use and the trail along the lakeshore shows signs of disturbance to natural conditions. Pack stock use added to this will have cumulative effects to natural and experiential conditions in this area.

It is not expected that private stock use would increase or that this use would have any effect on the areas where commercial use is being prohibited in this alternative. Private stock use is very light and stock numbers are low in comparison to the commercial stock numbers.

Overlapping operators will still exist in Lower Mono, Graveyard, Bear Ridge, and Hilton Analysis Units. Limits to overlap will be made in this alternative with the reduction in traveling trips over Mono Pass to the north. The cumulative effect of this would be campsites receiving less frequent use, reduced need for grazing and a reduction in grazing, and overall less stock use on the Mono corridor trail.

Over time, the combination of actions in this alternative should lead to some noticeable improvements in the Mono Creek area. Reductions in use at locations where risks and concerns have been recorded, containment and design appropriate stock camps, prohibiting use of some impacted use trails, and limits on expansion of packing operations into new areas should be

substantially improve wilderness character through out the Mono region. Limiting commercial pack stock out of many of the higher reaches of drainages (Laurel, Second Recess, Pioneer Basin, and Graveyard) will protect wilderness qualities.

Mono Creek/Rock Creek – Alternative 2

Analysis

Overall, there would be a potential increase of about 26 spot and dunnage trips to 27 destinations with this alternative. As with all other locations, it is not likely that pack station would reach the destination quotas on an annual basis but the quota allows for fluctuations of client demands. If the entire quota was used it would likely be used with the same level of stock that has currently serviced less trips.

Of the 27 areas where spot and dunnage trips occur, five of these would have two overlapping spot and dunnage operations and in two areas, there would be three overlapping spot and dunnage operations. The primary area of overlap from all-expense trips would be in Mono Creek, with occasional overlap in other areas.

The proposed action will allow some growth to the Tamarack area. This area is currently low use with a high percentage of use by the commercial packer. This is not expected to change with the allowances for growth. There a number of suitable camp locations for moderate-to-large groups. The sites are well screened to protect opportunities for solitude. Some day use occurs but it is likely that wilderness character (solitude and natural conditions) will remain high in this basin due to the low levels of use.

Little Lakes Valley is a high use area with a relatively low level of commercial stock use. This proposal will allow for some growth to Ruby, Long and Chickenfoot lakes but limit use to Gem Lakes, a destination where camping is limited and impacts from heavy use by day hikers and backpackers are noticeable. Campsites for spot and dunnage drop sites would be established at these locations to mitigate the impacts of trailing to camps and prevent a proliferation of campsites and trails used by the packers. A party size limit at Gem would insure that large parties would not be dropped here which could expand the size of campsites.

Morgan Lakes would remain low use and little effects of pack stock use would be noticeable. Day rides are authorized on the Morgan Lake trail, which currently does not occur. This additional use would not cause any change in character to this area.

Commercial pack stock use in the Hilton Lakes area would be reduced measurably. There would still be three operators in the area, but most of the use occurs with one operator. The limit on the number of trips reduces the packer use by about 15 percent to Davis and Second Lake. Use to the upper basin would be reduced by up to 70 percent. If the trail to the upper lakes is improved, use could increase up to 12 trips, which would be 30 percent reduction from current use. With the designation of stock camps and limiting travel to use trails that access campsites there would be an improvement in the area and a reduction in trailing and reduction in campsite impacts. The trailing of stock between campsites on use trails would be prohibited. Overall reduction of numbers of stock used in conjunction with the packer operation would be measured to insure an overall reduction. The lower basin (Davis and Second lakes) would remain low to moderate in wilderness character but opportunities for solitude and high wilderness character would be insured above Third Lake.

The number of all-expense trips that pass-through from Mono creek north from Mono Pass is reduced from 35 trips to 16 trips a year. With fewer all-expense trips there will be less loose grazing throughout the Mono corridor, which currently is the source of complaints by backpackers. This will greatly reduce conflicts between hiking and stock parties and improve the experiential conditions for backpackers.

The Mono Corridor in Fourth Recess analysis unit will have designated sites for the all-expense trips in established campsites. With the design of these sites that will establish access in an appropriate location there will be a reduction in confusion that currently exists between system trails and trails accessing stock camps. Identifying one route will greatly reduce trail impacts and improve the experiential conditions in the canyon. These sites will also be contained to prevent further expansion. Establishing and designing the site will improve the overall condition of these sites.

Also in the Fourth Recess Analysis Unit, there will be an improvement in Third Recess through the elimination of pack stock into this basin. The trail condition will not improve without some level of trail maintenance, reconstruction, and restoration. However, by eliminating the commercial pack stock, further deterioration of the trail may be limited. Clients of pack station will still be able to travel by foot to Third Recess. Opportunities for solitude may be improved into this area and over time and with mitigation, natural conditions will improve along the trail corridor.

The general conditions in Pioneer Basin will be improved through containment of pack stock operations to a limited number of trails and campsites. Many miles of use trails were identified by the operators in this basin. In this action, there will be only one trail maintained to the upper basin and one trail to the second lake and all use trails and short cuts will be prohibited from use. The overall reduction in the number of use trails will have a positive effect on the character (natural conditions and solitude opportunities) of the area. Two established stock camps at Mudd Lake would improve the overall condition by containing stock related impacts in the camp-able areas of Mudd Lake. Non-pack stock visitors will have more opportunities to select sites that are not used or impacted by pack stock.

Use into Hopkins drainage will be limited to eight trips a year. This allows for a slight increase from a high of six trips in 2001. Use will be limited to lower Hopkins Lake with prohibited access on the use trail that loops to the upper basin. With this prohibition, the trail may improve but private stock will continue to use this trail. Opportunities for solitude will likely remain the same in this area and are generally considered moderate to high. Camping is concentrated at the lake, which has limited capacity, but one stock camp will be identified to help mitigate a conflict at this location. Opportunities for solitude will be low when stock parties are present here, but overall reduction in traveling trips between Mono Pass and Mammoth will translate to a reduction in the number of trips to this location, thereby maintaining and or slightly improving the opportunities for solitude at lower Hopkins.

Very light and limited use will occur in Laurel and Second Recess Analysis Units. Most of the use in Second Recess unit will occur in the Mono Corridor on a primary trail. Slight increases (from 7 to 10 trips) are being proposed which will not greatly change the character of this area. Laurel will remain lightly used only if all-expense trips are managed to avoid significant increases in use. Stock is prohibited above the stock camp below Laurel Lake and this will insure

that opportunities for solitude remain high at Laurel and Grinnell lakes. With the absence of stock impacts in these locations, the character of this area will also be high.

Use in the Silver Peak Analysis Unit will be reduced by the overall reduction in traveling trips from Mono Pass north. The use in the analysis unit is on the PCT/JMT trail with associated grazing. In addition, trips to Mott Lake will be limited to the existing number allowing no growth in business to Mott. Mott Lake is a popular destination with limited camping and in August can have low opportunities for solitude. This proposal will maintain these conditions. By establishing a stock camp at Mott Lake it may encourage overnight holding of stock in an area that currently only receives spot and dunnage use. This may change the character of the destination slightly. It is not expected that it would receive much of this type of use.

Use into Graveyard Analysis Unit would be limited to 56 spot and dunnage trips a year. The current high is 55 trips in the past three years. The trail to Feather is hard to follow and shows no signs of current use. Use at both lakes is low and opportunities for solitude are high. Use into Feather Lake may increase and this could change the character of the destination that receives only occasional use. There is a potential for new impacts and loss of solitude if use were to increase and this would have some minor to moderate adverse effects to wilderness character. With an allowance for up to ten trips to Feather/Arrowhead Lake, it is possible that all ten trips could go to Feather Lake.

Use at Graveyard would remain at current levels. This is a very popular destination and opportunities for solitude are low as the capacity for camping is limited. Conditions would not change and would be maintained with this action. Use would however be limited to the lower lakes and opportunities for solitude at the upper lakes would be improved by the limits on packer use.

Devils Analysis Unit would be allowed to increase to up to eight trips a year from four that are currently occurring. The primary destination here is Devil Bathtub Lake. This is also an easily accessible and popular day use area for both hikers and stock. Opportunities for solitude are low in this area.

Bear Ridge would remain primarily a pass-through area to access the JMT/PCT from Lake Edison. Use will not increase and stock numbers on this trail will stay the same as the past few years. Public use on this trail is very light with less than 30 parties a year. Pack station use will stay at similar levels, up to 35 parties taken in a year via Bear Ridge. Total use in this area will remain light.

Volcanic Analysis Unit will remain very low use for packers, and most of the use will be to support the State of California Department of Water Resources to supply the snow survey cabin and site in Volcanic meadow.

It is expected that over time, trails in the Mono Creek/Rock Creek Geographic Area, specifically on the Sierra National Forest will be improved. Improvements to the trail system will greatly reduce the visual and experiential impairment noticeable throughout the Mono Corridor. In particular, Mott Lake, Mono Creek trail, Pioneer Basin, Second Recess, and Third Recess all would be improved with trail improvement projects. These projects could change the character of places like Third and Second Recess if they are built to facilitate use and access.

Overlapping operators will still exist in lower Mono, Graveyard, Bear Ridge, and Hilton. Limits to overlap will be made in this alternative with the reduction in traveling trips over Mono Pass to

the north. The cumulative effect of this would be campsites receiving less frequent use, reduced need for grazing and a reduction in grazing, and overall less stock on the Mono corridor trail.

Over time, the combination of actions in this alternative should lead to some noticeable improvements in the Mono Creek area. With reduction in use at locations where risks and concerns have been recorded, containing and designing appropriate stock camps, prohibiting use of some impacted use trails, and limits on expansion of the packing operations into new areas, there should be substantial improvements to wilderness character through out the Mono region. Limiting commercial pack stock out of many of the high reaches of drainages (Laurel, Second Recess, Pioneer Basin, and Graveyard) will protect wilderness qualities and insure that pack stock impacts are minimal and would only occur with private stock use.

Cumulative Impacts

In Hilton drainage, past actions including the removal of structures, reduced maintenance of trail to the upper basin, limitations on the packers such as prohibiting camping on the peninsula, agreements between the Forest Service and the packer to not hold stock overnight in the drainage, have all led to fewer opportunities for commercial pack stock. Overall impacts have been reduced by many of these past actions. When the additional actions of this alternative are in place, there will be a cumulative effect of greatly reducing the extent of influence of commercial pack stock in the drainage. This will have beneficial effects to some visitors experience and natural conditions by reducing the overall extent of impact. It will also have adverse effects to those visitors that are prohibited or limited in their use and enjoyment (unconfined recreation) of the area via the commercial pack stock operator.

A similar effect occurs in Pioneer Basin. Actions in the past have closed the area to grazing. Lack of maintenance of the system trail has led to the creation of multiple user trails to access various portions of the basin. This action will greatly reduce to the areas where commercial pack stock can occur and the extent of commercial stock impacts. By prohibiting the use of most of the use trails, and all of the use trails where noted resource concerns existed, many of these trails will show signs of recovery. Identifying two system trails should accomplish a reduction in use trails. There is substantial work needed to bring the trails to standard, when that is work is completed there should be a noticeable improvement to the character of the basin.

Deferred trail maintenance in Mono Creek, Hopkins, Second Recess, has similar cumulative impacts as described in Alternative 1. Continued commercial pack stock use contributes to the condition in these areas, but public use and lack of management has played a big contribution as well. The cumulative effect of this is some severe trail erosion, very rough and dusty trails all of which combine to have an affect on visitor's experience. It is expected that this will continue under alternative until adequate trail work is undertaken. With the noticeable impacts to trails throughout the area, there are short-term minor to moderate adverse effects to a visitor's experience. There will be localized moderate to sever effects to natural conditions along these trail corridors until trail work improves the conditions.

Little Lakes Valley receives a high volume of day use, hikers, anglers, climbers and sightseeing combine to create crowding and the adverse effects to solitude. With developed campgrounds adjacent to the wilderness boundary and resort facilities along the access road to this wilderness boundary, the area draws hundreds of visitors a day into Little Lakes Valley during the summer months. No regulation of day use is in place, yet the relatively small level of backpacking and

pack stock use is regulated. These activities outside the wilderness boundary have a cumulative effect on solitude and natural conditions as the intensive use causes trailing and multiple trailing impacts and impacted sites along the trail corridor. Gem Lake receives a high volume of use and the trail corridor lakeshore shows signs of disturbance to natural conditions. Pack stock use on top of this will have cumulative effects to natural and experiential conditions in this area.

It is not likely that private stock use would increase or that this use would have any effect on the areas where commercial use is being prohibited in this alternative, as this use is very light and stock numbers are low in comparison to the commercial stock numbers.

Mono Creek/Rock Creek – Alternative 3

Analysis

Devils Analysis Unit will continue to see moderate levels of stock use, light spot, and dunnage served by the Devils/Graveyard quota and day rides. Two operators will continue to provide spot and dunnage services to this basin. One operator will provide day rides, amounting to less than 200-day rides a year.

Graveyard unit will also see the continuation of two operators providing primarily spot and dunnage services at higher levels than the past few years. A recreation category change would be implemented from a Recreation Category 1 to a Recreation Category 2 at Lower Graveyard Lake. This area has been a popular destination for many years and was an error in mapping with the 2001 Wilderness Plan. This is a popular destination for commercial stock and the public. Opportunities for solitude will remain low to moderate at the lower lake. Commercial use will be prohibited above the third lake where the system trail will end in this alternative. The upper basin would have opportunities for higher levels of solitude with this alternative than currently exists in the No Action (Alternative 1), as restrictions on use are not in place.

Also in this analysis unit, access to Feather and Arrowhead lakes will be authorized. With no direct controls at these destinations, there is the potential for there to be some change to the pristine qualities at Feather and wilderness character that currently offers high levels of solitude and mostly pristine conditions, which could be compromised if use patterns shift. If use were to increase the trail, condition may also deteriorate. It will be incumbent upon the packers operating here to insure that these conditions at Feather do not exceed the standards for a Recreation Category 1. With limitations discussed above in the Silver Divide section, there could also be an increase in traveling trips to Silver Divide country over Goodale Pass.

Bear Ridge Analysis Unit will continue to be a travel thru area for two operators. Multiple trails access through this unit to the JMT/PCT corridor. Collectively these trails will allow 230 stock numbers, which is the seasonal stock threshold to the JMT/PCT. This is slight increase over Alternative 1 (No Action). The change from single quota to multiple quotas for Bear Creek and Bear Ridge Trailheads could potentially increase the overall use.

Volcanic Analysis Unit is subject to a recreation category change from a RC1 to a RC2. Currently there is a cabin and a snow survey site with structures in place to relay snow sensor data for Department of Water Resources. These have been in place for over 15 years and make it difficult to manage under the definition of a RC1. It is likely there was a mapping error or lack of information on this condition at the time of the 2001 Wilderness Plan. It is possible that use will shift to Volcanic Lake without any direct controls, but it will remain visited by commercial

operators during the late season (September) to allow hunting access and to support the DWR site.

Silver Peak will remain an area of moderate commercial stock use along the JMT/PCT corridor for traveling trips along the JMT/PCT and to Mott Lake. Due to the low capacity for campsites that are not within sight and sound of each other, Mott Lake will continue to have low to moderate opportunities for solitude. Opportunities for solitude will also continue to be low along the trail corridor and encounters between hikers and stock will be similar to Alternative 1 (No Action), and probably expected. Loose grazing of stock may remain in conflict with campers seeking no quite and solitude.

Second Recess, being an internal destination, does not have any direct controls on use levels. It is expected it will remain the same as current or if the trail is maintained. The trail has not been cleared for a number of years and therefore is difficult for stock to travel, which has discouraged stock use the past years. It could sustain use and be a location where a light dispersion of use may or could relieve conflicts in Mono Creek, Silver Divide, and Silver Peak.

Laurel Analysis Unit is similar to Second Recess in that it has no direct controls regulating the use. Access here would occur from traveling trips or spot and dunnage from the west side (Edison). It has had light use in the past and virtually no use in the recent years and some issues with trail maintenance. Some light use dispersed here would have the same effect as is described in Second Recess. Anything more than occasional stock use beyond the bench at Laurel (approximately 1 mile below Laurel Lake), may cause resource degradation to trails which are not likely to receive much maintenance due to the remoteness of the area. Commercial stock use to Grinnell would not occur in this alternative thereby protecting the area for high opportunities for solitude.

Hopkins, again similar to Laurel and Second Recess, will have no direct controls on use.

Available grazing resources will draw use to this location as a means to make up for a reduction in grazing resources in Silver Divide. Hopkins will very possibly receive more use and this use will be concentrated at lower Hopkins Lake where a designated stock camp will probably get more occurrences of use than in the No Action (Alternative 1). The standards for stock camps will insure that the size and impact is contained. There will be fewer opportunities for solitude and possibly more encounters between stock and hikers groups in this area than in the No Action. Travel to Hopkins Pass is allowed in this alternative, and will be in the form of day rides from the stock camp. With this trail available for use, it will make the Hopkins camp more suitable for longer stays for pack trips.

Pioneer Basin will have a number of direct controls in place with this alternative. Access to use trails will be substantially reduced from the No Action (Alternative 1). This will concentrate commercial stock presence at Mudd Lake stock camps and once the trail is improved to Lake, 10,820 (check) it will be extended to the upper basin via this trail. This greatly limits what has currently been approved and what has occurred in the past. The excessive amount of use trails that exist may have resulted from lack of maintenance on the original system trail, and/or the lack of an adequate trail system to reach locations in the basin desired by hikers and pack stock. It is expected that some of these trails, such as the one on the east end of the basin accessing the upper lakes and the use trail to Lake 10,900 will only be improved with substantial rehabilitation work. But by removing a commercial stock use with its associated potential for further impacts to soft soils and meadow of this basin that are susceptible to hooved trampling, the damage will

at least be arrested. This will improve the experiential values of the setting. Stock camps at Mudd Lake will still receive a high level of use, perhaps more if use in the upper basin is displaced to Mudd Lake. However, there will also be a seasonal destination quota in the area to insure that use does not increase through displacement.

Fourth Recess Analysis Unit will continue to have a high level of stock use. There will be four stock camps that will be designated at and above Third recess junction along the trail corridor. This alternative reduces the number of stock camps that exist in the No Action and will concentrate stock related impacts into fewer locations that can sustain and will contain the impacts through the standards for stock camps. Many of these camps are very large in total area and heavily affected with vegetation loss, pulverized soils in the holding areas and compacted soils in the non-stockholding areas. This alternative will reduce the sites to an appropriate size, location and improve access. Use trails to campsites currently provide for a very confusing trail system in the Mono Creek corridor and this will be improved by establishing one trail into the site and better signing.

Fourth Recess Lake will continue to be a location for concentrated use. A large campsite at the outlet will be used for concentrating large parties supported by commercial packers.

The Mono trail will continue to have some negative experiential affects to the hiking public until repairs and improvements are made. Continued stock use will contribute to the deterioration of this trail.

Little Lakes Valley will have low levels of commercial stock use. Packers have limited their use over the years as the public use increased, particularly day use. By continuing a limited use for commercial services, primarily spot and dunnage and some day rides, there will be a reduction in use conflicts over time between hikers and stock.

Identified camp locations for larger groups at Chickenfoot Lake will insure that larger groups occur at appropriate locations. Limits on party size at Gem Lake insure that the limited camping opportunities and a setting that is not conducive to much solitude are not negatively affected by large stock supported parties.

Tamarack Analysis Unit will have an increase in stock use from recent past use. Use in this area fluctuates year to year in the No Action Alternative. This will likely continue to be the case. Tamarack does not have a draw or demand like other destinations in the region and is not expected to start drawing more use. It is probably capable of supporting 125 stock a season with established stock camps and limitations on use trails and short cuts that are currently identified by packers and had been used until the 2001 Wilderness Plan limited travel to existing system trails unless authorized.

Hilton Analysis Unit will continue to have a high level of commercial stock use but with more constraints than Alternative 1. There will still be three operators in the drainage but two operators will be infrequent, with light use per season and access in the drainage from the north via Hilton creek. This separates the use somewhat and it would be less than a few nights a season when more than one operator would be in the drainage at the same time. Use trails in the area are excessive and in this alternative, like the proposed action, will be greatly reduced, concentrating stock use on primary trails. Use trails that appear to be in place to travel between camps used by packers will be prohibited and over time, these areas may re-vegetate with the disturbance removed. Hilton will remain an area that is dominated by packer use. Use will be prohibited

above Third Lake thereby insuring that stock impacts do not extend into more areas of the drainage over time and that use patterns will not change.

Cumulative Impacts

There will be continued cumulative effects of high day use combined with pack stock use in Little Lakes Valley. The actions in the alternative insure that pack stock use does not increase and remains at a very low level. With developed campgrounds adjacent to the wilderness boundary and resort facilities along the access road to this wilderness boundary, the area draws hundreds of visitors a day into Little Lakes Valley during the summer months. No regulation of day use is in place, yet the relatively small level of backpacking and pack stock use is. Access to classic mountaineering routes (Bear Creek Spire) also draws a type of user into the area, and many of these routes experience low-level impacts to the climbing routes and some crowding. Lack of actions in these developed areas has had an effect on the wilderness experiential values in this area.

Hilton Lakes was the location of multiple structures and facilities that were removed after the 1964 Wilderness Act was passed to comply with wilderness standards. Impacts from an earlier period of heavy use remain on the landscape. The area has improved wilderness character significantly from the time it was designated wilderness. Actions in this alternative continue use at high levels yet the overall impacted area has been reduced between past actions since the 1964 (removing facilities) and in this alternative by limiting the extent and locations of commercial pack stock services.

Mono Creek/Rock Creek – Alternative 4

Analysis

Locations within the Upper Mono corridor (east of Second Recess) are primarily influenced by use levels over Mono Pass from the Mono trailhead. West of Second Recess, the Lower Mono trailhead accesses the Lower Mono corridor and Graveyard trailhead accesses the Graveyard/Goodale Pass area. Mono Pass trailhead, even though it is being reduced from 15 to 10 people per day, will have little direct effect on some key locations such as Hopkins, Pioneer Basin, and Fourth Recess.

Use could become concentrated at any of three locations with no guarantee that it will disperse between these destinations. Destinations vulnerable to increases in use would be Pioneer Basin, Lower Hopkins Lake, Second Recess, and Fourth Recess. Crowding already occurs at Fourth Recess, and with limited camping, any increases to Fourth Recess could degrade the already low opportunities for solitude. Hopkins Lake also has limited camping potential and may become a primary destination for overnight stock use other than camps in Mono Creek.

Traveling trips may be fewer with the reduction of service days. This area currently receives a high level of all expense traveling trips. With reduced service days, there may be a shift to more spot and dunnage type of services and fewer traveling trips, which utilize service days. The effect of this would be reduced impacts because of fewer occurrences of use at the already existing stock camps and possibly more people in the upper Mono Creek, Fourth Recess, and Pioneer Basin. Opportunities for solitude would likely be diminished in Pioneer Basin.

As described above in the wilderness scale, with controls on people and not stock, there will be an increase in the numbers of stock in this area to compensate for the reduced service days and daily quota. Increased stock on the Mono Trail will continue to degrade the trail, which is not currently built to standard, with a consequence of degrading the experiential qualities for the visitor.

With a trailhead quota of 10 people a day, the number of commercial parties would be greatly reduced in the month of August. This use may be spread out to July or September but that will be dependent on demand. It is possible that the service days cannot be utilized due to quota availability in the month of August, which is peak season. An overall reduction in use would not equate to reduction in impacts if stock numbers do not correspondingly go down, or frequency of use at certain locations increases.

In the Hilton area, use will be limited to 10 persons a day. This is typically an area used in the early season with less frequent use in August. Pack operations generally shift their business to trips over Mono Pass and traveling trips from Mono to Mammoth and/or Yosemite National Park. With quota space being constricted on the Mono Pass trailhead, it is possible that more use would occur throughout the season in Hilton to make up for the loss of opportunity over Mono Pass. If more use were to occur in Hilton, commercial pack stock use would be even more dominant than it is currently, which is over 40 percent of the use. If designated campsites concentrated the camping impacts and trail limitations concentrated the stock use to the lower basin as this alternative proposes, then the primary impact would be to a visitor's wilderness experience with increased crowding at Second and Davis Lake and encounters with pack stock on the trail. Again, without direct controls on stock numbers, if stock were to increase in the very small area authorized for the commercial stock use in Hilton with this alternative, there would be very intense and concentrated stock impacts, including odors and/or urine and manure along the primary corridor and destinations of the drainage.

Tamarack may have similar effects as those described for Hilton Lakes. Use may disperse to Tamarack if quota availability allows. In this alternative, the quota is reduced at Tamarack from eight to six. However, this would still allow for considerably more use than occurs in Alternative 1, 2 or 3. Since Tamarack is relatively remote and has lighter impacts, it is vulnerable to the increased impacts that increased stock use could bring. Dorothy Lake would receive all the use, as it would be the only designated campsite for packer operations. Dorothy is suitable for pack stock use but may receive intense impacts if use were to increase. Encounters with pack stock in this area would likely increase and opportunities for solitude would likely decrease.

Little Lakes Valley may also provide some potential for dispersal for packer operations that would be limited by reduced quota on Mono Pass. Again, the quota is eight people a day. This still allows for considerable growth in commercial packer operations from the Alternative 1 – No Action, and Alternatives 2 and 3. Chickenfoot Lake and Long Lake are the two identified camp locations for all commercial packer use (including spot and dunnage). The use would probably remain primarily spot and dunnage and would be easy for the packer to accomplish being so accessible from the pack station. Chickenfoot Lake is conducive for parties, including large parties, and very little increased impact would occur here or at Long Lake. The amount of use would be consistent with a Recreation Category 3 area, where use is managed intensively. The increased encounters with stock would likely create the most impact to wilderness experience, and could create more crowding and loss of opportunities for solitude.

At the west end of this geographic region, the primary control point would be Mono Creek trailhead for lower Mono Creek, Graveyard for Graveyard lakes, and Devil's Bathtub, Bear Ridge, and Bear Creek trailheads for Bear Ridge and Volcanic. This later trailhead also becomes the primary regulator of use along the PCT/JMT from Volcanic to Seldon Pass. Trailhead quotas would not change from current use, but overall use levels determined by service day would be reduced by 20 percent. Possible increases in stock numbers would result with corresponding effects to the Mono trail, Goodale Pass trail, and JMT/PCT. Use patterns would likely stay the same, with intense use continuing to lower Graveyard Lakes and no improvement to the opportunities for solitude. With fewer options for dispersing use in this alternative, the crowding may become exacerbated. Arrowhead Lake may get more use because of this action as it becomes one of the few locations where use can disperse.

More remote locations such as Feather and Upper Graveyard lakes will, over time, become more remote and have high opportunities for solitude and high wilderness character.

The Silver Peak area would probably receive less commercial pack stock use if the 20 percent service day reduction were to result in fewer all-expense trips (as it likely will). Most of the commercial pack-stock use would then go to Mott Lake, with fewer stock encounters along the trail to Silver Pass. Mott Lake may see increased use as one of the few destinations where commercial stock use will continue. Opportunities for solitude will be reduced and crowding and a sense of remoteness will be very hard to come by in August.

Bear Ridge will likely remain a pass-through area for accessing the PCT and JMT. Use patterns will not change, nor will the small reduction in overall use have any noticeable effect on resource or experiential conditions in this area.

Cumulative Impacts

These actions, when combined with present activities will have a cumulative effect in some locations of increasing use and potentially impacts or at least decreasing opportunities for solitude and wilderness experiences. Little Lakes Valley will experience the cumulative effect of displacing pack stock use into an area where there is a very high day hiking visitation. With developed recreation sites in close proximity to the wilderness boundary, and Little Lakes Valley providing easy hiking into extraordinarily scenic settings, this area may experience some intense crowding and diminished experiential wilderness qualities.

Hilton Lakes will also have multiple use types occurring with this action possibly displacing even more commercial pack stock use into the lower basin. Cumulatively, the actions effectively concentrate a lot of use into a smaller area, with limits on trails to the upper basin. Though this protects the upper basin and achieves high opportunities for solitude, there may be an effect of displacing the non-packer use into the upper basin to find solitude from the intense packer use concentrated in the lower basin.

Mono Creek/Rock Creek – Alternative 5

Analysis and Cumulative Impacts

This area currently receives a high level of commercial pack stock use. This region includes that area accessed from the east over Mono Pass, and from the west from Lake Edison. It also

includes Hilton Lakes and Tamarack north and south of Rock Creek respectively. 25 percent of the use over Mono Pass is by packers, 45 percent of the use in Hilton Lakes is by packers.

Hilton Lakes has been used intensely by packers. The primary access is from Rock creek with a small amount of use accessing from Hilton Creek to the east. Up to 750 head of commercial stock have been recorded in a season in Hilton, with the primary destinations being Davis Lake and Second Lake. A very rough and deteriorated trail exists to the upper basin and with the removal of packer use, this trail could be maintained at very minimal level and sustain the use. The entire area will take years to recover from the intense packer use, as many trails and camps are heavily compacted. Light use will continue by hikers and day hikers and it is not likely that this will be high priority for management actions for restoration. With no action, the character of the area will change dramatically. There will be no encounters with stock where currently there is 20-70 stock a day traveling on the trails. Opportunities for solitude would be increase significantly, although most of the use in here by packers is concentrated in early season.

The Mono Creek corridor, including the side canyons (recesses) and basins, attracts moderate to high use area for all types of use. By eliminating packer use there would be noticeable changes in the Mono corridor, to trails, campsites, and in the number of encounters. Specific locations that would be most affected would be Fourth Recess, Pioneer Basin and lower Hopkins Lake.

Up to 600 commercial stock travel to, or through, Fourth Recess (which includes the Mono trail to just below Hopkins junction). Fourth Recess itself has recorded up to 200 stock a season. With the elimination of packer, use there would be a noticeable change. There would be higher opportunities for solitude, as the capacity for camping is limited at Fourth Recess Lake. Fewer parties would be camping without the assistance of spot and dunnage support. Campsites would likely remain impacted at the lake; there is no stock camp here.

The trail corridor from Mono Pass to just below Hopkins would be affected by eliminating stock, including fewer encounters, higher opportunities for solitude, reduction in the number of stock camps and in the impacts of these stock camps. Many of the stock camps along the trail corridor have substantial use trails to them that provide confusion of the trail system. The trail itself is highly eroded, rough and in need of repairs. The repairs needed without pack stock would be greatly reduced, and the trail could be maintained and reconstructed at a lower development level than with current packer use levels. This would enhance the wilderness character of the area by providing more a primitive trail.

Lower Hopkins Lake would show some improvements with the absence of packer use. There is one large stock camp, with an associated holding area, that would be contained or eliminated over time. The area receives less than 10 trips a year so opportunities for solitude would be increased somewhat. Private stock use would still occur but trails could be maintained at lower standards, use trails eliminated (specifically lower Hopkins to upper basin).

Up to 200 commercial stock access Pioneer Basin in a season. With the elimination of this use, the system and use trails that have been identified for use by packers will not be needed. Some of these trails are noticeably degraded and by removing one source of the disturbance, the trails may not improve but will not degrade further. Without significant mitigation, these trails will not naturally recover and in some cases may continue to degrade. Multiple stock camps at Mudd Lake will no longer be needed and it is expected that one site will be identified as a suitable location for private stock parties and over time, the other sites will be contained and/or rehabilitated. The trail system can be greatly reduced to a few primitive trails and allow for

cross-country travel by the foot travelers. The basin is open and as such is vulnerable to perceptions of crowding, even with a relatively small amount of visitors. Removing up to 70 visitors a season, mostly in August, will only moderately improve the opportunities for solitude.

Currently up to 350 stock travel in the Graveyard area per season. The primary destination is lower Graveyard Lakes. With no commercial stock, the biggest effects would be noticed at lower Graveyard and along the trail corridor to Goodale Pass. Opportunities for solitude would increase at lower Graveyard with the absence of commercial pack stock services, but would probably be only moderate since this is a popular destination for backpackers. Camping opportunities are moderate at the lake and the presence of other parties camped is noticeable. One large site frequented by packers at the outlet would remain similarly impacted, with a large impacted area. This may over time decrease in size due to fewer large parties and no temporary holding for stock or disturbance by bringing stock in and out and unloading them at the site.

Very little use occurs at Feather and Arrowhead lakes, and therefore, little change would occur at these locations.

Second Recess, Volcanic, Tamarack, and Bear Ridge Analysis Units receive low commercial use. Volcanic sees less than 10 stock a year. This use is primarily associated with hunters or to assist crews at the snow-survey site. The need to continue to provide stock support for the snow survey would probably be conducted by the Forest Service with their stock. Private hunting parties would possibly replace commercial stock support and the same level of stock would occur in Volcanic. Bear Ridge is used primarily as a pass-through to access the JMT/PCT from Lake Edison. The greatest effect of eliminating packer use would be on the trail system and may lead to decrease need for maintenance and reconstruction over time. Second Recess use is along the Mono trail and similar decrease in maintenance may be an effect. Tamarack receives less than 50 stock a year and the effect of eliminating this use would be in increasing already high opportunities for solitude.

Little Lakes Valley also receive very low packer use, similar levels to Tamarack. This area however receives very high public use, primarily day hikers. It is one of the highest day use areas in the two wildernesses on the Inyo National Forest. The effect of eliminating packer use would be barely noticeable. Trails are built substantially in this valley to accommodate high use. These trails have gradually been narrowed from when the main trail was a mining road. These actions have improved the wilderness character of the area but the high use and lack of opportunities for solitude due to proximity and easy access from developed recreation sites will continue.

Bishop/Humphreys – Alternative 1

Analysis

This region will have a high level of commercial stock along primary trails and popular destinations. Numbers of stock used could increase over time. Some secondary trails and use trails to remote locations are prohibited for stock use in this alternative, but some areas without trails areas remain available for commercial pack stock to use. Frequency of use to these destinations is not controlled therefore changes in patterns and increases in frequency of use at destinations could occur. This leaves a potential for increases in impacts.

Gable Lakes are managed as a case-by-case trail. Commercial use has occurred in the past but the condition of the trail has limited the opportunities for pack stock and in some years,

prohibitions have been identified in the annual operating plan. If use were to be approved on a case-by-case basis, it would receive only occasional and infrequent commercial stock use. However, the trail is managed as a trail class 3 in this alternative, which would allow for a highly developed trail into the Gable Lakes drainage. Managing the trail to this level would be in conflict with the needs implied by the case-by-case designation for pack stock, and in conflict with the Recreation Category 1 designation.

Pine Creek would have a high concentration of pack stock use on the main trail to Honeymoon Lake. Moderate use at lower and upper Pine Lakes would continue and Honeymoon Lake and dunnage trips to the Pass would constitute the bulk of commercial pack stock use in east of the pass. Honeymoon Lake would be a location where opportunities for solitude would be compromised and crowding can affect visitor's experience. Campsite impacts, with large total area of vegetation loss and soil compaction would persist and possibly expand in this alternative.

In French Canyon, there will be opportunities for pack station services to access more remote locations. Use trails to Royce Lake, French Lake, Steelhead Lake, Shepherder Lake, and Alsace Lake are all authorized to commercial pack stock. Since a level of use is not prescribed to these locations, there is a danger that if use levels were to increase at any one of these locations, it would lead to more trailing impacts, campsite impacts, and a general loss of existing solitude at these more remote locations. If commercial packers, however, use the destinations at the level they currently are, these locations may not experience much change over time.

The campsite at Royce Falls in French Canyon will continue to see a high level of stock use. The camp is used for two-day spot trips over Pine Creek Pass. The frequency of this type of use is not directly controlled. The camp has experienced significant expansion, extends across the system trail, and is a noticeable impact for travelers on the trail. It is likely that impact will continue. Loose grazing in French Canyon will also have effects on a visitor's experience with noticeable impacts to meadows, and the possibility of loose stock roaming the canyon.

No system trail to Merriam Lake would result in commercial stock use to Merriam having the potential to cause further erosion with a lack of the means to maintain or reconstruct the trail. The current use trail authorization does not specify which trail should be used (there is one on both sides of the creek). Use would continue on both trails with an effect on a wider area. Lack of an identified system trail would cause a conflict between the allowable use and the trail resources. Use trail to LaSalle would be authorized in this alternative and could lead to diminished solitude and deteriorated trail conditions over time.

Hutchinson Meadow would receive use from multiple operators. Use typically does not converge here often but has the potential to in this alternative. Multiple stock camps would persist and new ones could be created and developed over time. The area shows signs of extensive impacts due to many years of campsite development and expansion from hikers and stock travelers. The area will continue to be subject to crowding and noticeable impacts from use. The drift fence will be allowed to remain and its size could have an effect on visitor's wilderness experience.

In Glacier Divide unit, Golden Trout Lake will have a high concentration of commercial stock use. The current packer will probably utilize the same sites and multiple trails to access the various sites causing resource concerns and confusion to the visitors. The proliferation of use trails could be curtailed with active management that defines appropriate trail and campsites for packer use, but to date that has not occurred. Without active management, the area could continue to degrade, particularly the trail accessing the lake, which will not be on the system in

this alternative. This will cause a conflict between trail management direction and allowable uses which will likely result in noticeable impacts.

Lower Honeymoon Lake and Packsaddle Lake would be approved as use trails. While the trail to Honeymoon could easily withstand some increase in pack stock use, Packsaddle is vulnerable to increased use both from potential impacts to the fragile meadows surrounding the lake to the experiential qualities and opportunities for solitude that could be compromised with increased or facilitated use to this area. Both areas have limited camping opportunities where other camped at the same time could affect the wilderness experience.

The Muriel Lake trail will also not be managed as a system trail. A short section through the riparian area will persist and possibly degrade further with continued commercial pack stock use. No limits on the frequency of commercial stock use may exacerbate this situation over time. Further impacts or reduction of impacts will be dependent on the timing of use, the snow pack and the wetness of the area and then number of stock that use the area.

Humphreys Basin will have moderate commercial stock use. Use will be allowed on most cross-country routes in the basin. It is expected that most use will continue to go to Desolation Creek/Lake and Humphreys Lake. Light use would occur to Mesa and Tomahawk and if this pattern were to continue, little change would be evident in this area.

The North Fork of Bishop Creek will remain a high use area and commercial pack stock will be heavy. The area is used mostly as a travel through to destinations west of the pass. Upper Piute Lake receives occasional use throughout the summer by commercial stock. Day rides to Loch Leven will occur and will add to the congestion at that popular day use destination but is consistent with Recreation Category 3 area if managed intensively.

Lamarck Trail will be managed as a Trail Class 3. If managed to this level it could facilitate more commercial stock use than currently occurs. With an improved trail, the trailhead quota may get used more frequently by commercial pack stock. This would have the potential for moderate adverse effects to solitude and natural conditions effect on the south side of Lamarck Col.

Horton will receive low and infrequent commercial pack stock use. It will probably be early season use and have no effect to this area.

Sabrina will have high commercial stock use. Multiple destinations disperse the pack stock use. Dingleberry and Emerald Lake will receive the highest concentration of use. Without a system trail to Emerald there may be conflicts between use and trail resources in the future. Use will remain primarily spot and dunnage. Impacts will be to trails, campsites and in frequent (daily) encounters with pack stock on the trail. Baboon Lakes will be managed to a high level (Trail Class 3) and this could facilitate additional use, which could affect some qualities of the destinations. Limited camping exists at Baboon Lake and opportunities for solitude have the potential to be diminished if use were to increase.

Tyee would remain a case-by-case trail for only occasional use. The trail would be managed as a highly developed Trail Class 4. This would cause some conflict between trail assignment and the commercial use assignment, which in the future may lead to some reconsideration of the commercial use.

Bishop Pass would be a high use commercial stock use primarily as a travel through to Sequoia-Kings Canyon National Park. The Chocolate-Ruwau trail would be managed as a Trail Class 3,

which would greatly change the character of this loop. By improving the trail, pack stock use could be facilitated and lead to commercial stock use expanding to sites at Chocolate and Upper Chocolate. Currently, pack stock use has been limited to Bull Lake and not beyond to Chocolate or onto Ruwau Lake. Ruwau can be accessed from Long Lake. Marie Louise Lake would not be managed as a system trail and commercial pack stock would not be approved.

Treasure Lake will be open to commercial stock use and up to eight persons a day could be allowed. This could lead to increase in use if the quota were to be utilized more days a season. Opportunities for solitude will be low to moderate.

Cumulative Impacts

Effects of past use and management actions are particularly evident in Pine Creek, Piute, Sabrina, and Bishop Creek. All these areas show evidence of high commercial and public use, including commercial and private backpacking, mountaineering, pack stock, and day use. Actions in the 1970s established quotas on these high use trails for private users. Commercial use, although it did not increase was not controlled on a daily basis. One effect of trailhead quotas on only high use trails may have been to disperse use to other less crowded areas. The addition of trailhead quotas on all trailheads (2001) may help prevent further impacts in light to moderately used areas. Site-specific campfire closures that were put into place in Piute, Sabrina, and Bishop Creek helped reverse the depletion of wood and prevent further scarring and mutilation of trees that was occurring.

The cumulative effect of past actions and on-going commercial pack stock activities in this No Action Alternative are that there will be the potential for minor to moderate local adverse effects to natural conditions if use patterns change and new impacts are created as a result of the change in use. There is also a moderate adverse cumulative effect to visitor freedom for all users, with past and present restrictions and limitations on visitor use. These limitations have had moderate beneficial effects on natural conditions and some experiential components of wilderness character, particularly at high use destinations such as Blue Lake, Long Lake, Piute Lake, and Golden Trout Lakes.

Past high use including commercial pack stock and commercial and private backpackers in the Golden Trout Lakes are (Humphreys Basin) led to some severe trail and campsite impacts and a proliferation of use trails. A closure to camping was put into effect in the 1980s, which was only partially effective at reducing site and trail impacts. In 2003 there was a rehabilitation project in Humphreys Basin, focused at Golden Trout Lakes. The project removed fire-rings and set back campsites at Golden Trout Lakes, responding to the 2001 elevation campfire closure. When removing campsites, consideration was given to the packers needs and to minimize the need for use trails. Actions in this alternative may lead to continued needs for this type of project work as the multiple use trails continue to be available for pack stock use.

Currently there is a capital investment project on the Pine Creek Trail. This work will improve the condition of the trail and may facilitate pack stock use by making travel easier and safer. Use levels however would be more dependent on market demands than trail conditions. Substantial investment and development of this trail contributes to the development of the area. Scenic qualities in the lower portion of this trail are greatly diminished by a large Tungsten mine just outside the wilderness boundary. The mine, now closed, is in the midst of rehabilitating the landscape yet the scars are visible from within the wilderness. Future uses of this land could

further diminish the scenic and experiential qualities for visitors. Pack stock uses that will continue in this alternative at moderate to high levels, combined with the diminished experiential qualities and a highly developed trail all contribute to some effect on the wilderness character of the area.

There will be a potential cumulative effect of continued allowances for commercial pack stock trips up to Lamarck Col. Use will be facilitated into Sequoia-Kings canyon national Park into a more remote and pristine area. Increased use can have adverse effects on the natural conditions of this pristine area, and loss of opportunities for solitude.

Day use, facilitated by developed recreation sites in the Bishop Creek drainage, in addition to the commercial pack-stock use activities in this alternative, will have cumulative effects on crowding and wilderness experience in Piute, Sabrina, and Bishop Creek in this alternative. There will be short-term moderate adverse effects to some people's experience as a result of high recreation use and various recreational activities in the first 6 miles of the trail into the wilderness.

Bishop/Humphreys – Alternative 2 – Modified

Analysis

In this region 35 destinations will be used by commercial pack stock. This is a very small proportion of this very extensive geographic unit. A heavy concentration of packer use will occur in Sabrina, Bishop Creek, French Canyon, and the Glacier Divide areas. Generally, locations that were suitable and sustainable were identified for potential growth while areas where impacts were high (or current use was of a concern) use was reduced. These will be discussed below.

Only two analysis unit areas, French Canyon and Hutchinson, would have overlapping spot and dunnage operations: French Canyon with two operators and Hutchinson with three. A very small number of all-expense trips (approximately 20) would travel through the area. There are two operators doing versions of the North and South lakes loop through Sequoia Kings Canyon National Park. These operators run occasional trips from Mono Creek to the south going out either Pine Creek or Bishop Pass and trips from Pine Creek to Sequoia Kings Canyon via Hutchinson Meadow.

In the Gable Analysis Unit, the trail is being identified as Not Recommended for Stock. No packer operations would occur. Currently packers do not go there but have expressed their desire for trail improvements so they can access the lakes. Opportunities for solitude would remain high.

Pine Creek Analysis Unit would allow for some increases in spot and dunnage along the Pine Creek trail. This increase, if it were to be realized would occur along the primary trail corridor and have very little additional effects on encounters while camping or traveling since it would be a minor increase over the course of the season. The trail has a high level of development and suitable for stock travel at moderate to high levels.

A slight increase is allowed for Honeymoon Lake. The designation of campsites for all commercial pack stock clients (including spot and dunnage drops) and limits to only two commercially occupied sites at one time would reduce conflicts with other visitors, limit the area of impact, and contain the stock related impacts at Honeymoon Lake. This lake has limited

capacity for camping and more than two parties at a time would reduce opportunities for solitude.

Commercial pack stock would not be allowed beyond Honeymoon Lake to access either Chalfant Lakes or Granite Park. This would insure that the area remains more primitive and that trail development is kept to a minimum, as it is not needed to support commercial pack stock. Opportunities for solitude at Chalfant Lakes will be high. Granite Park receives a lot of public use and will remain moderate for solitude and high for wilderness character.

Horton Creek will have occasional early season packer use. It is used in conjunction with spring horse drives and six trips with two different operators. These trips will not have much effect on the area. It will remain a low-use area.

In French Canyon, the use will be reduced to Elba and Moon lakes until the trail is improved. This is not expected to occur in the next few years. Substantial work will be necessary to make it suitable for increased use. Maintaining low stock use levels to these lakes will ensure that natural conditions do not degrade further. The low use levels would have very little adverse effects to solitude while camping in this location as visitors can disperse to various lakes.

Use will also be reduced from the high use year to Merriam Lake. One trail will be eliminated to remedy a duplicate trail system. This will concentrate use onto the one trail but that use is relatively light (four trips a year). There is not expected to be any adverse effects to naturalness or solitude with this low level of use.

Access to Royce Lakes will be authorized for light use (two trips a year) and this will not likely change the use trail access or the character of the area. French Lake use will be capped at the current high of two trips a year. Limits on the number of stock will ensure that the trail does not become defined over time. This will allow for these destinations, French Lake, Royce Lakes, and Merriam Meadow to remain low use and limit stock related impacts. No stock camps are identified at French or Royce so stock impacts will be minimal. Merriam has one camp identified on the bench below the lake and no travel by pack stock beyond the camp is allowed. This will protect the lakes identified by the packer for use from additional stock impacts. The bench above Elba and Moon lakes will be off limits to commercial pack stock, thereby preventing any further deterioration of the use trail from Elba Lake to Alsace Lake.

The Glacier Divide unit will see an overall reduction from high use years. This reduction would take place at Golden Trout Lakes, to help reduce any adverse effects to the trail accessing Golden Trout Lakes. It is expected that this level of use will continue to cause visual and experiential impacts for visitors. However with the reduction in use trails the proliferation of trails between camps and shortcuts between trails may be curbed and this will help improve the experiential values of this destination.

Trail impacts are by far the most noticeable at this destination and effect on the wilderness character of the area with trail impacts, crowding and campsite impacts, will continue at moderate intensity. With the potential action of removing the commercial stock use from the current trail alignment, which passed through a series of riparian areas where incision and multiple trailing is severe, to more durable location west of the lakes, there is a chance that even high levels of use can be sustained with fewer impact to naturalness. Active restoration of the system trails and use trails is needed if any improvements or beneficial effects to naturalness are to be realized.

Muriel and Packsaddle Lakes should maintain their current qualities of moderate and high wilderness character, with Packsaddle Lake receiving only occasional use and Muriel Lake receiving moderate use. The trail to Muriel Lake should not deteriorate further with this level of use and when improved can probably sustain a light increase.

Humphreys Analysis Unit would allow the same level of use; however, this use would shift from Humphreys Lake to Desolation creek/lake and Mesa/Tomahawk Lakes. No stock use would be allowed beyond Tomahawk to Knob Lake. Limited use around Tomahawk and Mesa Lakes will be authorized as long as trailing does not become evident. This area has sparse vegetation and decomposed granite soils where trailing is currently not an issue. Light use should maintain this condition. The area will continue to have high opportunities for solitude. Limited use to Humphreys will protect the primitive trail from becoming more established and thereby requiring development.

Piute Analysis Unit, east of Piute Pass will remain a corridor of high stock use. The campsites used at Piute Lake will be improved to allow for stock access and to insure that no further deterioration occurs. This area receives a high level of day and overnight backpacking use.

Day rides will likely continue at existing levels. Day rides will be occasional (less than 50 a season) to Loch Leven Lake and rarely beyond. There will be effects to crowding because of this, but limited to no noticeable or measurable effects to the trails. The level of use is consistent, in fact low, for a Recreation Category 3 area.

Trips into the Lamarck Lakes area will be limited to five trips a year and the commercial pack and riding stock will not be allowed past Upper Lamarck Lake. This will reduce but not solve the concerns raised by Sequoia-Kings Canyon National Park that packer use is facilitating access into upper Evolution Basin. It is not expected, however, that five trips spot and dunnage to Upper Lamarck Lake will reduce the use noticeably.

The Sabrina Analysis Unit will see a potential for more trips with the same level of stock. The biggest change in use could occur at Emerald Lakes. This area is slightly off the main trail and currently receives mostly moderate packer use. This is a location suitable for family type trips because of the closer proximity to the trailhead and camping opportunities that maintain opportunities for solitude due to the vegetative screening. There will be an overall increase in parties supported by pack stock but not likely to be an increase in stock numbers. More visitors will be serviced with less stock if the growth potential is realized in Sabrina. The prohibition on a number of use trails will concentrate use to the main trail and maintain solitude and character off trail in the basin.

Tyee Lakes will see the same level of use that is currently occurring, very light use with no more than two trips a year. This will not change the character of the area or effect solitude for visitors as it receives moderate day use mainly by anglers and day hikers from the Bishop Creek developed sites.

Bishop Creek will continue to have a moderate level of stock use primarily passing though to Sequoia-Kings Canyon National Park. The limit on trips is the only control currently for the packers into the Park. The trail on the Inyo National Forest side is highly developed and can withstand high levels of use, including stock use. The potential growth for the packer will be along this main trail and over into the park, with limitations on use of trails off the main corridor. No use is permitted beyond Bull Lake. Use will be capped to Marie Louise Lake with a party

size limitation to insure that continued use the area does not expand trail and campsite impacts. Hurd Lake will be an area for potential growth and with its location off the main trail, located in lodgepole pine and with suitable campsites for large parties. It will become more developed but not effect either the character or the solitude component for the area. Ledge, Ruwau, and Chocolate lakes will all be off limits to pack use. By concentrating the pack use on the highly developed main trail and greatly limiting use off this corridor the majority of the basin will not be subject to stock related impacts. Opportunities for solitude off the main trail will be moderate to high and because of the trail prohibitions (i.e., Ruwau, Chocolate, Ledge, and Margaret lakes) the effects of commercial pack stock use in areas off the main trail will be minimal.

Treasure Lakes will have the potential for an increase in use, but will remain light use, up to eight trips a year. Limiting use to the main trail corridor and not beyond the lower lakes will insure that stock related impacts are contained. Trail conditions along the last $\frac{3}{4}$ mile to the lower lakes will not likely improve but will not deteriorate with this level of use.

Cumulative Impacts

High visitor use, both commercial and non-commercial, outfitter guide and packers, has occurred for over thirty years in many parts of this region. Impacts are noticeable in Piute, Sabrina, Bishop Creek, Golden Trout Lakes, and French Canyon. Trailhead quotas reduced spikes in use, which probably helped reduce campsite impacts at many locations in Humphreys Basin and Sabrina Basin. Closures to campfires in the 1980s at Sabrina and Piute and the camping closure at Golden Trout Lake, along with active management to restore campsites and fix trails, have all reduced the extent of the impacts. All these areas show evidence of high commercial and public use, including commercial and private backpacking, mountaineering, pack stock, and day use. Additional action in this alternative of limiting trips to locations where risks are evident or resource impacts have been identified, and prohibiting commercial pack stock on a number of use trails will have a moderate long-term beneficial effect to natural conditions. Removing a source of disturbance and/or reducing the frequency of the disturbance will allow for recovery of some trails and impacts at destinations such as Muriel and Golden Trout Lakes. It will also limit opportunities for unconfined recreation for those visitors who rely upon commercial pack stock to access these areas. The areas will still be available to the clients by foot travel.

Work on the Pine Creek trail (trail construction project currently in progress) should improve the condition of the trail and may facilitate pack stock use by making travel easier and safer. Use levels however would be more dependent on market demands than trail conditions. Scenic qualities in the lower portion of this trail are greatly diminished by a large tungsten mine just outside the wilderness boundary. The mine, now closed, is in the midst of reclamation, yet the scars are visible from within the wilderness. Future uses of this land could further diminish the scenic and experiential qualities for visitors. Pack stock uses that will continue in this alternative at moderate to high levels, will add to the effect on experiential qualities on the lower section of this trail. Having the use and trail standard compatible will improve some of the experiential qualities by fixing the impacts of commercial stock, private hiking use and past mining use.

Past high use of commercial pack stock and commercial and private backpackers in the Golden Trout Lakes area (Humphreys Basin) led to some severe trail and campsite impacts and a proliferation of use trails. A closure to camping was put into effect in the 1980s, which was only partially effective at reducing site and trail impacts. In 2003, there was a rehabilitation project in Humphreys Basin, focused at Golden Trout Lakes. The results of this project work and past

action combined with the actions in this alternative will further reduce the extensiveness of impacts in this area by containing the commercial use to a limited number of trails and campsites. The chance of the project work being successful (that is, impacts do not return) are higher with this alternative than Alternative 1, 2, 3 or 4 as a definitive limit and reduction on trips to this area is prescribed until trail conditions are improved. This will have long-term beneficial effects that will reduce the cumulative effects of continued commercial pack stock in the area.

Day use, facilitated by developed recreation sites in the Bishop Creek drainage will continue to have some minor to moderate effects on crowding and wilderness experience in Piute, Sabrina, and Bishop Creek in this alternative. This, combined with increasing day rides out of North Lake may increase conflicts between hikers and stock users and contribute to more crowding and experiential impacts on the trail to Piute Pass.

Bishop/Humphreys – Alternative 2

Analysis

In this region 48 discrete destinations will be used by commercial pack stock. A heavy concentration of packer use will still occur in Sabrina, Bishop Creek, French Canyon, and Glacier Divide areas. Collectively at these 48 destinations there are allowances for 69 additional spot and dunnage trips. Generally locations that were suitable and sustainable were identified for potential growth while areas where impacts were high or current use was of a concern were identified for reductions. These will be discussed below. Only two areas, French Canyon and Hutchinson, would have overlapping spot and dunnage operations: French Canyon with two operators and Hutchinson with three. A very small number of all-expense trips would travel through the area, two operators doing versions of the North Lake/South Lakes loop through Sequoia Kings Canyon National Park—an occasional trip from Mono Creek to the south, going out either Pine Creek or Bishop, and trips from Pine Creek to Sequoia Kings Canyon via Hutchinson meadow.

In Gable Analysis Unit no packer operations would occur with the trail being identified as Not Recommended for Stock. Currently packers do not go there but have desired for the trail to be improved so they can access the lakes. Opportunities for solitude would remain high. Wilderness character would continue to be diminished by the remnants of the mining operation.

Pine Creek Analysis Unit would allow for some increases in spot and dunnage along the Pine Creek trail. Only a slight increase is allowed for Honeymoon Lake and this, combined with designated campsites for all commercial pack stock clients and limits to only two commercially occupied sites at one time would reduce conflicts with other visitors, limit the area of impact, and contain the stock related impacts at Honeymoon. This lake has limited capacity for camping and more than two parties at a time would reduce opportunities for solitude. Commercial pack stock would not be allowed beyond Honeymoon Lake to access either Chalfant Valley or Granite Park. This would insure that the area remains more primitive and that trail development is kept to a minimum, as it is not needed to support commercial pack stock. Opportunities for solitude in Chalfant will be high, but Granite Park receives a lot of public use and will remain moderate for solitude and high for wilderness character.

Horton Creek will have occasional early season packer use. It is used in conjunction with spring horse drives and six trips with two different operators will little effect on the area, and it will remain a low use area.

In French Canyon the use will be reduced to Elba/L and Moon Lakes until the trail is improved. This is not expected to occur in the next few years and substantial work will be needed to make it suitable for more use. Use will also be reduced from the high use year to Merriam and one trail will be eliminated to reduce a duplicate trail system. This will concentrate use onto the one trail but that use is relatively light (four trips a year). Royce Lake will be allowed for light increase (two to four trips a year) and this will not change the use trail access or the character of the area. French Lake use will be capped at the current high of two trips a year. This will allow for these destinations, French, Royce, and Merriam to remain low use and limit stock related impacts. No stock camps are identified at French or Royce so stock impacts will be minimal. Merriam has one camp identified on the bench below the lake and no travel by pack stock beyond the camp is allowed. This will protect the lakes that had been identified for packer use from further stock impacts. The bench above Elba and Moon will be off limits to commercial pack stock, thereby preventing any further deterioration of the use trail from Elba to Alsace Lake.

The Glacier Divide unit will see an overall reduction from high use years. This reduction would take place at Wahoo Creek (vicinity of Golden Trout Lakes), Muriel, and Packsaddle. Increases would be allowed at Hutchison meadow. Muriel and Packsaddle should maintain their current qualities, with Packsaddle receiving only occasional use and Muriel receiving moderate use. The trail to Muriel should not deteriorate further with this level of use and when improved can probably sustain a light increase.

The overall level of use at Golden Trout Lakes would remain the same. It is expected that this continued level of use at Golden Trout Lakes will continue to cause visual and experiential impacts for visitors. However, with the reduction in use trails, the proliferation of trails between camps and between trails may be curbed. This will help improve the experiential values of this destination. Active restoration of the trails and use trails is needed if any improvements in the area are to take place in the next 10-20 years. Trail impacts are by far the most noticeable and affect the wilderness character of the area more than the crowding or campsite impacts, both of which are high in the month of August. This area being opened to campfires from clients of commercial pack stations would probably suffer from the issues of non-compliance discussed in the Wilderness section. A proliferation of fire-rings would likely occur and confusion over a fire closure would be inevitable when some visitors can have fires while others cannot. With the amount of both public and commercial use at this location it could become very problematic to manage effectively.

Humphreys Analysis Unit would allow the same level of use; however, this use would shift from Humphreys Lake to Desolation Creek/Lake and Mesa/Tomahawk. No use would be allowed beyond Tomahawk to Knob Lake and only limited use around Tomahawk, Square, and Mesa lakes as long as trailing does not become evident. This area is mostly sparse vegetation and decomposed granite soils where trailing is currently not an issue. Light use should maintain this condition. The area will continue to have high opportunities for solitude. Limited use to Humphreys will protect the primitive trail from becoming more established and thereby requiring development.

Piute Analysis Unit, east of Piute Pass will remain a corridor of high stock use. The campsites used at Piute Lake will be improved to allow for stock access to insure that no further deterioration occurs. This area receives a high level of day and overnight backpacking use. Sanding at the pass will be allowed to continue and may facilitate early stock use into Golden Trout Lakes which may contribute to the deterioration of trail conditions on the trail to Golden Trout. This will continue to be an issue until the trail is either relocated or developed to sustain this level of use. The day ride allocation will increase to 600-day rides a season. This will increase encounters between hikers and stock and contribute to crowding, but is consistent with a Recreation Category 3 designation if managed closely to insure additional damage does not occur. It is assumed that with a substantial trail there would be no additional environmental change as result of increased day use.

North Piute Analysis Unit will receive light use by two operators overlapping spot and dunnage to Piute canyon. Trail concerns will not change and this level of use will probably not have any effect on the current poor trail conditions in Piute Canyon below Hutchinson meadow.

Trips into the Lamarck area will be reduced from the high use year by nearly 50 percent. This will reduce but not solve the concerns raised by Sequoia Kings Canyon that packer use is facilitating access into upper Evolution Basin. It is not expected, however, that five trips (spot and dunnage) to upper Lamarck Lake or the Col will reduce the use noticeably. Wilderness permit use has not increased on Lamarck trail for over ten years, and in fact has decreased.

Sabrina Analysis Unit will see a potential for more trips with the same level of stock. Up to 30 more trips will be allowed but limited to areas in the basin that can sustain that use. The biggest change will occur with Emerald Lakes. This area is slightly off the main trail and currently receives mostly moderate packer use. This is a location suitable for family type trips with the closer proximity to the trailhead and camping opportunities. This location maintains opportunities for solitude due to the great screening and campsite locations that separate parties in the same area. There will be an overall increase in parties supported by pack stock but not likely to be an increase in stock numbers, so more visitors will be serviced with less stock if the growth potential is realized in Sabrina. The prohibition on a number of use trails will concentrate use to the main trail and maintain solitude and character off trail in the basin.

Tyee will see the same level of use that is currently occurring, very light use no more than two trips a year. This will not change the character of the area or effect solitude for visitors as it receives moderate day use mainly anglers and day hikers from the Bishop Creek developed sites.

Bishop Creek will continue to have a moderate level of stock use primarily passing through to Sequoia Kings Canyon. The limit on trips is the only control currently for the packers into the Park. The trail on the Inyo National Forest side is highly developed and can withstand high levels of use, including stock use. The potential growth for the packer will be along this main trail and over into the park, with limitations on use of trails off the main corridor. No use is permitted beyond Bull Lake, yet Bull Lake is suitable for an increase in trips without changing the character or creating additional stock related impacts to the area. Use will be capped to Marie Louise Lake with a party size limitation to insure that by allowing this continued use the area of impact does not expand and trail impacts do not increase. Hurd Lake will be an area for potential growth and with its location off the main trail but in lodgepole and with suitable campsites for large parties it will become more developed but not effect either the character or solitude component for the area. Ledge Lake, Ruwau, and Chocolate Lakes will all be off limits to pack

use. By concentrating the pack use on the highly developed main trail and greatly limiting use off this corridor the majority of the basin will not be subject to stock related impacts. Opportunities for solitude off the main trail will be moderate to high and in some location such as Chocolate, Ruwau, and Ledge may increase.

Treasure Lakes will have the potential for an increase in use but will remain light use, up to eight trips a year. Limiting use to the main trail corridor and not beyond the lower lakes will insure that stock related impacts are contained. Trail conditions along the last ¾ mile to the lower lakes will not improve but will not deteriorate with this level of use.

Cumulative Impacts

High visitor use has occurred for over thirty years in many parts of this region. Impacts have been noticeable in Piute, Sabrina, Bishop Creek, Golden Trout Lakes, and French Canyon. Trailhead quotas reduced spikes in use, which probably helped reduce campsite impacts at many locations in Humphreys Basin and Sabrina Basin. Closures to campfires in the 1980s at Sabrina and Piute and the camping closure at Golden Trout Lake along with active management to remove campsites, and fix trails, have all reduced the extent of the impacts. All these areas show evidence of high commercial and public use, including commercial and private backpacking, mountaineering, pack stock, and day use. Additional action in this alternative of limiting trips to locations where risks are evident or resource impacts have been identified, and prohibiting commercial pack stock on a number of use trails will have a moderate long-term beneficial effect to natural conditions. Removing a source of disturbance and /or reducing the frequency of the disturbance will allow for recovery of some trails and impacts at destinations such as Muriel and Golden Trout Lakes. It will also limit opportunities for unconfined recreation for those visitors that rely upon commercial pack stock to access these areas. The areas will still be available to the clients by foot travel.

Work on the Pine Creek trail will improve the condition of the trail and may facilitate pack stock use by making travel easier and safer. Use levels however would be more dependent on market demands than trail conditions. Scenic qualities in the lower portion of this trail are greatly diminished by a large Tungsten mine just outside the wilderness boundary. The mine, now closed, is in the midst of rehabilitating the landscape yet the scars are visible from within the wilderness. Future uses of this land could further diminish the scenic and experiential qualities for visitors. Pack stock uses that will continue in this alternative at moderate to high levels, will add to the effect on experiential qualities on the lower section of this trail. Having the use and trail standard compatible will improve some of the experiential qualities by fixing the impacts of commercial stock, private hiking use and past mining use.

Past high use of commercial pack stock and commercial and private backpackers in the Golden Trout Lakes area (Humphreys Basin) led to some severe trail and campsite impacts and a proliferation of use trails. A closure to camping was put into effect in the 1980s, which was only partially effective at reducing site and trail impacts. In 2003, there was a rehabilitation project in Humphreys Basin, focused at Golden Trout Lakes. The results of this project work and past action combined with the actions in this alternative will further reduce the extensiveness of impacts in this area by containing the commercial use to a limited number of trails and campsites. The chance of the project work being successful (that is, impacts do not return) are higher with this alternative than Alternative 1. The exception is with campfire use. There is a risk

with opening the area to campfires by clients of commercial pack stock that many of the fire-rings will return.

Day use, facilitated by developed recreation sites in the Bishop Creek drainage will continue to have effects on crowding and wilderness experience in Piute, Sabrina, and Bishop Creek in this alternative. This combined with increasing day rides out of North Lake may increase conflicts between hikers and stock users and contribute to more crowding and experiential impacts on the trail to Piute Pass.

Bishop/Humphreys – Alternative 3

Analysis

Gable Lakes will officially be closed to commercial pack stock through the designation of the entire trail as Not Suitable for Commercial Stock (NSCS). Under the No Action alternative there is no official restriction but no use is recorded. The effect therefore will be minimal.

Pine Creek will remain an area with moderate to high stock numbers. This use would be concentrated along the trail corridor to Honeymoon Lake and Pine Creek Pass with some use at lower and upper Pine Lakes. Similar to the Proposed Action (Alternative 2) use would be managed more directly at Honeymoon Lake with designated campsites for spot and dunnage parties. With an additional control of commercial packer clients occupying no more than two sites at a time. This will reduce crowding that occurs under the No Action alternative where there are no limits. Camping opportunities are limited at Honeymoon and opportunities for solitude are greatly compromised with more than one party since campsites are within sight and sound of each other. Allowance for campfires at designated stock camps may affect compliance with the campfires closure by the public at upper Pine and Honeymoon Lake.

Granite Park will have no commercial stock in this alternative. This will continue to be a popular destination for hikers but trail conditions will remain primitive and without commercial stock use there will be little need to maintain this trail at more than its existing primitive standard. Use to Chalfant Valley will be by foot travel only and dispersed into various cross-country routes. The recreation category change in Chalfant from a Recreation Category 2 to a 1, as it is in the No Action alternative, will insure that the drainage remains undisturbed and primitive, with high opportunities for solitude.

French Canyon will maintain a moderate to high level of commercial stock use. The only direct controls on use in this unit would be prohibitions on trail use. Use to L, Elba and Moon could occur in this alternative like No Action but not beyond to Alsace or the Puppet Lake bench or Steelhead. Use to Elba, L and Moon would not be limited and with more occurrences further trail deterioration of this deeply incised trail and further multiple trailing could occur which would continue to cause experiential effects. At remote destinations, visitors often expect more pristine conditions. Conditions on the trail to Elba are not likely to improve without heavy maintenance, relocation, and reconstruction. Improvements to the trail could facilitate more use. Allowances for campfires at designated stock camps may shift use back to this area. Under the No Action, use shifted to the camps in French Canyon where fires are allowed. Recent restoration work at Moon and Elba greatly improved the overall condition and reduced impacts associated with campfires. With allowances for one user group here may be non-compliance with the closure and general confusion about the restrictions. The so called Waterfall Camp at Royce Creek and French Canyon will be designated a stock camp to concentrate impacts and with the standards of

stock camps implemented this site will decrease from its current size of nearly four acres. Improved trail access to the site and a drift fence to prohibit stock travel in the fen-like meadow below this camp will all work together to reduce the impacts associated with the stock use at this site. Only one trail to Merriam Lake will be approved, the one west of the creek which is more sustainable. This will reduce unnecessary multiple trailing that was only occurring as a time saving measure of convenience to operators accessing the lake from the east. Commercial pack stock use will be limited to the bench below Merriam Lake and not beyond to the upper reaches of this basin. This will protect opportunities for solitude and disturbance to trails that may occur with continued stock use, even at low and infrequent levels. Trails above the bench are difficult to find, steep in places where they can be found and generally not suitable for stock use without needed improvement and development. Use trails to Royce and French Lakes will be approved but conditioned with a destination quota to each destination that will limit the number of occurrences and frequency of pack stock use to these Recreation Category 1 areas.

North Piute will continue to have only pass-through use by multiple operators. The Piute trail provides east – west access as well as access to Evolution Valley in Sequoia-Kings Canyon National Park. Trail conditions will continue to be deteriorated until improvements are made.

Glacier Divide will continue to be an area of very high stock use. Commercial stock use will be concentrated at Golden Trout Lake and Hutchinson Meadow along the main trails. There will be low to moderate use at Muriel Lake with limits on the number of trips the level of stock use will be lower than in the No Action where up to 14 trips have been recorded in a year. Impacts at Golden Trout Lake will still be noticeable and will continue along the main trail. With use limited to trails accessing approved designated camps, there may be a reduction in overall multiple trailing in the area. This will improve the experiential qualities of the area somewhat. Allowances for campfires at designated stock camps with packers may lead to non-compliance and confusion regarding the fire closure and lead to increased impacts of fire rings by this non-compliance. The approved use trail to Packsaddle will be complemented by a destination quota to insure that the trail, which is currently not visible and only a cairned route, does not become a visible path. Since Packsaddle is a Recreation Category 1 area, this level of use and the character of the trail accessing should not change in this alternative. Encounters with commercial pack stock use would be infrequent. Commercial pack stock use may not occur every year. Overlap of operators will be minimized by the primary operating area concept but may occur at Hutchinson meadow especially in support of tribal walks. There will also be overlap between operators offering North-South Lake loops from each of the trailhead (North Lake and Bishop Pass). This will continue and perhaps expand if National park regulations do not provide any limits in this type of use.

Humphreys Basin unit will maintain a low to moderate level of commercial stock use.

Use will be controlled by a destination quota to Mesa and Tomahawk Lakes which is virtually cross country and use trail travel in the wide open Humphreys Basin country. Direct controls on the trips to these destinations will help prevent trails from developing over time and will keep the area with a setting of remoteness and undisturbed. Trips to Humphreys Lake will not be controlled and there may be an effect of more use to these lakes. More use could have impacts on the trail condition, which is at very low level, currently undeveloped, and at times hard to follow. No use would be authorized beyond Mesa to Knob Lake.

Piute unit (east of Piute Pass) would remain a very high commercial stock use area. Travel is mostly through travel with some spot and dunnage services to destinations east of the pass such as Piute Lake and Lamarck. Some day rides use would be authorized but this use is relatively light. This is a very popular trail for hikers both day and overnight, providing fishing and hiking opportunities from the campgrounds in Bishop Creek. The trail would remain highly developed trail and help facilitate access to the area. Sanding of the pass helps facilitate early access to the west side of Piute pass and would be allowed to continue as in the No Action alternative.

Horton would remain an area with occasional commercial stock use. Use would be in association with spring horse drives and would be limited to the lower lake. With a seasonal limit of 15 stock, impacts would not be noticeable or change because of this use.

Lamarck unit would maintain a very low level of commercial pack stock use. Less than 10 trips a year occur with the No Action alternative. In this alternative, a seasonal stock limit of 20 head would insure that use does not grow and help respond to concerns expressed by the Park Service that use is increasing into a trail-less area to the south of Lamarck Col. Pack stock support can facilitate more use and will be limited with this alternative. Use would still be authorized to the tarn below the Col and over time the trail impacts will deteriorate but possible at a slow rate with this low level of stock.

Sabrina would continue to be an area with moderately high commercial stock use. This use would be commensurate with use occurring in the No Action alternative (2003 reported use). Few direct controls would be in place. Some prohibitions on use trail use such as that to Fishgut Lakes, the outlet of Donkey, and an alternative to Baboon Lake will all be prohibited thus concentrating commercial stock use to the more sustainable system trails in the basin. Designated stock camps at Emerald, Dingleberry, and Moonlight Falls will concentrate use and stock impacts at these locations. There would be no allowances for campfires at these stock camps since the fire prohibition pre-existed the 2001 Wilderness Plan elevation closure.

Tyee unit would have only occasional day rides and no overnight use with this alternative. The Tyee trail is steep and with continued day use or any increases in day use the trail would become hazardous. No direct controls on day rides exist with this alternative and use could increase over time.

Treasure Lake would remain an area of low stock use in this alternative. A seasonal limit of 25 stock combined with a destination quota of eight trips would insure that occurrences of commercial pack stock would be few though out the season. Camping capacity at this destination is low and the setting is such that opportunities for solitude become compromised with more than one or two parties camped here as sites are easily within sight and sound of each other.

Bishop Pass will be an area of moderate to high stock use. Use would occur primarily on the main trail to Bishop Pass. Commercial stock use would be limited to Bull Lake and not beyond to Chocolate Lake, or to Ruwau from Chocolate. Use to Ruwau would be allowed from Long Lake, possibly having an affect on the area around Ruwau where stock loading and unloading would occur. Camping impacts and opportunities for solitude may be at risk with this allowance. The use trail to Margaret Lakes would also be prohibited, maintaining this destination as a high opportunity for solitude. Limitations on stock use over the pas into Sequoia-Kings Canyon National Park will need to be determined by the Park Service in future planning efforts if the effects of this level of stock become or are determined to be unacceptable in the Park.

Cumulative Impacts

Cumulative impacts are essentially the same as those described in Alternative 2.

Bishop/Humphreys – Alternative 4

Analysis

Gable Lakes will be an area not available to commercial stock with the trail designated as Not Suitable for Stock. This is no different from Alternatives 2 and 3. Although there is no formal designation in Alternative 1, commercial pack stock have not used the area in years. The formal designation insures that stock impacts do not occur in the future, whereas in Alternative 1, the use pattern could change.

Pine Creek trailhead day quota does not change from the No Action with 15 persons a day allowed to access Pine Creek, Pine Creek Pass, and French Canyon. It is not expected that use or impact patterns will change much in this alternative from the No Action. Stock numbers will not be limited and up to 350 stock a year could travel through the Pine Creek drainage, about half of which would access French Canyon. These numbers could increase in the future with no direct controls on stock numbers. Use will continue to be concentrated spatially at Honeymoon Lake and Upper Pine Creek Lake and temporally in the first few weeks of August. Travel beyond Honeymoon to Italy Pass will be prohibited as it is in Alternatives 2 and 3. Honeymoon Lake will continue to have low opportunities for solitude with crowding at the few campsites that are all within sight and sound of each other.

Access to the more remote locations in French Canyon will have more limitations than in the other alternatives. Access to Merriam, Royce, French, and Steelhead Lakes will be prohibited in this alternative, all of which were limited in some fashion in Alternatives 1, 2, and 3. This further concentrates commercial stock use to Elba, L and Moon Lakes and French Canyon. These destinations are currently in a Recreation Category 2 and use could exceed standards if not regulated further. Royce, Merriam, French, and Steelhead will be protected from future impacts; however, current light use show very little disturbance or evidence of use. Opportunities for solitude will be improved for those seeking remote locations without the possibility of stock intrusions.

French Canyon and Royce Falls Camp, in particular, will receive the bulk of use for commercial pack stock in French Canyon. Available grazing resources may attract use since few other locations are available. Further concentration of use at Royce Falls Camp will not affect the already impacted site and with additional management prescribed for these sites there will be an improvement and, even with increased use this site, will not likely degrade further.

Hutchinson meadow will continue to be a location where multiple operators could converge. If use patterns that emerged under the court injunction continue, where operators attempted to maximize their use by traveling into Sequoia Kings Canyon National Park (via Evolution Valley) it is expected that intensive use of this area would continue. The area, which is already heavily impacted, would not degrade further with continued or increased use. With management actions that designate appropriate locations for campsites, the further concentrations would improve the general area, which receives more widespread impacts from stock camps.

Glacier Divide would see continued high use concentrated at Golden Trout Lakes. The use trail proliferation would be contained by maintaining defined routes for commercial pack stock to

access the identified campsites in the area. No new impacts would occur with this strategy and existing impacts would be reduced, as they would be in Alternatives 2 and 3. One difference in this alternative is in the prohibited access to the more remote location of Packsaddle Lake. This destination would see slight improvements with the removal of very low and infrequent commercial pack stock use. Improved opportunities for solitude would occur, though the improvement would be barely noticeable since over the course of the season only a few occurrences of commercial pack stock use had previously occurred. However in Alternative 1, use patterns could change and more use could occur at Packsaddle. The numbers of occurrences of pack stock use are limited in Alternative 2 and 3. Lower Honeymoon Lake could become a more frequented destination for commercial pack stock as it remains one of the few remote locations available. The trail is suitable for light stock use as it is, but if pack stock use were to increase further degradation could result.

Commercial pack stock to Humphreys Basin would have no direct controls to either Humphreys or Desolation Lake, but no other cross country travel or use trail travel in the wide open basin would be permitted. Use could shift to locations where trails would be maintained at the lowest level, TC1. This may result in some conflict between increasing use to these destinations and the trail maintenance level as use is displaced from other locations previously available to the commercial operator. Opportunities for solitude at these two available destinations could degrade if use patterns shift.

Use in the Piute Analysis Unit from North Lake to Piute Pass will continue to have a high level of commercial pack stock use. It is possible that over 700 stock a year would travel over Piute Pass and with controls on people and not stock and a daily quota remaining 15 person a day, there could be a shift towards fewer people being serviced by more stock. This would be quite noticeable in this canyon, which in the No Action alternative, has received this level of use the past couple of years. Opportunities for solitude would be low but not likely to be in conflict with the Recreation Category 3 designation for this area.

Commercial pack stock use to lower Lamarck Lake and beyond would be prohibited in this alternative. This would reduce expressed conflicts in Sequoia-Kings Canyon National Park that commercial services were considered to be facilitating. It is expected that public use will continue to increase into the Park as the public continues to seek more remote and challenging trips in the backcountry, with or without pack stock support. The area would reduce the use from about 4 parties a year and 24 stock. It is not expected that the impacts on the trails would be improved without rehabilitation efforts.

Horton will continue to be used as an early season destination primarily associated with spring horse drives. It may, however, be used at any time of year but is not likely that use patterns would shift to this location as it is far enough away to deter the casual use of this trailhead.

Commercial pack stock would continue at high levels in the Sabrina Basin. Up to 300 stock a year could be expected in this alternative. The only difference in trail use for pack stock is the prohibition in this alternative to Topsy Turvy and Baboon Lakes. Presently, use is infrequent to these destinations and this action would not likely cause a shift in use to other locations in the basin. Trail maintenance would be lower to Emerald Lakes. This could cause some conflict if commercial stock continues at existing levels to Emerald and with no direct controls use could increase to Emerald and, if so, trail deterioration could occur with the lower trail class level.

Tyee would be designated as Not Suitable for Commercial Stock in this alternative. Limited use that has been allowed the past few years would be eliminated. This may reduce the few conflicts that occur with stock and day hikers in particular on this steep and narrow trail.

Bishop Creek would continue to be an area with a high level of commercial stock use.

Marie Louise Lake would be prohibited for commercial stock use in this alternative. This would result in fewer trail concerns over time and increased opportunities for solitude. The lake has few good locations for camping and by removing stock to this destination, it would insure that camps do not enlarge and, although impacts may persist, they will not increase. The trail to Marie Louise has never been on the system and by including it on system in this action (as well as in Alternatives 2 and 3) some level of maintenance would prevent degradation of the trail. The level of development implied by a TC2 trail may not be needed with the elimination of commercial stock; however, it is consistent with the RC2 designation of this destination. Use will continue to be primarily concentrated on the main trail with the primary purpose of commercial services to access Sequoia- Kings Canyon National Park.

Treasure Lakes will be maintained at a lower level in this alternative yet stock numbers could increase with only a trailhead quota in place on people. With six persons a day, this area may see increased use. Opportunities for solitude will continue to be low to moderate and crowding may be increased if stock numbers increase.

Cumulative Impacts

The effects of past, present and reasonably foreseeable projects are similar to Alternative 1, 2 and 3. Visitors on the Pine Creek trail will be affected by activities at the Tungsten mine site, which may contribute to some diminished wilderness character on the first section of trail. Reducing pack stock use in this alternative will not show any changed affects on the section of trail. Reduced pack stock use may lead to increased use of other types such as hiking, backpacking or private stock use in these areas. This may result from perceived fewer conflicts with pack stock in this alternative.

Developed recreation use in Bishop Creek will contribute to increases in public use of adjacent wilderness lands. This will probably be in the form of day hiking. Similar to Pine creek, there may be an increase in use because of perceived fewer stock in the backcountry.

There would be no other adverse cumulative effects.

Bishop/Humphreys – Alternative 5

Analysis and Cumulative Impacts

This area is characterized by a high level of packer use currently. With the absence of packer use there would be a noticeable change in social, resource, and wilderness character conditions in most but not all of the units in this region.

Two units, Granite Park and Gable currently have no reported stock use. This is due primarily to the condition of the trail as not passable or suitable for pack stock. Elimination of commercial stock use would not affect these areas. Horton receives very low use, and only in early season, late June with horse drives to the pack stations. The elimination of packer use would have very little effect or noticeable change in the resource or social conditions in Horton. Two recreational

cabins in Horton and the presence of structures and a mining past have more effect on the area than the light use. Gable also has evidence of past mining activity with significant mining debris that has an impact on the character of the area.

Pine Creek also has a mining history evident in the landscape. This effect to wilderness character takes place in visual intrusions of a large tungsten mine at the base of the canyon, which is currently closed but contributes to diminishing visual qualities. The trail that is a road for the first section also diminishes wilderness qualities and with the elimination of the packer use these effects would continue. The trail is substantially constructed with the capital investment project currently in progress. The highly developed trail needed to ascend the steep canyon may be overbuilt for hiker only traffic if stock is eliminated. Destinations in the canyon that would see improvement would be Upper Pine Lake and Honeymoon Lake. Honeymoon Lake receives the majority of packer use in the canyon and would likely see improvements to camping opportunities with less occupied sites and gradual improvement of the highly compacted camping area from the continual use of pack stock for loading and unloading.

French Canyon would see improvements with the absence of pack stock. The degraded trail conditions in French Canyon and to Elba Lake would not likely improve quickly without substantial investment. However, with the removal of pack stock use, the trail to L and Elba may stabilize although in a degraded condition. The condition of the trail has an effect on a visitor's sense of remoteness and the obvious imprint of man almost 15 miles from the trailhead has an experiential effect. The conditions may not improve quickly but a sense of remoteness may improve if stock support ceases. The camp at the junction of Royce Creek ("Waterfall Camp") in French Canyon would not be needed from holding the number of stock often needed with packer operations. Given that is already highly impacted; it would probably remain a stock camp for private stock use but over time could be contained to a quarter of its current size with very little investment. Removing the disturbance, much of which is related to the churned up soils from stock holding is easier than restoring the compacted soils at the core of a site where most camping activities take place.

Hutchinson meadow is an area where camping is concentrated. Packer use contributes to this on a frequent basis in the month of August. Use will continue to concentrate and campsites that are well established will not be affected by the absence of packer use. The sites that are used for holding stock may be used infrequently and see some minor recovery to vegetation loss and expansion of compacted soils and core area. These sites have been used annually by Native American tribal walks and this activity will continue with large stock and people numbers for a short duration in August or September.

Moderate use by packers occurs in the Humphreys Basin area. Desolation Creek and Humphreys Lakes receive the most use by packer spot and dunnage services and a few cross-country trips to Mesa Lake each season. Opportunities for solitude will increase slightly in Humphreys, with up to 15 less parties a year. This may improve the social conditions of the area since it is a very open destination with low camping capacity and even two parties camped would affect the experiential qualities if they are seeking solitude. Humphreys tends to be a destination that is a base camp for those ascending Humphreys peak. These types of parties (climbers) often tend not to be seeking solitude at base camp locations. Camping conditions will most likely not change and with the trend toward an increase in the peak climbing activities use will probably continue to increase at this location with or without packer use.

In Glacier Divide, the primary packer destination is Golden Trout Lakes and secondary destination is Muriel. The trail to Muriel Lake has a section through the meadow that is wet and with early and even mid season access with pack stock there is considerable impact. With the absence of packer use, the trail will only be used by hikers. Very little private stock goes there now. The condition of the trail will improve due to the absence of stock disturbance to the wet soils. The campsites at Muriel are for spot and dunnage parties, not stock holding, and will remain the same.

Golden Trout Lake has substantial use trails and high impacts to the trail itself. The impacts to the main trail to the lower lake will not improve without substantial investment. Given its popularity, it may be high on the list of trails to reconstruct, but may not see any work for 10 to 15 years. When this work is conducted the trail needed to access the lakes will be less developed than what would be needed for the level of commercial pack stock use today. Use trails that are used to access camps by packers will diminish over time due to the lack of use and there will probably be an overall improvement to the area with the absence of what is currently over 600 head of stock per year in July and August.

Other more remote locations in the region receive very low packer use. These include Honeymoon Lake, Tomahawk, and Knoblock and conditions in these places will most likely remain the same.

Piute Creek (the east side of the pass) is high use for backpackers and day hikers as well as the commercial packer use presently. There are often high encounters between hikers and between hikers and stock on this trail in July and August. Hiker-stock encounters will be nearly zero while hiker-hiker encounters will remain high. Opportunities for solitude while camping would not change as most packer services go over the pass. The area would probably maintain the same character of a high use corridor. There would no longer be the sanding of the pass and this would have little effect on hiker access. There may be more braiding of the trail in this section as the trail melts out and hikers avoid the snow.

Currently, Lamarck receives low packer use. With the elimination of packers, the area would still receive a moderate amount of backpacker and day use. Encounters with other hiking and camping would not change. The trail to the pass would still receive moderate use, as this is a popular access to Sequoia-Kings Canyon National Park. The opportunities for solitude will likely not change, as the packer use is less than ten stock a year. Some trail improvement and therefore improvement to wilderness character may take place with the absence of stock but improvements would not be noticeable for a number of years.

Sabrina currently receives a high level of packer use, with just under 300 stock a year used in conjunction with primarily spot and dunnage services. The majority of the use goes to Dingleberry, Moonlight Falls, and Emerald Lake. With the absence of use to Emerald (140 stock a year) the trail will have less noticeable impacts with less use trails to sites. Encounters will be fewer, especially camper encounters. Emerald Lake serves as a great site for family camping and packer services to this destination cater to the family. There may be fewer families as a result of the no action. The large stock site at Moonlight Falls will see some improvement especially in the use trail access and the visual effects of a highly compacted site once the stock use is absent. This is a moderate to high use area for backpackers and day hikers and this use would continue with impacts on trails and at campsites. Packer use is dispersed and low amongst the other destinations, including Hungry Packer, Hell Dive, Blue Lake, Baboon, and Midnight Lake.

Bishop Pass is a very high use area for backpackers, day hikers, and packer use. Visitors are primarily accessing Sequoia-Kings Canyon National Park (SEKI). This trailhead acts as the main control for use into the Dusy Basin area. Packer use is also primarily into SEKI, with light use dispersed to destinations in the lower canyon. Most of the use is spot and dunnage to Saddlerock Lake and above. Visitors will have few to no encounters with stock parties with Alternative 5, only the occasional and infrequent private stock party. Most campsites will stay the same, as impacts are contained and concentrated at the existing sites, and will likely not change with the No Action alternative.

Treasure Lakes receives low commercial use, less than 50 stock per year. Only a few parties are transported to Treasure Lakes and the effect of no packer use will be minimal to encounters, overall use levels, and resource impacts.

Florence/Bear – Alternative 1

Analysis

Commercial pack stock use in this region will continue to be concentrated in few areas with multiple operators overlapping services. Traveling trips will pass through this area, primarily along the JMT/PCT corridor and predictably stop at locations with available grazing resources. Destinations including Hilgard Branch, Bear Creek, Kip Camp, Rosemarie Meadow, and Sallie Keyes will receive this type of use. In these locations stock camps, most likely the ones that have existed for many years will continue to receive impact. Increased impacts would come in the form of expanded stock holding areas, expanded tent sites, more bare soil, and vegetation loss. It is possible that as stock camps become too impacted or if multiple operators converge in one location at the same time, new stock camps could be created.

Spot and dunnage service will occur in these same locations. Bear Creek, Bear Ridge, Hooper, and Florence trailheads control daily use into this area. For destinations north of Seldon Pass, single quotas for Bear Ridge and Bear Creek of 10 are the external controls. Various and numerous destinations can be reached from these trailheads, including Apollo, Cirque, and Marcella Lakes all with various use trails approved to allow for multiple access points to these lakes. If use were to increase at these locations, which currently receive very low use, it could change the character of these destinations.

Rose Lake is another destination off the primary trail where use could increase over time. Lou Beverley, Sandpiper, Three Island, and Medley Lakes are also subject to use pattern changes with no direct controls. Use trail approvals allow for on-going and potential increases in use if the trails were to be maintained to the prescribed levels. These more remote locations would remain remote and opportunities for solitude will likely remain.

Italy Lake is open for pack stock use in this alternative. Although it is rarely used, due to impassable trail conditions, and not likely to be used by commercial pack stock, this alternative allows for the use of Italy Lake, which allows potential for the area to change, or for more use to be facilitated into the upper area. If access is improved by major trail reconstruction opportunities for solitude will continue to be diminished.

South of Seldon Pass, between Seldon Pass and Florence Lake there will be multiple commercial pack stock offering a variety of services. There will be continued and possible increasing use up to Sequoia-Kings Canyon from the Florence Lake trailhead that allows for 15 commercial

persons a day. Sallie Keyes will have multiple stock camps and impacts will persist with concentrated pack stock use occurring by virtue of the scenic qualities and the location of the destination.

Destinations within the Hooper unit are controlled by the Hooper trailhead. Gordon Lake, Bear Dome, and Hooper Lake will continue to receive light to moderate use.

South of Florence, the Dutch unit will have moderate commercial stock use. Two commercial operators will disperse use to Dutch Lake, Crater Lake, Hidden Lake, Rodeo Meadow, and Thompson Lake but use to each destination will be light.

Cumulative Impacts

Muir Trail Ranch and Lost Valley are private inholdings within the interior of the wilderness boundaries. Muir Trail Ranch operates a guest ranch on the property that opened in 1940. There is four-wheel drive access to the private property, which has been under a Special Use Permit since 1948. The presence of the road has both experiential and environmental effects. Multiple trailing has occurred due to confusion, desire for direct access to eastbound destinations, and historical grazing by the pack stock associated with the permits issued in the area. This causes some confusion and a high density of trails in a small corridor. Both the presence of the road and the confusion and resource impacts of multiple trailing can diminish the wilderness experience for users. Both the private inholdings and their associated four-wheel drive access trail impact wilderness character.

Florence/Bear – Alternative 2 – Modified

Analysis

In this region 15 discrete destinations or zones will be used by commercial pack stock. Generally, locations that were suitable and sustainable were identified for potential growth while areas where impacts were high or current use was of a concern were identified for reductions. These are identified below. The PCT/JMT corridor is the primary area of packer use in this geographic unit, with most of the commercial stock use will be concentrated along the PCT/JMT.

Areas of overlap in this region will generally remain the same with a high concentration of overlap along the JMT/PCT between spot and dunnage operators out of Edison and Florence Lakes as well as the overlap with traveling trips. Hilgard Branch (Italy Analysis Unit) Seldon Pass and Sallie Keyes will continue to see up to five operators because of two operators providing spot and dunnage services to the same areas in addition to these traveling trips. Dutch, Ward, and Apollo Analysis Units will have two overlapping operators in a few destinations. This alternative does not change the overlap of operations, and with the potential growth, may bring about more occurrences of overlap.

Sallie Keyes unit will see up to 300 stock a season. It is expected that less than 200 stock will be the norm unless patterns shift and more traveling trips occur. This is not likely since all-expense traveling trips are limited to current levels. Trends the past two years show increases in use to Sequoia–Kings Canyon National Park, access via the JMT in this region may draw packer use in the future until or unless the National Park limits their use. Designated sites at Sallie Keyes will insure that a proliferation of sites does not occur. There may need to be a management of concurrent itineraries for traveling trips to insure that overuse of stock campsites does not occur.

Opportunities for solitude in this area will be moderate while camping and low while traveling on the trail system. This is a very high use area for backpackers and through hikers along the PCT/JMT. Stock use is low relative to backpacker use and these actions will not change this ratio.

Hilgard Branch in the Italy Analysis Unit will have low to moderate stock use (up to 14 trips). Commercial stock are prohibited beyond Hilgard Branch. This limitation will have minor effects since although commercial pack stock are currently not limited they do not utilize this area. To facilitate stock travel beyond the designated stock camps, trails will remain primitive.

The Seldon Pass Analysis Unit will have growth opportunities for spot and dunnage services. It is expected that more clients will be serviced with less stock to realize this growth. Opportunities for solitude will stay the same with possibly more encounters with stock parties along the JMT. Some growth in services will probably take the form of re-supplies to through hikers of the JMT/PCT.

Bear Lakes will not be accessible to stock use. Clients of commercial packers will only be able to be serviced 1.5 miles from the PCT/JMT junction. Opportunities for solitude will remain moderate to high.

The Hooper Analysis Unit will receive low commercial stock use, primarily at Gordon Lake. Opportunities for solitude in this analysis unit will remain high due to low commercial stock use and little trail development into the area. Commercial stock use that does occur in this area is limited to spot and dunnage trips. Due to the proximity of destinations in this analysis unit to the pack stations, overnight holding of stock rarely occurs in the Hooper Basin, and there are no opportunities for grazing of stock in the Basin.

Cumulative Impacts

Muir Trail Ranch and Lost Valley are private inholdings within the interior of the wilderness boundaries. Muir Trail Ranch operates a guest ranch on the property that opened in 1940. There is four-wheel drive access to the private property, which has been under a Special Use Permit since 1948. The presence of the road has both experiential and environmental effects. Multiple trailing has occurred due to confusion, desire for direct access to eastbound destinations, and historical grazing by the pack stock associated with the permits allowed in the area. This causes some route confusion and a high density of trails in a small corridor. Both the presence of the road, including encounters with motorized uses and the confusion and resource impacts of multiple trailing can diminish the wilderness experience for users. Both of the private inholdings and their associated four-wheel drive access trail affect the wilderness character.

An increase in stock numbers in the Sallie Keyes Analysis Unit is possible due to the change from trailhead quotas to destination quotas. This could increase interaction between the public and commercial stock operators in the heavily used San Joaquin River corridor and the Sallie Keyes/Senger Creek area.

Florence/Bear – Alternative 2

Analysis

In this region 17 discrete destinations or zones will be used by commercial pack stock. Collectively at these 17 destinations there are allowances for 49 additional spot and dunnage

trips. As with all areas of potential growth, this growth is in number of trips with an overall limit on number of stock based on the past few years of use. Growth in trips will need to take place with the same number of stock, so it is expected that more people will be served with less stock per party if growth is realized. Generally locations that were suitable and sustainable were identified for potential growth while areas where impacts were high or current use was of a concern were identified for reductions. The PCT/JMT corridor is the primary area of packer use and for potential growth in this region.

Areas of overlap in this region will generally remain the same with a high concentration of overlap along the JMT/PCT between spot and dunnage operators out of Edison and Florence Lakes as well as the overlap with traveling trips. Hilgard Branch (Italy Analysis Unit) Seldon Pass and Sallie Keyes will continue to see up to five operators because of the duplicate spot and dunnage services by two operators and these traveling trips. Dutch, Ward, and Apollo units will have two operators in a few destinations. This alternative does not change the overlap of operations, and with the potential growth, may bring about more occurrences of overlap.

Sallie Keyes unit will see up to 300 stock a season and it is likely that less than 200 stock will be the norm unless patterns shift and more traveling trips occur. With trends the past two years towards increases in use to Sequoia –Kings Canyon, access via the JMT in this region may draw packer use in the future. Designated sites at Sallie Keyes Lake will insure that a proliferation of sites does not occur. There may need to be a management of itineraries for traveling trips to insure that overuse of stock campsites does not occur. Opportunities for solitude in this area will be moderate and along the trail low. This is a very high use area for backpackers and through hikers along the PCT/JMT. Stock use is low relative to backpacker use and these actions will not change this ratio.

Hilgard Branch in the Italy Analysis Unit receives a high level of use, mostly hikers and moderate stock use. Up to 14 spot and dunnage trips a year will be the limit. Most clients that are dropped here will continue over Italy Pass or other cross-country routes that are popular in the area. Stock will not be allowed beyond Hilgard meadow. Two designated stock camps will be managed in this area for the occasional traveling or all-expense trips. With limited grazing there will be fewer trips staying here and staying for shorter stays.

The Seldon Pass Analysis Unit will have growth opportunities for spot and dunnage services. It is expected that more clients will be serviced with less stock to realize this growth. Opportunities for solitude will stay the same with possibly more encounters with stock parties along the JMT. Some growth in services will probably take the form of re-supplies to hikers of the JMT/PCT.

Bear Lakes will be limited to stock use. Clients of commercial packers will only be able to be serviced 1.5 miles from the PCT/JMT junction. Opportunities for solitude will remain moderate to high.

The Hooper Analysis Unit will receive low commercial stock use, primarily at Gordon Lake. Opportunities for solitude in this analysis unit will remain high due to low commercial stock use and little trail development into the area. Commercial stock use that does occur in this area is limited to spot and dunnage trips. Due to the proximity of destinations in this analysis unit to the pack stations, overnight holding of stock rarely occurs in the Hooper Basin, and there are no opportunities for grazing of stock in the Basin.

Cumulative Impacts

Muir Trail Ranch and Lost Valley are private inholdings within the interior of the wilderness boundaries. Muir Trail Ranch operates a guest ranch on the property that opened in 1940. There is four-wheel drive access to the private property, which has been under a Special Use Permit since 1948. The presence of the road has both experiential and environmental effects. Multiple trailing has occurred due to confusion, desire for direct access to eastbound destinations, and historical grazing by the pack stock associated with the permits issued for the area. This causes some confusion and a high density of trails in a small corridor. Both the presence of the road, including encounters with motorized uses and the confusion and resource impacts of multiple trailing can diminish the wilderness experience for users. Both the private inholdings, and their associated four-wheel drive access trail, affect the wilderness character.

An increase in stock numbers in the Sallie Keyes Analysis Unit is possible due to the change from trailhead quotas to destination quotas. This could increase interaction between the public and commercial stock operators in the heavily used San Joaquin River corridor and the Sallie Keyes/Senger Creek area

Florence/Bear –Alternative 3

Analysis

Commercial packer use in the Bolsillo, Ershim, and Dutch Boulder units will continue to be pass-through use for destinations in the Dutch unit. Commercial stock numbers will continue to be low and there will be potential overlap between three operators in the southeast corner of Dutch at Thompson Lake. The three operators would access this overlap area from three different trailheads.

East Florence is also a pass-through unit, with most of the use going to the JMT/PCT and Evolution Valley in Sequoia/Kings Canyon National Park. Four operators will continue to overlap in this unit as in the No Action alternative. Stock numbers will be high, over 600 a season in this area primarily concentrated on the main trail from Florence reservoir to the JMT. Activities and structures associated with two in-holding facilities, as well as the influences of the human made reservoir, will continue to reduce the wilderness character in this area, including opportunities for solitude, naturalness, untrammled and undisturbed qualities.

Ward Mountain will have minimal commercial stock activities with occasional use as a pass-through. Light use will be approved to Ward Mountain Lake within this analysis unit. Trails will be maintained consistent to the Recreation Category 1 desired conditions, with low density of primitive trails.

Sallie Keyes unit will continue to have a high level of stock use and the potential for continued overlap of services. There will be overlap of spot and dunnage services between three operators and additional operators passing through this popular region on traveling trips. The draw of Sequoia/Kings Canyon National Park where use restrictions may continue to allow for additional use may draw packers who can rely on grazing resources in the Park and laxer restrictions that accommodate some growth in services.

Along the JMT/PCT stock use will be moderate to high. Designated stock camps at Sallie Keyes will concentrate impacts associated with stock camping to areas that are more durable. One camp south of the lake along the old trail corridor (“trail meadow”) that is being used under the No

Action alternative will be closed and this will reduce impacts occurring in the meadow. Allowances for campfires for commercial packers, at designated stock camps, may lead to non-compliance by the public due to the confusion of seeing the smoke from campfires. This area is mostly well forested with wood resources, which may add to the confusion. The use trail to Senger Creek will be rarely used and mostly in association with hunting. Use beyond the campsite along Senger Creek will be prohibited, which will help protect opportunities for solitude and pristine conditions in this area.

Seldon Pass will continue to have moderate to high stock use and overlap between two operators providing spot and dunnage services to the same locations. Public use in this area is very high and pack stock support helps facilitate thru hikers as well as organized groups into the Bear Lakes and the Italy Pass regions. Access to Rose Lake will continue on the system trail. With no direct controls to this destination, there could be some change in use patterns over time that may lead a higher use in this area than is currently occurring. Camping opportunities are limited and the setting is remote and can be easily disturbed with more than one party camped here. The trail is also primitive and is not expected to sustain additional use without degradation or additional maintenance needs. Lou Beverly will be available to commercial packers and overlap between two operators is likely here. A designated stock camp will concentrate use and stock related impacts. Very low public use occurs here and conflicts between uses would be minimal. Use above Lou Beverly would be authorized on the system trail to Sandpiper Lake but not beyond to Three Island Lake. Without direct controls on the amount of use that can be on this section of trail it is possible that the trail may need more maintenance and/or reconstruction needs to support any additional use. This may change the character of there if the trail were to be more highly developed and may facilitate access.

Hooper unit will continue to have one operator with very low use. Commercial pack stock would be infrequently encountered in this area and most likely only during the hunting season. A use trail would be approved during the hunting season only, thereby maintaining most of the area as trail-less with high opportunities for solitude, wilderness character, and low stock numbers.

Apollo will remain a low use area with very low commercial stock use. Less than 25 stock a year would be authorized and encounters with pack stock would be infrequent or rare. Use in this area would however take place off the main system trail. At such low levels it is expected there would be no effect to the character of the trail-less areas. One stock camp is designated at Cirque and two stock camps at Marcella. With allowances for campfires in stock camps, with full service trips, this area could be an area of non-compliance with campfire restrictions for the public and cause some confusion over the campfire restrictions. If low use levels were to occur annually over a short time (3-4 years) there could be an increase in noticeable impacts and disturbance and some loss of opportunities for solitude.

Use in the Bear Lakes unit primarily consists of pass-through on the PCT on the western edge of the unit. Occasional use may occur along the Seven Gables trail. This will protect opportunities for solitude in the upper Bear Lakes region and reduce impacts associated with stock on this trail that is not designed or sustainable to stock use.

Use into the Italy unit will also be limited to the first 2 miles of Hilgard Branch. Designated stock camps at the Hilgard Meadow marks will concentrate impacts associated with stock. Use in this area by the public will continue to be high during the peak of the summer season. By designating the trail beyond these camps as not suitable for commercial stock the trail will be

able to remain primitive and suitable for hardy hikers only. This helps protect the character of the area, reducing trail maintenance and trail development needs. Opportunities for solitude will remain moderate at Italy Lake and evidence of humans, primitive campsite impacts will remain.

Cumulative Impacts

Muir Trail Ranch and Lost Valley are private inholdings within the interior of the wilderness boundaries. Muir Trail Ranch operates a guest ranch on the property that opened in 1940. There is four-wheel drive access to the private property, which has been under a Special Use Permit since 1948. The presence of the road has both experiential and environmental effects. Multiple trailing has occurred due to confusion, desire for direct access to eastbound destinations and historical grazing by the pack stock associated with the permits issued in the area. This causes some confusion and a high density of trails in a small corridor. Both the presence of the road, including any encounters with motorized uses and the confusion and resource impacts of multiple trailing can diminish the wilderness experience for users. Both the private inholdings and their associated four-wheel drive access trail affect the wilderness character.

Florence/Bear – Alternative 4

Analysis

The primary access in this area is Florence and Dutch trailheads. Multiple operators will still overlap services in this area and compete for the daily trailhead quota as in Alternative 1 – No Action. The quota remains the same for both these trailheads. Overall use levels being reduced by the 20 percent cut to service day allocations will be the primary difference between this alternative and the No Action in this geographic region. The number of locations where pack stock can drop clients will be limited to 13 areas. Although in the No Action there are numerous possibilities for dropping clients, most use is currently spot and dunnage to these same primary locations. There will be no flexibility that exists in the other alternatives.

Seven of 22 system trails would be designated Not Suitable for Commercial Stock, three more than in Alternatives 2 and 3. This provides few additional limits on access to destinations compared to Alternatives 2 and 3. Use trails would be limited more than system trails in this alternative. 20 or 24 use trails would be prohibited from commercial pack stock use compared to 8 trails in Alternative 3 and 9 in Alternative 2. Many of these trails not approved are used in hunting season and only occasionally.

Areas where commercial pack stock would be excluded include Orchid Lake, Three Island Lake, Senger Creek toward Turret Lake, Seven Gables, Lake Italy, and Gordon. These locations are relatively remote with few impacts. By excluding pack stock it would eliminate the chance that pack stock use could increase and/or contribute to impacts that may be associated with even light levels of stock use.

Use would still occur at relatively remote locations in this region such as Apollo, Lou Beverly Rose Lake, and Cirque Lake. There would be more opportunity for dispersed pack stock use in this region than in other regions. These destinations will be vulnerable to impacts if use levels were to increase. Without direct controls on these destinations, conditions could change over time. Incremental increases in pack stock use can change the character of a place like Cirque and Apollo Lakes if stock use displaced from other locations were to disperse to Cirque. Lou Beverly has the potential to withstand some increase in use, with a well-established stock camp and

evidence of higher use in the past; it is expected that it can absorb more tock use without affecting the resource or other visitors.

Cumulative Impacts

There may be a cumulative effect of uses converging and possibly increasing in the adjacent Sequoia Kings Canyon National Park. With a 20 percent decrease in service days and direct access from Florence Lake, where the trailhead quota remains the same as in Alternative 1, there could be a cumulative effect, specifically in the Evolution Valley area. This could occur because of the possibility that stock numbers may increase because of only regulating people numbers in this alternative. In addition, the desire to maximize stock numbers could result in accessing the National Park where service days or any limits are not currently in place.

Florence/Bear – Alternative 5

Analysis and Cumulative Impacts

No overnight packer use has been recorded in Bolsillo, Dutch/Boulder, Ward Mountain, and East Florence. Any packer use in these areas is traveling through but not dropping clients or camping with clients. Eliminating this use would have some but little effect. Trail conditions may improve but the level of use is so low there would be no noticeable change in resource or social conditions.

Most of the use in this geographic unit is in Sallie Keyes, Italy, and Seldon, with low use in Hooper, Apollo, and Bear Lakes. Trail use is primarily on the JMT/PCT, which is high priority for maintenance and has some sections that are substantially developed. Overall use on this trail is very high with a high level of encounters, especially in July, August, and early September. The level of stock use by packers is over 600 per season but is dispersed significantly across this geographic area. By comparison, over 700 stock are in one drainage in the Ansel Adams East – Rush Creek. The dispersal of stock in this region has a moderate effect on resource impacts and social conditions. The effect of eliminating the use would be noticeable on the trail from Bear Ridge junction to Piute trail. Encounters would be noticeably less. Campsite in the Sallie Keyes area would improve with the absence of stock and stock holding on a regular basis in August.

John Muir Southeast – Alternative 1

Analysis

The North Fork of Big Pine will have a high level of commercial pack stock use. The use would be concentrated at the lake destinations. Sites that have been used and impacted for years would continue to be used. Since the canyon has limited camping opportunities different that what is currently being serviced by pack stock, there is very little potential for new sites to develop or significant new impacts to occur. Destinations are well established. The trail to Sam Mack meadow could be improved up to a Trail Class 2, which could facilitate stock use that is currently not occurring. Little opportunities for camping at Sam Mack would make this somewhat self-limiting and it is expected the existing packer would not pursue any growth in services to this location.

Commercial pack stock use is currently not occurring in South Fork Big Pine. An agreement between the packer and the Forest Service has led to this non-use. No regulation prohibits pack stock use.

Taboose, Sawmill, and Shepherd are all single quota trails that commercial pack stock competes with the public for. They are low quotas, yet do allow for growth in services. In this alternative any packer willing to truck stock to these trailheads could access these areas. Access is attractive as it is a pass-through trail on the National Forest and accesses Sequoia-Kings Canyon National park where fewer limitations are currently in place. Increased commercial pack stock use on these trails would have minimal affect on the Forest. Trails would be subject to higher maintenance needs that would be consistent with both Sawmill and Taboose that are managed as trail class 3 trails. The character of these areas, which are low use and rough trails, could therefore change in this alternative, especially Taboose and Sawmill.

Kearsarge Pass would have a high potential for commercial pack stock. Use would primarily be accessing Sequoia-Kings Canyon National Park. Some destinations would receive low to moderate commercial pack stock use, Bench, Gilbert, Matlock, and Pothole Lakes. It is likely that commercial use to these destinations would not have any impact, even if use were to increase a substantial amount as the trails and sites are well established and already heavily impacted from over 50 years of high use.

The Cottonwood Lakes area will have light to moderate commercial pack stock use. Use can disperse to multiple locations in the basin in this alternative, including Hidden Lake, Muir Lake, Cirque Lake and 5th and 6th Lakes. Although it is possible for use to disperse it is likely that use will continue to concentrate at third lake and impacts will be minimal and restricted to trails.

No commercial pack stock use will be allowed on the Mt. Whitney trail. Use can, however, be facilitated by pack stock that enters the Golden Trout Wilderness over Cottonwood Pass and drops parties at Crabtree in Sequoia-Kings Canyon National Park. The party then travels over Trail Crest, which is managed by the Forests' only exit quota. Some quotas are reserved for this type of use, and will continue to draw use over the crest. Use can also exit Trail Crest this way from any trail on the Inyo National Forest, such as Shepherd, Taboose, and Kearsarge and subject to the Trail Crest quota. The party is not under commercial service or support once they have been dropped off at Crabtree or vicinity. This will continue to have some effect on crowding and campsite affects at Crabtree and Guitar Lakes in the National Park. Additional regulations may be put into effect to control the use on the Park side of Trail Crest.

Cumulative Impacts

Past and present high use and management occurs in the North Fork of Big Pine. This area receives a high volume of commercial pack stock use, private and commercial mountaineering and backpacking use, and high day use. Management over the years has contained some impacts. Packers were asked not to travel to Sam Mack meadow or South Fork of Big Pine, and have complied with that request. Commercial mountaineers have been requested not to camp at Sam Mack meadow. A reasonably foreseeable action is that Sam Mack meadow may be closed to all camping because of meadow compaction and hydrologic function concerns due to high concentration of use, most all of which is non-stock use. The commercial pack stock does facilitate use into the drainage through dunnage trips. Campfire closures have been in effect for over twenty years and some improvements to the area are noticeable. A resort facility in

existence at the time of the Wilderness Act at Fourth Lake has been removed, greatly enhancing the wilderness character of the area.

Visitor use in the southern portion of the John Muir (Taboose to Whitney) directly access Sequoia –Kings Canyon National Park. Most visitors travel through the Forest to the Park and very little impacts occur east of the passes. This use does however have effects in the Park. Trailhead limits regulate the amount of use to a great degree but destinations west of the pass receive use and impacts as a result of this east side use. Some of these trailhead quotas were lowered in the 2001 Wilderness Plan and commercial packers using these trails must compete with the public for that quota. Without additional direct restrictions on the use from the Park, commercial pack stock use will be attracted to these areas since the Forest control (service days) does not apply once they cross the boundary. With limited service days to use, the park and these access points have become more popular for the commercial pack stock.

Cottonwood Lakes is an area where the State Department of Fish and Game (DFG) have a fish rearing operation. There is early season activity associated with this operation, some of which uses the commercial pack station. A cabin used by DFG is also located in the basin and is a noticeable human imprint. An equestrian campground at the trailhead of Cottonwood Lakes does contribute to additional stock use into the basin, most of which is day riding and remains on system trails.

John Muir Southeast – Alternative 2 – Modified

Analysis

In this region 12 discrete destinations or zones will be used by commercial pack stock. The southern part of this region is characterized by the access it provides to Sequoia- Kings Canyon National Park. One operator, that has historically used this region, will be managed through the existing trailhead quotas system where they will still need to compete with the public for access via the daily quota on people. Two operators will be managed through the destination quota concept. The trend the past few years has been an increase in use of these trailheads. This action will likely curb that trend.

There will continue to be a slight overlap of operations in Taboose, Sawmill, Kearsarge, and Shepherd Analysis Units. The past few years saw an increase in use by other operators either entering or exiting via these trails. This trend was a reaction to the limits placed on the Forest use and the ability to increase use in the Park. More operators accessed Sequoia-Kings National Park on traveling trips. It is expected that most of that trend will be curbed; however, until the Park establishes limits on Park use this will continue to some degree.

In Taboose, Sawmill, and Shepherd, the packer use is passing through to the Park and rarely, if ever, does any use occur off the system trail. This alternative allows camping at Anvil camp (Shepherd) but maintains the grazing closure. Annually it is most likely that there will be only the occasional packer use of the camping at Anvil. Impacts on the trails and opportunities for solitude in these pass-through areas will remain moderate to high and the character and conditions of these areas will not change. If Park management allows for more use to pass-through, there may be a change in character.

Kearsarge Analysis Unit is primarily a pass-through to Sequoia-Kings National Park, but does receive some use on the Forest. Opportunities for solitude would remain low to moderate in this

drainage with little effect by the packer operation. It is a Recreation Category 3 area and with up to 16 trips allowed for by packers for spot and dunnage their use is a very small percentage of the total use. One use-trail accessing Bench Lake would be approved and would not see any change.

North Fork of Big Pine would be managed as a zone for packer use, with Black Lake being the only separate destination managed. Packer use would be prohibited up to Sam Mack meadow and beyond, and although not currently prohibited, the trail is such that the packer chooses not to go there now. Use trails would be allowed to the snow survey sites, Heidi Cabin for hunting season, and to campsites at Fifth Lake. The predominant use would be on the system trail. Day rides would be minimal here. Currently the packer conducts day rides as a part of his spot and dunnage trips and this pattern would continue.

In this alternative there are two trips identified for South Fork of Big Pine to Willow Lake with the trail designated not suitable for commercial stock above Willow Lake. With very low, occasional use (one party a year round trip) opportunities for solitude would remain moderate to high and for most of the days a year, there would be no encounters with stock. This level of stock use on the trail would not affect the condition of the trail.

Cottonwood Basin will continue to receive light packer use relative to non-commercial use. This basin is a Recreation Category 3 area and receives very high public use. Like Kearsarge, the packer use is a very small percentage of the overall use. Up to 50 trips to the basin, with specific destinations undefined will probably not change the area. Opportunities for solitude will be low to moderate with or without this use. If the packers use the system trail and the use trail for the early season fish-hatchery support projects on a limited basis, the area will see little continued impacts. South Fork Creek trail will be designated not suitable for commercial stock above South Fork Meadow and the effect of this will be to minor beneficial effects to natural conditions as the trail can be maintained at a primitive level.

A quota is identified to Trail Crest for two pack station operators. Although stock is not allowed on the Whitney trail, packers will be able to service parties to within five miles of the sierra crest in the National Park and the clients can exit Trail Crest through the Main Mt. Whitney Zone. Although this use is limited to ten trips a year, there may be an affect on National Park wilderness, which in the future may need further management by the Park. Mt. Whitney is an area of extremely high use and an additional ten parties a year will not be noticeable. This will help facilitate parties that may not otherwise be capable of ascending Mt. Whitney. The type of client will not be managed and may be just be a first come first serve with no difference to capability.

Cumulative Impacts

Past and present high use occurs in the North Fork of Big Pine Creek, including commercial pack stock use, private and commercial mountaineering and backpacking use, and high day use. Past management over the years has contained some impacts (see Alternative 1). These actions have and continue to maintain a high level of the wilderness character of the area despite the high use. The actions in this alternative should maintain these conditions. In one case it will open areas up to packer use that has not occurred in the recent past, which may lead to additional resource and experiential impacts such as at South Fork of Big Pine.

Visitor use in the southern portion of the John Muir Wilderness (Taboose to Whitney) directly access Sequoia –Kings Canyon National Park. Visitors will continue to travel through the Forest

to the Park and very little impacts would occur east of the passes with these actions. There will probably be minor to moderate effects of the use in the Park, but given that it is consistent with current use, there should not be any additional adverse effects. Commercial pack stock use that facilitates the use of Crabtree and Guitar Lakes in the Park may have some minor adverse effects to crowding and physical impacts in the area from camping. Park management will be undertaking their own wilderness management plan within the next five years and can provide further limits here and elsewhere if needed. Nothing in this alternative will preclude the Park from further limitations.

Cottonwood Lakes is an area where the California Department of Fish and Game has a fish rearing operation. There is early season activity associated with this operation, some of which uses the commercial pack station. No changes to this use would occur with this alternative. A cabin used by the Department of Fish and Game is also located in the basin and is a noticeable human imprint. An equestrian campground at the trailhead of Cottonwood Lakes does contribute to additional stock use into the basin, most of which is day riding and remains on system trails. The additional effects of this alternative are minor relative to these effects as the use is comparatively small.

Horseshoe equestrian campground is located at the trailhead and will continue to facilitate stock use into this area. The effects of commercial use activities in this alternative will have minor adverse effects to the areas where these uses will overlap, primarily Cottonwood Lakes Basin and the Golden Trout Wilderness (GTW). These actions, combined with the activities in the surrounding Golden Trout Wilderness have no adverse effects to wilderness character in either the John Muir or Golden Trout Wildernesses. A reasonable foreseeable action is to provide limits on commercial pack stock use in the Golden Trout to prevent dispersal of use into the GTW or into the Park via Cottonwood Pass.

John Muir Southeast – Alternative 2

Analysis

In this region 12 discrete destinations or zones will be used by commercial pack stock. The southern part of this region is characterized by the access it provides to Sequoia- Kings Canyon National Park. Two operators that have historically used this region will be managed through the existing trailhead quotas system where they will still need to compete with the public for access via the daily quota on people. The other operator will be managed through the destination quota concept with allowances for very little growth. The trend the past few years has been an increase in use of these trailheads. This action will curb that trend. Park management will be addressing the appropriate level of use in the Park and Forest controls should be consistent with NPS regulations. If this happens in the next 5-10 years there may be future actions that increase or decrease this use.

There will continue to be a slight overlap of operations in Taboose, Sawmill, Kearsarge, and Shepherd Analysis Units. The past few years saw an increase in use by other operators either entering or exiting on these trails. This trend was a reaction to the limits placed on the Forest use and the ability to increase use in the Park. More operators accessed SEKI through traveling trips. It is expected that most of that trend will be curbed; however, until the Park establishes limits this will continue to some degree.

In Taboose, Sawmill, and Shepherd, the packer is passing through and rarely, if ever, gets off the system trail or uses campsites. On Shepherd, there have been exceptions made to the closure at Anvil Camp to allow packers to spend the night. This action would open that up to camping but maintain the grazing closure. Annually it is most likely that there will be only the occasional packer use of the camping at Anvil. Impacts on the trails and opportunities for solitude in these pass-through areas will remain high and the character and conditions of these areas will not likely change. If Park management allows for more use to pass-through, there may be a change in character.

Kearsarge Analysis Unit is primarily a pass-through to SEKI but does have some use on the Forest side. It is a Recreation Category 3 area and with up to 16 trips allowed for by packers for spot and dunnage it is a very small percentage of the use. One trail accessing Bench Lake would be approved for use and would likely not see any change. Opportunities for solitude would remain low to moderate in this drainage with little effect by the packer operation.

North Fork of Big Pine would be managed as a zone for packer use, with Black Lake being the only separate destination managed. Packer use would be prohibited up to Sam Mack meadow and beyond, and although not currently prohibited, the trail is such that the packer chooses not to go there now. Use trails would be allowed to the snow survey sites, Heidi Cabin for hunting season, and to campsites at Fifth Lake. The predominant use would be on the system trail. Day rides would be minimal here, up to 250 a year. Currently the packer conducts day rides as a part of his spot and dunnage trips and this pattern would continue.

In this alternative, there is no trip quotas identified for South Fork of Big Pine (SFBP); however, the trail is not designated as “Not Recommended for Stock.” In the past the packer rarely, if ever, went up this trail but this action would not preclude this use. The packer could use their five unassigned trips to access SFBP. If this were to happen the character of the area may change. If use remained occasional opportunities for solitude would remain moderate to high, but facilitating use via pack stock could change this. Improvements to the system trail could facilitate stock use to Willow Lake but not beyond as it is proposed as a TC1 beyond Willow Lake.

Cottonwood Basin will continue to receive relatively light packer use. This basin is Recreation Category 3 area and receives very high public use. Like Kearsarge, the packer use is a very small percentage of the overall use. Up to 50 trips to the basin, with specific destination undefined will probably not change the area. Opportunities for solitude will be low to moderate with or without this use and if the packers use the system trail with very limited use of the use trail for the early season fish hatchery support projects, the area will see little continued impacts. Southfork Creek trail will not be recommended for stock and, while commercial stock are not authorized, it may receive some private stock. Horseshoe equestrian campground is located at the trailhead and will continue to facilitate stock use into this area.

A quota is identified to Trail Crest for packers. Although stock is not allowed on the Whitney trail, packers will be able to take parties to within 5 miles of the crest in the National Park and the clients can exit Mt. Whitney, having their trip facilitated by pack stock. Although this use is limited to 10 trips a year, there may be an affect on the Park side, which in the future may need further management by the Park. Mt. Whitney is an area of extremely high use and an additional ten parties a year will not be noticeable. This will help facilitated parties that may not otherwise

be capable of ascending Mt. Whitney. However, the type of client will not be managed and maybe just be a first come first serve with no difference to capability.

Cumulative Impacts

Past and present high use occurs in the North Fork of Big Pine including commercial pack stock use, private and commercial mountaineering and backpacking use, and high day use. Past management over the years has contained some impacts (see Alternative 1). These actions have and continue to maintain a high level of the wilderness character of the area despite the high use. The actions in this alternative should maintain these conditions. In some case it will open areas up to packer use that have been closed in the past, which may lead to additional resource and experiential impacts such as at Sam Mack Meadow and South Fork of Big Pine. Allowing campfires may negate past actions to close the area to campfires.

Visitor use in the southern portion of the John Muir (Taboose to Whitney) directly access Sequoia –Kings Canyon National Park. Visitors will continue to travel through the Forest to the Park and very little impacts would occur east of the passes with these actions. Trips by commercial pack stations will be limited more than Alternative 1 unless the park directs changes to these use levels. Past trends towards more pack stations using these trailheads and accessing the park will be eliminated with this alternative with the establishment of Primary Operating areas, unless or until the Park establishes more direct controls on the commercial pack stock use.

Cottonwood Lakes is an area where the State Department of Fish and Game have a fish rearing operation. There is early season activity associated with this operation, some of which uses the commercial pack station. No changes to this use would occur with this alternative. A cabin used by DFG is also located in the basin and is a noticeable human imprint. An equestrian campground at the trailhead of Cottonwood Lakes does contribute to additional stock use into the basin, most of which is day riding and remains on system trails.

John Muir Southeast – Alternative 3

Analysis

Coyote Analysis Unit will continue to have no overnight pack stock use. There will be day rides into this area but such activities would be infrequent and visitors would not encounter pack stock on very many days during the season.

North Fork of Big Pine will continue to be an area of high commercial stock use. There will continue to be only one operator. Use will be concentrated at Third Lake, Fourth Lake, and along the trail corridor with some use at Fifth Lake. Pack stock use will not be authorized from the junction of the NFBP trail to Sam Mack meadow or beyond. This will provide a hiker only experience in this area and insure that trail damage by pack stock does not occur in the future. Opportunities for solitude will be low to moderate in this drainage. This area is a very popular location for many user types including day hiking, climbing, fishing, and backpacking. Encounters with pack stock will continue to be high, as it will remain to be about 12 percent of overall use in the drainage. The wilderness character of this area is dominated by the very high scenic qualities of the Palisades and will not change. Pack stock use facilitates will continue to facilitate access to the Palisades.

South Fork of Big Pine will be an area of potential growth for the pack operator at Big Pine. Currently no use occurs. Pack stock use expanding into this area again (use has occurred here in the past, just not the recent past) will increase potential conflicts between stock and hikers, since the area is now considered and expected to be a location where there is no packer use. This change in expectations may lead to conflicts between user groups. Trail conditions would likely deteriorate if use were to be more than occasional.

Birch unit will be used as a location for occasional hunting use. Hunting use is determined by State game permits and changing patterns of deer populations. Therefore the use will not occur every year and will continue to be very light when it does.

Red unit will have no commercial stock use.

Taboose will continue to be an area of light to moderate commercial stock use. Use will be pass-through use to Sequoia/Kings Canyon National Park. Use will be controlled with a single quota where the packer must compete with the public for quota space. Use will be limited to 50 stock a year, a slight increase from recent years. Use will be limited to two operators. In the No Action, use is not limited to a number of operators, and any packer willing to truck stock down to the trailhead could access with quota space.

Sawmill will continue to be an area of low commercial stock use. 15 head of stock or less will be in this drainage in a given season. If current use patterns continue, and they will, there will be many years when there is no use. There will be two operators that can potentially use the area. Both will compete with the public for quota space of 10 persons per day. Sawmill will likely remain an area of very low use all around, with high opportunities for solitude.

Baxter Pass will have no commercial stock use allocation. The system trail will be designated as “not suitable for commercial stock” and no use would occur on the trail in the future. The No Action alternative allows for occasional (case-by-case decisions) commercial use, but none has occurred in a number of years. This alternative would help maintain high opportunities for solitude. Maintaining a primitive trail would keep the sense of a high wilderness character.

Kearsarge would continue to be an area of low commercial stock use. Most of the commercial stock use would travel through the drainage into Sequoia/Kings Canyon National Park. Some use would be spot and dunnage to destinations on the east side such as Matlock, Bench, and Flower. Some minimal use of use trails to access camps would be needed and authorized at Bench Lake. Most use would be accessing the Park, and the effects of this are consistent with current Park policy that regulates use by stock nights in the Park. There may be an increase on use exiting this area. In Alternative 1 (No Action) as much use exits via Kearsarge as enters, only by other operators. This overlap may be increased if traveling trips increase under this alternative, which is possible. Overall use in the drainage is very high, with pack stock use being a relatively small proportion of the use. It is expected that commercial stock use will be less than 5 percent of total use into the future.

Shepherd unit would continue to have moderate levels of commercial stock use. This use would be pass-through use to Sequoia-Kings Canyon National Park. Some use would be allowed at a designated stock camp at Anvil Camp. Under the No Action, use is not allowed to stay overnight east of the Pass: however, exceptions have been made for safety reasons (generally no more than once a year). It is expected that there would be only occasional overnight use at Anvil. Exits on the trail occur as often as entry, and this will continue if not increase. Exits may increase if

further restrictions on use are not put into effect by the Park, which currently manages commercial pack stock by grazing nights. Two operators would overlap providing services entering Shepherd, and this overlap may increase if traveling trips increase.

There will be no commercial pack stock use in the North Fork Lone Pine, Whitney, Meysan, or Langley units. However, there may be some hiker use that has been facilitated by commercial pack stock that exits these areas. It is a popular activity to get pack stock support into the Park from an east side trailhead and hike the rest of the trip self supported. The party is no longer associated with the packer services, but the pack support does make the trip easier and more accessible to a larger group of people. A popular trip is to be dropped by a packer on the east side of Mt Whitney, at Crabtree. In this alternative the Trail Crest quota will be made available to packers for allowing parties to continue the trip over Trail Crest. This is a departure from the No Action alternative, which limits this trail to case-by-case.

Cottonwood will continue to be an area of one operator with relatively low commercial pack stock use. Commercial pack stock use will continue to be less than 3 percent of the overall use in this area. Some day rides will be permitted in this alternative, up to 200 in the season. This would be an increase from the No Action, where current use and allocation is 41 service days. Early season pack stock use would continue to provide support to the State fish-rearing project. Besides impacts to the trail system, this use is rarely observed or in conflict with other users. The opportunities for solitude are low in this drainage and commercial stock use has little or no effect on this condition.

Cumulative Impacts

There may be some effects to Sequoia-Kings Canyon National Park with this alternative, including increased crowding at Crabtree and Guitar Lakes. Park policy may dictate differently in the future.

Trails in the southern portion of the John Muir directly access Sequoia-Kings Canyon National Park. Most visitors travel through the Forest to the Park and very little impacts occur east of the passes. Trailhead limits regulate the amount of use to a great degree but destinations west of the pass receive use and impacts as a result of this east side use. In particular use allowances at roughly current levels over Kearsarge, Taboose, Sawmill, and Shepherd Pass may have some effects on destinations in the Park. A reasonably foreseeable action may be that the Park will have to provide additional regulation other than relying on the access regulation on the Forest to control this use.

Cottonwood Lakes is an area where the State Department of Fish and Game have a fish rearing operation. There is early season activity associated with this operation, some of which uses the commercial pack station. A cabin used by DFG is also located in the basin and is a noticeable human imprint. An equestrian campground at the trailhead of Cottonwood Lakes does contribute to additional stock use into the basin, most of which is day riding and remains on system trails.

John Muir Southeast – Alternative 4

Analysis

North Fork of Big Pine will have little change from the Alternative 1. The 20 percent reduction in service days will effect an overall reduction in people serviced. Stock number may continue to

increase, with up to 700 stock in this canyon. Use will be prohibited to Sam Mack meadow, which will insure that the trail is not subjected to the potential for more rapid deterioration that may occur with stock use as is allowed in Alternative 1 and 2. Currently, the operator has chosen not to use this trail due to the deteriorated condition, but the use is not prohibited. Commercial stock use will continue to be concentrated at Third and Fourth Lakes with less use at Black and Fifth Lakes with a consistent, steady use of the trail from mid July through August.

Opportunities for solitude along the trail and at these destinations will be very low and commercial stock use will remain at about 12 percent of total use overnight use. Impacted areas will continue to be used with no new areas that will become subjected to new impacts. Limited cross-country travel will continue to Heidi Cabin and snow survey sites, but cross-country travel to Coyote Ridge will be eliminated. This will have no effect as the current approval has led to infrequent use that has no sign of impact.

The canyons south of North Fork Big Pine will mostly be designated Not Suitable for Commercial Stock (NSCS). Only Kearsarge trail will be available for commercial stock use. This will likely have the effect of increasing commercial stock use on this trail. The number of days the commercial quota fills will be much higher, with possibly up to 40 days being filled compared to 2004 when on no days was the commercial quota filled.

Cottonwood Lake will continue to have low to moderate stock use, with up to 300 stock a year in the basin. Access to Hidden Lake would be prohibited which would concentrate use at other destinations in the basin. Little use occurred at Hidden so the effect of use dispersal would be minimal. Most commercial stock use would occur at Lake 3, as it does currently, and the effects of this would not likely be different from in other alternatives, including Alternative 5.

Cumulative Impacts

North Fork of Big Pine will continue to see high levels of private day hiking, mountaineering and outfitter-guide use. All these uses combine to create low opportunities for solitude in most locations in this basin. Some improvement to Wilderness character has occurred with past actions removing structures (old resort facilities) since 1964.

Commercial pack stock use will be greatly reduced into Sequoia-Kings Canyon National Park. An overall reduction of impacts west of the passes may occur because of this action, unless Park management authorizes or allows use to increase from other points of entry.

John Muir Southeast – Alternative 5

Analysis and Cumulative Impacts

This region has a few areas of moderate to high use, including North Fork Big Pine, Cottonwood, Shepherd, Whitney, and Kearsarge. The remainder of the region is more typically low use. Most visitors in these areas access Sequoia-Kings Canyon National Park. Overall up to 1500 commercial pack stock use this region. With Alternative 5, no stock would be servicing visitors.

North Fork of Big Pine with access to the Palisades would see a reduction of use by about 12 percent. There would still be a high level of day hiking, climbing, and backpacking that would occur. In the months of July and August, there would be a noticeable difference in encounters with pack stock. Typically, however, the packer here takes one run up and down the trail a day.

This pattern helps to reduce encounters. With no encounters with stock there would still be a high level of visitors and opportunities for solitude would still be low to moderate. Camping encounters would be slightly less than hiking encounters but this use would remain high.

Taboose Pass receives moderate packer use, less than 15 trips and 75 stock a season. All this use passes through to Sequoia-Kings National Park and little impacts exist from this use other than to the trail system, which is rough and difficult to maintain. It would remain difficult to maintain but may not require the present level of maintenance.

Shepherd Pass receives moderate stock use, 22 trips and just over 100 head of stock. The trail is, like Taboose, rough and difficult to maintain. There has been no camping allowed except by exception on the east side of this pass so no change would occur east of Shepherd Pass. On the west side, in SEKI, there may be a noticeable change in stock numbers accessing the Park. This is a popular loop trip through the park either starting or ending at Shepherd. In August, it is common to encounter stock that have accessed from the east side on these loops. Opportunities for solitude would not be affected, as these areas will remain popular for visitors that do not travel with commercial stock.

Kearsarge has a moderate level of commercial pack stock use with over 130 stock a year. Most of this use is through to SEKI to Charlotte or the JMT/PCT. There is occasional use to destinations east of Kearsarge Pass, but due to the popularity of this trail by backpackers and day hikers, there is not likely to be any noticeable change to social or resource conditions. The trail will not need to be maintained to the current level for stock travel, but will still be a major trail into the Park and will require high maintenance. It is expected the recent construction work will be adequate for up to 20 years without the stock present. Opportunities for solitude will likely not change.

Sawmill receives only occasional stock use, at most one or two trips a year. There will likely be no noticeable change in this area, either to resource or to social conditions.

Cottonwood Lakes Basin is a very popular area for backpackers and day hikers but relatively low commercial stock use compared to the public use. With no packer use, stock would be mostly used to assist with the Department of Fish and Game fish rearing project in the basin. This early season access may have more effects on the trails than mid to late season use and would still probably occur, with state or federal packers doing the work. Campsite conditions would stay the same as the general use is so high and conditions have stabilized. Opportunities for solitude would alone not change and remain low to moderate.

Mt Whitney currently has no stock use so the conditions of high use, high encounters, and high encounters with others camped will remain. However packers do drop parties on the west side of Trail pass with their commercial service ending there and the parties continuing over and travel down to Whitney Portal. Discontinuing this use will hardly be noticeable to visitors on the very popular Whitney trail.

Cumulative impacts are similar to Alternative 4.

John Muir Southwest – Alternative 1

Analysis

Commercial pack stock use will be light to moderate with stock use widely dispersed over this large geographic region. Overlap between operators is not likely to occur anywhere but in the northern portion of the region, in the Hobler unit. This overlap is expected to be only occasional. All other use throughout this region would be by one operator. Without direct controls on any of the destinations, use patterns can shift and concentrate at a point in time. Some destinations may get more use in the future and would be dependent on packer marketing and visitor demands.

A number of trailheads offer access in this region. Maxson has, by far, the highest packer use with a packer quota of eight persons a day. Single quota trailheads are also available at Crown Rancheria, Cliff Lake, and Woodchuck. These 3 trailheads offer up to 50 persons a day. With current public use being low, this allows for increases in use at these trailheads.

Many options for accessing destinations are allowed with use trail approvals in this region. Access to Crabtree Lake, Blackrock, Bench Valley, Hummingbird Lake, Sceptor Lake, Portal, Pearl Lake, and Ambition Lake are all open to the packer. There is the potential for repetitive use on any of these trails since the only control is at the trailhead. The scarcely visible use trails could become noticeable impacts and trails that may not be visible now could become visible paths, which could facilitate use into low use areas.

Cumulative Impacts

There is an effect on Kings Canyon National Park by pack station use occurring from the Rancheria Trailhead. Use from this trailhead enters the Park and concentrates in Tehipite Valley.

Cattle allotments in this unit also may affect trails, riparian corridors, and wilderness character. Trails may receive more impact as a result of the combination of both human/stock use and cattle use. Multiple trailing also may occur due to range cattle. The wilderness character of the Crown Valley area may be negatively affected due to the cattle allotments in the area.

The most heavily used trailhead in this geographic unit is the Maxson trailhead, which shares a trailhead with the Dusy-Ershim Off-Highway Vehicle (OHV) route. This proximity of this OHV route to the Maxson trailhead and the John Muir Wilderness may affect the wilderness character of nearby areas.

There is a private inholding in Crown Valley with cabins and other structures. The owners are actively rehabilitating the facilities. Use of helicopters into the property has been occurring. Many years ago the property was somewhat of a dude ranch but the intentions of the current owners are unknown. There is a negative effect on the wilderness character that is localized in the Crown Valley area because of activities—especially helicopter use—on this private land.

A second inholding at Statum Meadow near the Crown Valley trailhead and the wilderness boundary has structures that are used by the property owners. However, due to location and low intensity of the use there is minimal effect on the wilderness character. Overall this Geographic Area generally has the largest amount of private horse use within the Sierra NF portions of the planning area. Popular destinations include Red Mountain Basin, Crown Lake, Spanish Lake, and Geraldine Lakes. At these locations and along the trails accessing them there may be a

reduced sense of solitude, especially for those that find horses inappropriate for a wilderness setting.

John Muir Southwest – Alternative 2 – Modified

Analysis

In this region, 23 destinations or zones will be used by commercial pack stock. This region will have only one location where overlapping spot and dunnage services would occur, in the Hobler unit. The rest of the unit will have one operator.

Use throughout this region will be low and dispersed. Opportunities for solitude will remain high and may not be changed by these actions. Most destinations will have no more than 10 trips a year, with only one destination Chimney/Woodchuck with up to 15 trips. Most of this region is within a Recreation Category 1, managed for low use and this type of operation is consistent with those desired conditions.

Use will not be allowed to be higher than the current high use year at Rae Lake. This area receives a light amount of packer use but is a very popular destination for hikers and private stock parties. Capping packer use will reduce conflicts with other user groups and contain impacts. The use trail used by the packer to access Fleming Creek will be prohibited, concentrating the use onto the system trail. This will have a minor beneficial effect on the naturalness of the area.

Access to Crabtree Lake will be limited to the use trail up Bench Valley and packer use will be prohibited between Crabtree and Horsehead Lakes. This will insure that the area maintains a trail-less quality and will maintain high opportunities for solitude and wilderness character.

A trail that is used to bypass the Bench Valley trail—which is very difficult for stock—will be approved for use until the Bench Valley trail is fixed. There may be continued trail impacts occurring until such time as the system trail is improved. There would be minor to moderate effects to naturalness by allowing an entirely new trail system to be used, but with light use the trail impacts will have minor adverse effects.

Areas in the south end of this region, Woodchuck, Finger, Spanish, and Rodgers will all see occasional packer use. Very light use will continue from this region into Sequoia Kings-Canyon National Park, mostly to access Tehipite Valley and Blue Canyon.

Cumulative Impacts

Cumulative impacts are the same as Alternative 1.

John Muir Southwest – Alternative 2

Analysis

In this region, 22 discrete destinations or zones will be used by commercial pack stock. Collectively at these 22 destinations there are allowances for 9 additional spot and dunnage trips. This allowance for a slight potential in growth would take place over a large area. As with all areas of potential growth, this growth is in number of trips with an overall limit on number of stock based on the past few years of use. This region will have only one location where

overlapping spot and dunnage services would occur, in the Hobler unit. The rest of the unit will have one primary operator.

Use throughout this region will be low and dispersed. No destination will have more than 10 trips a year. The maximum number of trips to a destination will be at Pearl Lake. Much of this region is within a Recreation Category 1, managed for low use and this type of operation is consistent with those desired conditions. Opportunities for solitude will remain high and will not be changed by these actions.

Use will not be allowed to be higher than the current high use year at Rae Lakes. This area receives a light amount of packer use but is a very popular destination for hikers and private stock parties. Capping packer use will reduce conflicts with other user groups and contain impacts. The use trail used by the packer to access Fleming Creek will be prohibited, concentrating the use onto the system trail.

Access to Crabtree Lake will be limited to the use trail up Bench Valley and packer use will be prohibited between Crabtree and Horsehead. This will insure that the area maintains a trail-less quality and will maintain high opportunities for solitude and wilderness character.

A use trail that is used to bypass the Bench Valley trail—which is not passable to stock—will be approved until the Bench Valley trail is fixed. There may be continued trail impacts occurring until such time as the system trail is improved, which could be 5-10 years.

Areas in the south end of this region, Woodchuck, Finger, Spanish, and Rodgers will all see only occasional packer use. Very light use will continue from this region into Sequoia Kings Canyon, mostly to access Tehipite Valley and Blue Canyon.

Cumulative Impacts

Cumulative impacts are the same as Alternative 1.

John Muir Southwest – Alternative 3

Analysis

Only one pack stock operator will be authorized in this area. Under the No Action there had also been only one operator but there were no managerial constraints on other operators using this area. Generally throughout this geographic region use will be low to moderate with low use dispersed across many distinct destinations. Use patterns are not likely to change from current patterns noted in the No Action. However, few direct controls exist to assure this. If use patterns continue opportunities for solitude will remain high at most destinations in this region. Total use in the area is roughly 1500 people and less than 500 stock over a relatively large geographic area compared to the same amount of use on some trailheads on the east side of the John Muir where as many people and stock are generally concentrated on fewer trails.

In this alternative use will continue to be low into the Hobler unit with access from the Courtright trailhead. Destinations that will continue to receive use will be Burnt Corral and Red Rock Basin. Opportunities for solitude will be moderate in Burnt Corral and high in Red Rock Basin. The approved use trail into Red rock basin will allow access into a Recreation Category 1 area. Use pattern shifts into red rock basin are possible and would need to be monitored to insure use levels continue to be compatible with the desired condition of a RC1. Use levels would be at

the high end of a Recreation Category 1. The system trail access to Burnt Corral would be maintained at a slightly higher level than the No Action alternative (from a 1 to a 2) but is consistent with the desired recreation category of the Burnt Corral. Overall use, public and commercial is low to moderate, with 200-300 parties a year and commercial use would remain less than 10 percent of use in the area in this alternative.

The Courtright trailhead would also be used to access Post Corral unit. Use would continue to be moderate and stock numbers would be moderate in this area as it provides access to multiple destinations. This would be used primarily as a pass-through to other Fleming, Red Mountain, Blackcap Basin, and Bench Valley. Encounters between commercial pack stock and other visitors would be low to moderate in this alternative. Most of the encounters would be from Post Corral meadows to the Potholes.

Beyond Post Corral meadow, use will continue to disperse into various destinations. Fleming unit will continue to have moderate hiking and stock use. Commercial pack stock use will be concentrated but still low at Rae, lower Indian, Fleming Creek, and Dale Lake. Use will likely remain at about 50 stock to these locations a year.

Red Mountain Basin would receive use concentrated at low levels at Disappointment Lake, Devils Punchbowl, Little Shot, and Blackrock Lake. Approved use trails to Little Shot and Blackrock allow for the potential for use to shift over time to these more remote (off trail) destinations. Use to Blackrock, if it were to increase, could lead to a use trail that now is not visible to a more established route which could, over time, encourage or facilitate more use. The setting is such that there is little capacity for camping and opportunities for solitude are easily spoiled.

The Bench unit would have light use, less than 50 stock dispersed between Guest and McGuire, Crabtree, and Horsehead Lakes. Stock use to McGuire and Guest Lakes will likely not occur to any notable amount until the trail is improved. Use is prohibited between Crabtree and Horsehead in all alternatives.

Big Maxson will continue to have a low level of commercial pack stock use along the trail corridor at Halfmoon Lake and Maxson Meadow. Stock use levels will remain similar to the No Action alternative; about 100 stock a year total in these areas. This relatively light use will have no change in effect on opportunities for solitude, no increases in encounters between stock and hikers, and a high probability that any stock related impacts will be minimized and or improved over time with management.

Basin, entirely with a Recreation Category 1, will continue to see a low level of stock use dispersed in Blackcap Basin, Lightening Corral Meadow, Pearl Lake, and Portal Lake. Use pattern shifts will need to be monitored to assure that Recreation Category 1 conditions are maintained at these locations. A number of approved use trails allow for additional access to locations and may require monitoring for conditions. The Portal to Pearl use trail may particularly facilitate more use into the area over time.

Crown Basin and Crown Lake units have no recorded commercial stock use staying overnight in these units. It is used as pass-through to Blue Canyon in Sequoia Kings Canyon National Park. Use restrictions or allowances from the Park Service may affect use levels through this area. With no direct controls use patterns shifts could occur under this alternative. However no popular destinations are present that would draw stock use to this area and with a seasonal stock

quota of 55 from Crown /Rancheria trailhead, and multiple destinations accessible from this trailhead, it is not at all likely that stock use will increase. A use trail approval to Hummingbird Lake and Sceptor Lake could allow for more use. Stock related impacts into this area are possible at low levels of use if no stock use or very infrequent stock use has occurred to date.

Rodgers has low potential for commercial pack stock use more than at low infrequent levels. Geraldine Lake is the primary destination and commercial stock use will be concentrated at low levels, less than 30 stock a year at this lake. System trails maintained at a TC1 will help maintain the primitive character of the area.

Spanish unit will continue to have very low levels of commercial stock use. Less than 25 stock a year will be occurring at Spanish Lake, Statum Meadow, and the Crown Ridge area. Opportunities for solitude will be high and conditions will be closer to the desired condition of a Recreation Category 1 area instead of the Recreation Category 2 it now is classified.

The Woodchuck unit will have moderate commercial use relative to the rest of the John Muir West region. Use will continue to be concentrated at one destination in the unit, Woodchuck Lake, and along the trail corridors. Use trails that have been used as alternates and short cuts to the system trail will be unapproved reducing overall stock related impacts in the area. One use trail to the snow survey site at Loper Peak will allow for continue support to the State's program, and will be infrequently used. Woodchuck Lake will continue to have moderate opportunities for solitude with the commercial pack stock use a higher percentage of overall use than other locations in this region. Still the use is low, with less than 15 trips a year expected to this destination.

Chain Lakes and Duck Lakes will continue to receive light commercial pack stock use in the Finger area. Opportunities for solitude will remain high when no commercial pack stock are at these lakes. During the infrequent times that commercial pack stock are here, opportunities for solitude may be reduced.

Cumulative Impacts

Cumulative impacts are the same as those described under Alternative 1

John Muir Southwest – Alternative 4

Analysis

The primary access into this area is from the Maxson, Rancheria, and Woodchuck trailheads. Overall use levels being reduced by the 20 percent cut to service day allocations will be the primary difference between this alternative and the No Action in this geographic region. The number of locations where pack stock can only drop clients will be limited to 18 areas. The number of locations where pack stock can overnight will be limited to nine areas. Although in the No Action there are numerous possibilities for dropping clients, most use is currently spot and dunnage to these same primary locations. There will be no flexibility that exists in the other alternatives.

Five of 32 system trails would be designated Not Suitable for Commercial Stock, four more than in Alternatives 2 and five more than Alternative 3. This provides additional limits on access to destinations compared to Alternatives 2 and 3. Use trails would be limited more than system

trails in this alternative. Six additional use trails would be prohibited from commercial pack stock use than in Alternatives 2 or 3.

Areas where commercial pack stock would be excluded include Ambition Lake, Lightning Corral Meadow, Twin Buck Lakes, Roman Four Lakes, Hummingbird Lake, Heather Lake (from Mosquito Pass), North Fork Kings River (near Anderson Creek), and Blackrock Lake. These locations are relatively remote with few impacts. By excluding pack stock it would eliminate the chances that pack stock use could increase and/or contribute to impacts that may be associated with even light levels of stock use.

Use would still occur at relatively remote locations in this region such as Chimney Lake, Marsh Lake, Crabtree Lake, Horsehead Lake, Little Shot Lake, Jigger Lakes, Scepter Lake, and Maxson Lake. There would be more opportunity for dispersed pack stock use in this region than in other regions. These destinations will be vulnerable to impacts if use levels were to increase. Without direct controls on these destinations it can be possible that conditions will change over time and incremental increases in pack stock use can change the character of such remote locations if stock use displaced from other locations now prohibited were to disperse to these locations.

Cumulative Impacts

Cumulative impacts are the same as those described under Alternative 1.

John Muir Southwest – Alternative 5

Analysis and Cumulative Impacts

Packer use in this area is low and spread over a large area. The highest used destination is Woodchuck Lake with 100 stock a year. North Fork, Red Rock Basin, and Burnt Corral all receive some lesser amount of use with many other destinations receiving only occasional use. Many use trails are used by the packer in this area. Some are used to bypass trails that have not been maintained adequately for stock (Bench Canyon). Trails are rough even with light use. Conditions of the trail will not improve with the absence of stock. Encounters with stock parties will be less but may not be as noticeable since this area receives a higher level of private stock use than other parts of the wilderness. Few large packer camps exist, but they would remain and only improve by the fact that they will receive less use. They will likely remain as stock camps.

Cumulative impacts are the same as those described under Alternative 1.

4.1.3 Trails

Wilderness Scale

Methodology

Trails and use trails were assessed by evaluating their consistency with existing wilderness direction and desired conditions of the areas that they access, as well as their predicted stability (both of infrastructure and resource) under current and anticipated use.

Context: For the purposes of this analysis, local impacts are effects on resources in the immediate vicinity of specific trails because of instability, or at the trail destination as a result of relative inconsistency with area direction. Regional impacts vary slightly depending upon the type of resource affected. Regional impacts for physical resource effects are at the watershed scale, while effects related to consistency with area management are at the wilderness scale.

Intensity: Intensity considers whether the impacts of actions would have a negligible, minor, moderate, or major effect on trail and resource stability and consistency with wilderness-desired conditions. A negligible impact is one that is not readily evident and does not appear to affect trail or resource stability or consistency with management of a wilderness destination. A minor impact is evident, but the effect is not noticeable nor does it materially affect physical or wilderness resources. A moderate impact is readily apparent and clearly affects physical or wilderness resources. A major impact is one that creates substantial and potentially irreversible change in condition of physical or wilderness resources.

Duration: The duration of the impact considers whether the impact would occur in the short term or the long term. Short-term impacts would generally be those where an effect is evident in a relatively short time (1-10 years), and is not likely to have a permanent effect on the trail infrastructure or wilderness resource, such as the approval of sanding snow for early season access or social conflicts between different users. Long-term impacts are those which will not be fully evident until other events take place over a longer duration (generally 10-20 years or more), such as gradual natural recovery of resources, eventual implementation of active mitigation, or gradually increased stability of trails when trail management is well-aligned with anticipated uses and desired conditions of an area.

Type of impact: Impacts are determined to be either beneficial or adverse. Beneficial impacts are those in which actions enhance physical resource and trail stability, and provide a closer consistency with desired area management. Adverse impacts are evidenced by greater trail instability and greater discrepancy with desired area management.

System and Use Trails – Analysis Common to All Alternatives

General effects of stock and hiker use on trails

Effects of pack stock on trails consist primarily of churning of trail tread surface materials and compaction of subsurface tread materials. This action makes soils available for transport by water, or to a lesser extent, physical removal on hooves or feet, or in some cases, high winds. When a trail is incised through soil removal, it begins to channel surface runoff. Soils deeper than a few inches within the trail tread become compacted over time, making the soil less

permeable to surface runoff, increasing the intensity and velocity of water flows within the trail way. This loss of soil, if unchecked, can create unstable and awkward conditions, making trails less comfortable to travel for both hikers and equestrians.

Trail structures in the tread and supporting the trail are subject to very great forces by heavily laden pack animals, and can be loosened or damaged by such use. Soils, which are loosened in the tread, tend to be displaced to either side, creating berms, which further contain water on the trail. The loose soil can also plug waterbars and other drainage structures, requiring an increase in frequency of maintenance in order to keep them functional.

These impacts can combine to create degraded conditions of the trail itself, such as incision, loss of tread, clogging or failure of drainage structures, or collapse of support structures, making the trail hard to walk or ride on unless high levels of development and maintenance are performed. Additionally, these factors can result in increased off-trail resource effects, such as sedimentation into nearby streams and lakes, or a lowering of the water table in meadows when a trail becomes deeply entrenched. When trails become overly degraded, alternative routes are sometimes used by both hikers and by equestrians to bypass obstacles, creating multiple trails and added sources of impact.

In most scenarios, the effects of foot travel with no or only occasional stock use on a trail surface tend to be greater compaction of soils at the very surface of the trail and less compaction deeper in the soil structure. While this makes less loose soil available for off-trail sedimentation, berming, or filling drainage structures, it can reduce the absorption of water and increase velocity of surface flows. On trails with excessive grades for the soil type (generally >20 percent without tread retaining structures), increased water velocity can remove more soil, and deep incision and loss of soil can occur. In most cases, trails with only hiker traffic tend to be more stable and require less work and cost to maintain. As seen on certain trails that have been closed to stock long term, trails carrying only foot traffic tend to hold an outsloped surface (which sheds water), have firm tread, and require less drainage maintenance. Comparably built structures tend to last longer. Also, it is evident that there tends to be less susceptibility to incision at moderate water flows on comparable trail grades of foot-only trails relative to multiple-use trails.



Hardened trail surface in steep terrain can sustain repeated heavy stock use.

Trails that are well-designed with moderate grades and sufficient high-quality structural improvements and/or are in terrain and conditions with very few risk factors are more capable of resisting the impacts of heavy stock and hiker use, and generally will remain relatively stable with just basic recurring maintenance efforts. Trail structures, such as waterbars that deflect water from the trail, check dams or tread retainers that hold tread in place, or rock steps that help gain grade with less surface erosion potential can protect both the trail infrastructure and off-trail resources.

Conversely, trails with little or no design or structural improvements in areas with a higher intensity of risk factors, tend to be more susceptible to the effects of such use, potentially resulting in degradation of the trail itself and higher effects on resources in the trail area. Risk factors, such as steep natural slopes, steep trail grade, loose soils, connectivity to stream systems, or proximity to riparian habitat may complicate and multiply these effects.



Streambank damage and headcuts in trail where structural development is inadequate for use types and levels.

Preventing or mitigating these effects requires increased maintenance efforts and higher costs directly proportional to the amount of pack stock use when all other factors are equal. Trail

maintenance budgets on both forests have historically been inadequate to fully maintain all trails to standard. This has resulted in continuing degraded conditions on most trails, and has resulted in mainly the highest-use and highest-priority trails receiving the bulk of maintenance resources.

Consequences of specific trail-related actions taken in various alternatives

Trail-related action types in the various alternatives are limited to the following:

1. Adding a trail to the Transportation System inventory.
2. Deleting a trail from Transportation System inventory.
3. Increasing the Trail Management Class of an existing trail.
4. Decreasing the Trail Management Class of an existing trail.
5. Designating Trails as “Not Recommended for [private] Stock”.
6. Suitability of system trails for Commercial Stock. (Designation of trails “Not Suitable for Commercial Stock”).
7. Approval of Use Trails for commercial stock use.
8. Prohibition of Use Trails for commercial stock.
9. Sanding of snow by commercial operators to provide earlier access over passes.

Consequences of each action within these various categories will generally be similar on each trail. The difference between alternatives in the potential effects on an area is related primarily to the extent and number of actions within that area.

Trail System and Trail Classes

In all action alternatives (Alternatives 2-5), a trail transportation system is being designated, which includes adding trails or removing trails from past inventories and assigning trail maintenance and management levels on each trail consistent with destination management. These trail management levels are based primarily on the desired management condition of each destination within the wildernesses, which were determined in the 2001 Wilderness Plan, as well as other known or anticipated uses of the trail system. In all action alternatives, the intent is also

to align trail classes with the current or anticipated use types and levels, if such use is consistent with desired management conditions for the area. The long-term effect of correlating trail classes and the managed use types and levels will be trails with greater stability, less resource damage, and improved travel ability with limited maintenance funding.

Some additions and deletions from past (no action) trail system inventories are purely “paper” corrections. For example, some trails had been entered into the inventory more than once under slightly different names, or had been inadvertently dropped due to a typographical error or confusion with another similarly named trail. Correcting such errors will not have a material effect on the physical resource or costs associated with maintaining trails. Other errors in the inventory may have been caused by inadequate field information. For example, a trail was placed on the inventory because it was assumed that a trail existed. Leaving such trails on the system may lead to confusion for managers and wilderness visitors, and in rare circumstances, may inadvertently lead to an unnecessary use trail receiving maintenance.

(1) Adding trails to the system: Trails added to the system have generally been used by a moderate to large number of wilderness visitors, usually exceeding the capacity of an unmanaged use trail. Some have already been inadvertently managed as a system trail in the past, and appear to benefit from continued or future management as a system trail. Since the trails were added to the system with consideration of anticipated use types and levels expected in each alternative (including both commercial and private stock and hikers), the effects of adding these trails to the system is likely to be a reduction in direct resource effect in the immediate trail vicinity.

When trails are added to the system, they are assigned a trail management class, which defines the level of development, maintenance, and management the trail will receive (see discussion under Trail Classes below). Once a trail is added to the system, opportunities increase for management of the trail and its effects – including mitigating resource impacts – since trail maintenance funds can only be spent on system trails. Guided by trail class designation, appropriate structural improvements, such as drainage structures and tread retention structures, can be installed that will reduce erosion of the trail and sedimentation to off-trail resources. Whether such work is accomplished by Forest Service-funded efforts or by volunteers, the design standards of the designated trail class will apply, which helps ensure that intended management of a destination and the trail will be implemented.



Well-defined use trail, added to system as Trail Class 1 trail.

Additionally, since non-system trails have rarely been designed or intentionally aligned, the existing routes may be unnecessarily affecting sensitive resources. Once the trail is on the transportation system, there is a higher likelihood that trails will be rerouted away from particularly sensitive areas as funding or work resources become available. Signage consistent with wilderness and the trail class will also be installed. There should be a net reduction in total area trampled by dispersed use where signs or other improvements help keep wilderness visitors

on one alignment. In some cases, ensuring that all use stays on the one designated route may increase the direct effects on a trail. However, since use would not be causing as many dispersed and unmanaged effects, there will be a net beneficial effect on the wilderness resource.

Routes, which are completely undefined and so lightly used that there appeared to be no need for trail management, were not added to the system. Leaving these undefined routes off the trail system will likely prevent increased use and effects on those trails.

(2) Removing trails from the system inventory: Trails removed from the inventory generally did not exist on the ground, and there appeared no reason to provide transportation management to the destination. Inventory trail management-levels were sometimes moderately high for trails that neither had existed nor would have been practical to ever construct and maintain in these locations. In some cases, these trails appeared on published maps, even though no trail had ever existed.

Other trails removed may have been evident on the ground, but the original use type and reason for the trail may no longer be present. In some cases, existing use on these trails appeared very low and there appeared to be no wilderness, resource, or transportation management rationale for keeping it in the system. Examples include former mining roads or trails where mining activities have ceased; or trails accessing locations that formerly received intensive recreational use, but the activity (such as boat launches or historic lodges) is no longer occurring. Since use is at very low levels, and in most cases, maintenance activities have not occurred in recent decades, removing these trails from the system should have no noticeable effect on wilderness visitors or on resources.

Some trails removed from the inventory provided duplicate access to the same destination provided by another system trail. In these cases, travel patterns would change slightly, with a displacement of traffic to the trail that remains on the inventory. This would likely have a very slight increase in impact to this trail, with an incidental increase in costs to maintain the trail. This would be more than offset by reducing the full maintenance cost of maintaining a duplicate trail. Since access would still be provided to the same destination after the removal of a duplicate trail, there would be no overall effect on visitors' ability to access a destination or on resources at a destination.

Removal of these trails from the system should assist in providing information that is more accurate to the public, reducing confusion, and leading to a better experience. There may be a slight reduction in impacts caused by the dispersed use of visitors who attempt to find a trail on the ground after seeing the trail on a map. Without duplicate trails, expectations would be more accurate for those wilderness users who prefer to have trail access to their destinations. More importantly, removal of the trail from the system clarifies the intended management of routes for wilderness



Undetectable Trail Class 2 “system trail,”
removed from inventory

and trail managers who need to make maintenance and workload determinations for each system trail.

Where trails are somewhat evident, but have been removed from the system because of changes in original use type and demand, effects may include the gradual loss of a followable path, as slough or slides and brush encroach on the tread. In most cases, use is extremely low, so maintenance has become a low priority for these trails and this gradual naturalization has already occurred to a large degree. It is likely that some use will continue by private equestrians and hikers who are aware of the trail and are capable of traveling in its un-maintained condition. As long as such use is light and the route is in an area with few risk factors (such as riparian or aquatic habitat), resource effects should be minimal and the trail will gradually naturalize or stabilize.

Removing a trail from the system in Recreation Category 1 (primitive) areas also helps align trail system management more conceptually with other desired area management of desired conditions for destinations.

There is a slight risk of potential resource effects if a trail is removed from the system inventory, and if use levels increase beyond the capability of the unmanaged trail. These are the same potential effects as described for use trails, where a lack of development or maintenance relative to the type and amount of use increases susceptibility to degradation of both the trail and resources in the trail corridor. If the trail is not on the inventory, options for physical mitigation of these effects may be more limited, and, depending on the appropriateness of the type and level of use present, may lead to the possibility of adding the trail back into the system in a future process.

Trail Classes: Trail class designations define the development, maintenance, and characteristics of a trail. These are defined in Table 2.29 in Chapter 2. Generally, lower trail classes have a lower, more primitive development and management character, and tend to be of smaller scale in almost all design elements. Lower trail classes can accommodate lower use levels while remaining stable, and fit well with more primitive settings with limited visitation. Higher trail classes have greater development and more highly evident management. They tend to have more and larger scale structures, wider footprint, and tend to be more easily traveled. These trails are intended to remain stable under intensive use. Their character is more consistent with higher-use areas that have greater visitation and higher evidence of management.

Adjusting trail class for a particular trail may have a variety of potential effects. Actual physical effects on the environment – both beneficial effects and detrimental effects – would generally not occur until the time of actual repair or reconstruction of a given trail. The extent of actual effect on the



Trail Class 3 trail in high-use Recreation Category 3 area.

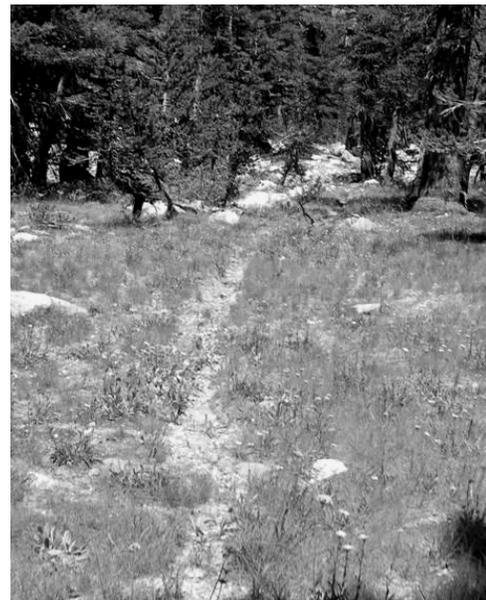
environment will vary depending upon a number of factors. If the change is only a “paper correction” that aligns the class to a trail’s current condition and management, and the current condition is consistent with area direction, then the only effect will be to provide more concise guidance about to what standard the trail will continue to be managed. Designating an appropriate development level will help prevent unintended change in the way a trail is physically managed. In this scenario, there would be little effect, even when work is performed to keep or bring the trail to standard.

(3) Increasing the Trail Management Class of an Existing Trail: As indicated above, if the increase in trail class simply makes the inventory consistent with existing trail management, and this management level is consistent with other area direction, there would be no notable effects on the trail, adjacent resources, or costs associated with maintenance.

When increasing the trail class designation will also require physically upgrading the trail above the past management of a trail, potential effects of increasing the management level (and future development levels) of a trail would primarily be in visitor perceptions of increased trail management. If the trail management level is currently insufficient for the existing or desired management of a destination, raising the trail management level may improve the experience of many wilderness visitors. Conversely, a trail managed at an excessively high level may appear to be out of character with more primitive environments, since the trail would be relatively easy to follow and travel, and may have more substantial structures than would be present in the most primitive wilderness destinations. In all action alternatives, trail management levels are designed with some consideration of desired management condition for destinations, so it is likely that in most alternatives, this effect will be minimal.

If a trail has previously been actively managed at a much lower level than is being designated, a number of effects could occur. When a trail is currently relatively undeveloped and extremely difficult to travel by either hikers or stock, bringing the trail to a much higher development level would potentially allow more ready access by types and/or quantity of wilderness visitors to a particular destination. If the designated standard requires lower trail grades, wider tread, and more substantial structural development than currently exists, there may be some additional site-specific effects at the time of reconstruction efforts. There could be a wider footprint and larger area of disturbance and potential disturbance of areas where rocks or other construction materials are obtained. Physical effects would occur at the time a trail is reconstructed to the designated standard and generally would not increase, due to subsequent recurring maintenance performed on the trails. Ongoing physical impacts to the trail and associated resources would generally be greatly reduced after a trail has been reconstructed to a higher standard.

In many cases, designating a higher trail class to meet an immediate or expected demand will have beneficial effects on the physical environment. If a use trail or low-development system trail with minimal



Low-use, lightly defined TC1 trail. Shares some characteristics with use trails.

management is not so difficult that it prevents travel, and it is currently receiving heavy use, it is likely that the trail is already causing some physical resource impacts that could be corrected by management that is more intensive. In these cases, designating a higher class and bringing the trail to standard would likely have a beneficial effect by stabilizing damaged sections of trail, improving drainage and reducing effects on various resources without significantly changing use patterns. Improving the trail's stability has the potential to reduce the overall footprint of disturbance by providing a single well-used trail, instead of multiple braided routes where hikers or stock bypass obstacles. In these scenarios, the greatest benefit would generally be in meadows, riparian areas, and at water crossings, where developing one stable route can substantially reduce hydrologic disturbance.

(4) Reducing Trail Management Class of an Existing Trail: Potential effects of reducing the management level (and future development levels) of a trail would primarily be in visitor perceptions of reduced trail management, and in potential future reduction of costs for reconstruction or maintenance. Some wilderness travelers prefer more primitive trails, which may be more difficult to negotiate, but which add to a feeling of remoteness and less management intrusion. Others may find the trails exceedingly difficult, especially equestrians or hikers carrying heavy backpacks.

Costs would likely be slightly reduced at the time of repairs or reconstruction if the trails can be built to a lesser standard. Trails with a lower management class will generally have fewer and smaller-scale structures, less width, and somewhat less frequent maintenance. However, savings in trail development may be offset in the long-term by the relative susceptibility of a less-developed trail to damage from natural events and heavy use. A potential effect of this would be an increased effect on physical resources in the trail corridor if structures do not adequately withstand the use types and levels present on the trail. As with undeveloped use trails, system trails with minimal development are more susceptible to catastrophic failure in high-risk areas or with a large runoff event. This could require a higher frequency of maintenance in order to maintain stability.

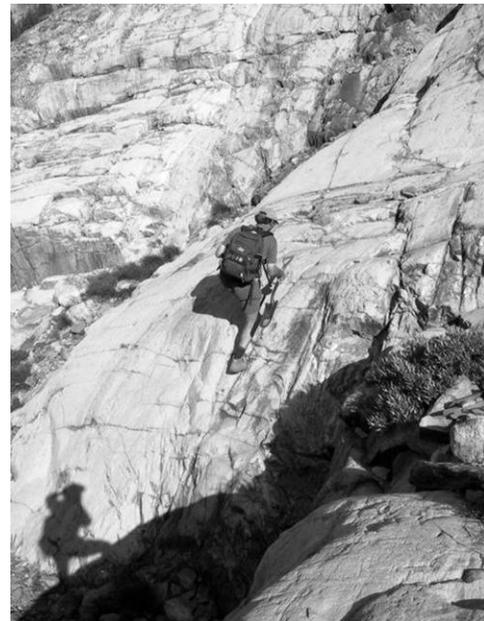
When trails are under-developed relative to the type and/or level of use, there is a high likelihood that both the trail stability and resources will be negatively affected over time. Trail class reductions proposed in the alternatives would only occur if the trail were receiving lower levels of use than the trail is currently managed for, and that less development and management would adequately meet the demands of the use and terrain. If this proves inaccurate, mitigation of these effects would require either restrictions that control the type and level of trail use and/or a higher future level of trail development and management to align the trail management to the demand.

(5) Trails Not Recommended for [private] Stock: In some alternatives, trails are designated "Not Recommended for Stock". The definition and application of this term have changed during the analysis process. These changes in the terminology and definition of this action make a difference in the effects by alternative.

In the proposed action, the term "Not Recommended for Stock" (NRFS) has dual implications of advising private stock users about severe trail conditions, combined with commercial stock-specific restrictions of the "Not Suitable for Commercial Stock" (NSCS) designation [see #6 - Trail Suitability]. In Alternatives 3, 4 and 5, the Forest Service separates the two actions by designating trails as either NRFS or NSCS, or both. The NRFS designation will be the basis for

providing advisories and expectations for private equestrians, but will not otherwise prohibit commercial or private equestrian use.

Trails designated as “Not Recommended for [private] Stock” in these alternatives are based on a subjective assessment of the difficulty and possible risks to equestrians who may not be familiar with uncharacteristically awkward conditions on a particular trail. While trail class provides some general description of development and management traits for a trail, it does not necessarily describe a trail that may have problems or obstacles that could create special concern for equestrians. For instance, a TC1 trail with minimal development that gradually climbs through a gentle, sandy canyon will have very different obstacles and potential problems than a TC1 trail which traverses very steep and/or rocky terrain with large jump-offs and/or difficult route finding.

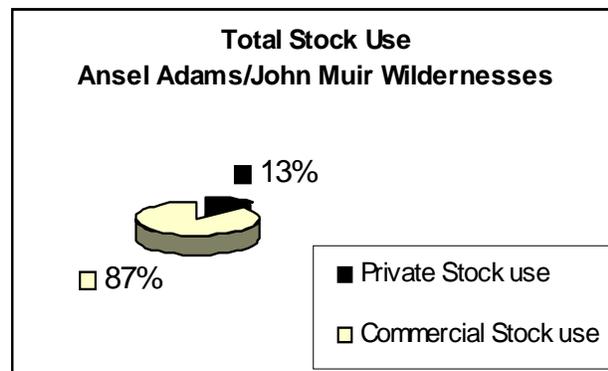


Severe bedrock obstacle on TC1 trail not recommended for stock. Awkward for hikers, potentially dangerous to stock.

Since this designation will assist private equestrians in ensuring they are prepared for such rugged trails or avoiding them altogether, the greatest effect would be a more realistic visitor expectation and increased safety for private stock users, who could make more informed choices about their travels. Even without actual restrictions of use, this will likely reduce the number of stock users who might otherwise unwittingly attempt these trails unaware of the trail conditions. Since these trails tend to be rough, undeveloped, relatively unstable, and susceptible to the impacts of stock use, this designation would likely cause a slight reduction to trail erosion and impacts to resources.

Most physical resource or trail stability effects resulting from designating trails as NRFS (if not also closed to commercial stock) will likely be insignificant, as the level of private stock on such trails is generally very low at present, and some private stock could still use these trails, if they choose. The effects of designating a trail as both NRFS and “Not Suitable for Commercial Stock” are more substantial and are described in the Suitability section below.

Figure 4.6 Comparison of Private and Commercial Stock Use in the Ansel Adams/John Muir Wildernesses



Trails designated “Not Recommended for Stock” will still receive basic recurring maintenance at a level consistent with the design and management considerations of the designated trail class. It is likely, however, that those conditions which are most impractical for equestrians, and which were the basis for the NRFS designation, will not be substantially repaired. The general character of the trails will likely remain the same, since the limited maintenance work will likely be focused primarily on trail and resource stability.

(6) System Trail Suitability – Trails “Not Suitable for Commercial Stock”: In all action alternatives, determinations will be made on which system trails are suitable for recurring use by commercial pack stock. Trails which either cannot be sufficiently managed in a stable condition under recurring pack stock use, or which provide access to areas which are determined to be inappropriate for commercial pack stock operations are designated as “Not Suitable for Commercial Stock” (NSCS). [In Alternative 2, this designation is “Not Recommended for Stock,” but carries the same implication for commercial operators.]

As noted previously, most trails designated “NSCS” have received low commercial use and practically no private equestrian use in recent years, since conditions on these trails have not been desirable for most private stock users. Therefore, after commercial stock are prohibited from using a trail, there will likely be very little if any equestrian use remaining on the trail. This would limit the majority of equestrian use to trails which are comparably stable with stock use, and that require relatively low investment of maintenance resources. Many of these trails will still have some sections that are substandard or damaged, but there would likely be no need to change current design standards for the trails in order to complete trail repair for non-stock users.

System trails that are in severely degraded condition and designated as NSCS may require physical repair even after all commercial stock has been removed. In these cases, removing commercial stock from degraded trails and high risk-factor areas will likely slow the rate of deterioration of resource condition and prevent further expansion of impacts. Actual physical improvement of resource and trail condition will not likely occur until implementation of future repairs and stabilization. Once accomplished, this rehabilitation has a much higher chance of success over the long term if no commercial stock (and only occasional private stock) uses the trail.

Considering very limited maintenance funding, reducing the need for expenditures on

trails closed to commercial stock will also allow greater trail maintenance and resource stability on the rest of the system. Assuming that maintenance funds remain stable, the net effect would likely be a slight improvement in trail condition on those trails that remain open to commercial use.

Trails that are designated both NSCS and NRFS would likely see the greatest potential trail and resource improvement, since no commercial stock will be present, and less private stock would inadvertently travel these trails unaware of the trail conditions.

A Forest Order has closed just over 16 miles of trail in the Mt. Whitney area to all equestrian use since the 1970s. Since this will continue in all alternatives, there will be no change in effect on trails, resources, or users.



Severe resource damage to stream bank and meadow from massive trail headcut. Risk factors make repair highly unlikely, and would be exceedingly intrusive.

Use Trails: The 2001 Wilderness Plan allows for a limited network of “use trails” (generally paths created by repeated hiker or equestrian use to access camps or other dispersed locations not accessed by system trails). Well-developed use trails may sometimes have similar characteristics to lower-development system trails. In most alternatives, a limited number of these are approved for commercial stock use. Some well-developed use trails are specifically addressed as “use trails,” while others are addressed within the context of approved campsites (which assume an access path to the site). There is no prohibition on the use of non-system trails or cross-country routes by private equestrians or hikers in any alternative. Guidance for managing use trails or adding use trails to the system is contained in the Wilderness Plan, but generally, if use levels and resource effects are low, and there is no other overriding need for maintaining or managing the trail, use trails are allowed to remain off the system.

Since use trails generally form in the line of easiest or most direct route for the user, with no designed alignment or construction, they are often located in areas that are not desirable for trail and resource stability. Use trails very rarely have or need structural improvements or active management, because the use tends to be relatively low. Structures are sometimes present on trails which were once managed as system trails or pre-wilderness roads, and which are no longer determined to be needed on the trail system because of changes in use patterns (see description under “deleting trails from existing inventory” #2 above).

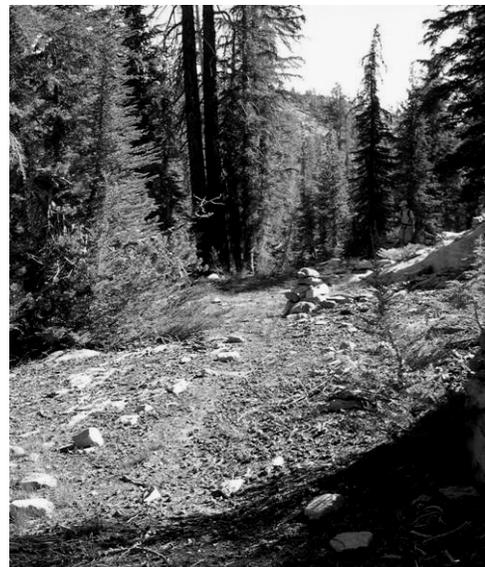
With no structural improvements, use trails may be especially susceptible to rapid degradation when they have high use and/or are in areas with many risk factors. Generally, structural solutions and improvements will not be used to mitigate resource effects; and if used, would be of limited scale. This makes use type and levels, both commercial and private, the primary factors in creating and/or mitigating effects on a use trail.

(7) Use Trails Approved: In general, when approving use by commercial pack stock on a non-system trail, the primary determining factor (aside from whether commercial stock are allowed to access the destination), is the current and predicted stability of the use trail under the anticipated commercial use levels. When the potential use on a trail is better known, such as when there is a destination quota, the approved trail is more likely to remain stable. If future use at a site-specific level is poorly understood, it is more difficult to predict whether a trail would be stable with future use.

Continuing commercial use on use trails that are currently well defined, and are located in stable areas with minimal risk factors will likely not affect trail or resource conditions if use remains at or below current levels.

Barely-defined use trails or routes would have the potential to change to a more evident route with potential resource effects, if use were to increase beyond current low levels. If use of this type of route were capped at existing or lower levels of use, the route would likely not become more evident than its existing condition.

Generally, commercial stock will repeatedly use the same use trail to access a specific destination, and in areas visited frequently by operators, use trails can become



Faint use trail, marked by cairn. Stable location with dry slopes, and few risk factors. Approved for use.

increasingly evident. Use trails that are approved for commercial stock will generally remain stable under anticipated low levels of use. If recurring use increases, however, there would likely be an increase in trail evidence, erosion, trail depth, and potential impacts at streams, riparian, or other sensitive areas. In all alternatives, commercially-used use trails will be monitored for changes in condition, which may result in reductions, prohibitions in use, or incidental physical treatments to prevent further degradation.

(8) Use Trails Prohibited: In some cases, use trails were prohibited when a high level of resource effect was occurring, and/or risk factors were present which created a high potential for degradation if use were to begin or increase. Use trails prohibited to commercial stock will generally have a reduction in negative effects to trails and resources. The scale of this reduction depends on how much the use trail is currently being used by commercial stock and how much the trail will continue to be used by private equestrians and hikers.

Barely-defined use trails or routes that currently receive so little use as to be nearly undetectable, even in sensitive areas such as stream crossings, will not change noticeably in character or in physical effects by the prohibition of commercial stock. The effect of prohibiting commercial pack stock from these undefined trails will be to ensure that use levels could not increase to the point that a trail becomes substantially evident, or that certain resources may become affected. This also ensures that dispersed trampling of potentially sensitive plants or amphibians, such as the Yosemite toad, will not occur by commercial pack stock. Depending upon the level of non-commercial use, private stock, and hikers may still cause some of these same effects.

(9) Sanding of Snow on Trails: Sanding of trails to melt snowdrifts—generally to allow earlier access over passes—can have both beneficial and detrimental effects on trails and resources. The negative effect of either shoveling snow or spreading sand to increase the melt of snow over the trail is that it may provide earlier access either to destinations that are still very wet from snow runoff or to trails that have other snow blockages. Such trails may continue to have effects with or without commercial use, but are most affected when use, especially equestrian use, occurs while water is actively flowing on the trail. Sanding provides this early access for both commercial and private stock. While the primary snow blockage may be sanded adequately to accommodate use over the trailway, smaller snowdrifts beyond the sanded area may force private or commercial stock or hikers to get off the trail tread for short distances, creating the potential for multiple trailing and other off-trail disturbance. Hikers, who make up the majority of trail use, increase in numbers at the end of June, and tend to walk around snowdrifts, trampling soils and vegetation outside of the trailway, potentially creating multiple bypass trails. Private stock, though low in numbers would also generally bypass these drifts where possible.

The potential benefits of sanding stem from the ability to keep commercial and private stock and hikers on the immediate trailway. The trail and resources in the immediate vicinity of the sanding would generally have a slight benefit from the sanding, since commercial and private stock use and hikers will generally remain in the immediate alignment of the trail, reducing multiple trails and off-trail damage. Since approval of the sanding material is required in any alternative where sanding is possible, the soil type should reasonably match that of the destination area, and would likely be of such a small quantity that the imported soils will not be readily discernible to visitors.

The number of trails and the length of time that they are affected by heavy snow drifting varies annually, depending on the quantity of snow on a given winter, and the rate at which natural melt

clears the trails. In some recent low-snow years, there have been no needs or requests for sanding. On heavy snow years, more trails would be covered for greater lengths and for longer periods, potentially until nearly the end of a normal summer use season. The longer time that snow blocks trails, the greater are the intensity and extent of both the negative and beneficial effects of sanding trails.

Actions Outside of this Analysis with a Cumulative Effect Related to the Above Actions

Other past, present, and future actions, which may have an incremental or added effect when combined with trail-related actions in all alternatives in this analysis, include:

- Funding levels for maintenance and repair.
- Trail maintenance activities and reconstruction projects.
- Various different trail user types and levels.
- Management activities of adjacent or cooperating agencies.
- Unclear past management direction for the wilderness transportation system.
- Recreational activities along the borders of these wilderness areas.
- These are addressed in the cumulative effects section of each alternative.

Maintenance to Standard

In this analysis, maintenance or reconstruction efforts and costs are considered which would maintain trails or bring them to standard. Certain trails in the planning area can clearly be described as meeting “standard” or conversely, are “substandard”. Determining whether a trail is “standard” or “substandard” is somewhat subjective, since there is a great deal of variability in any length of trail, as well as a range of acceptable characteristics within each trail class definition.

There are two different considerations in assessing the relative standard of trails in this area – development and condition. Development describes the characteristics of the trail, such as excavated trail width, constructed features, walls, drainage and stabilization structures, and designed grades. Condition describes the current relative functionality of the developed features – generally more recent maintenance and management. A trail with many features that are in need of reconstruction may still be seen as a high development trail (TC3) in poor condition; or, conversely, a very low development (TC1) trail with few developed features could be considered to be in good condition. If certain substandard conditions persist over the long term (20-30 years), the characteristics of a trail may change, so that a trail which was originally developed at high levels (or was even a road), may eventually appear to be a low-development trail.

In evaluating costs to bring trails to standard and to maintain them at standard, assumptions were made to classify trails in three broad categories:

- Trails determined to be generally at standard, and which would only require basic maintenance to assure stability at their designated class with anticipated use levels. Funding at or even slightly below normal annual maintenance level would be adequate to

make the minor repairs necessary to keep the trail within the general tolerances of the designated trail class and level of use.

- Trails determined to be moderately substandard are somewhat degraded so that normal maintenance would not likely keep the trail stable and fully functional at the standards of designated class with the anticipated use, but would not take full reconstruction to return them to this standard. Heavy maintenance efforts, including some replacement of structures and repair of more major failures would be needed.
- Trails which are clearly substandard, due to inadequate development or long-term backlog maintenance, or due to damaging event(s) that have not been repaired. In their current condition, such trails are not practical to perform basic maintenance on, and likely have instability causing resource impacts. These would require substantial reconstruction efforts to return them to designated standard and to make future maintenance efforts practical.

Estimates of recent past funding for trail maintenance and reconstruction are found in Chapter 3. In assessing backlog of maintenance for the trail system in the analysis, the estimated figure of \$170,000 is used as an annual baseline for what is currently spent on general trail maintenance in the AA/JM Wildernesses.

In addition to costs associated with returning the trail infrastructure to a stable condition that meets the designated trail class, there are often substantial costs associated with stabilizing resources within the trail corridor that have been impacted by the trail. The potential costs associated with such rehabilitation efforts can vary widely depending upon the current damage and risk factors at a specific location, as well as the extent and method of mitigation.

When the current resource effects of a trail are light to moderate and risk factors are low, simply removing a trail and use from a sensitive location and placing barriers may be adequate to mitigate impacts, and allow full natural recovery. However, in other cases, rehabilitation costs can potentially exceed the costs of trail infrastructure repairs – especially in the case of reroutes around highly impacted meadows with many risk factors, where the terrain for the realignment is in moderate or easy building terrain, but stabilizing the meadow could be very costly. In general, at the broad scale, resource stabilization costs related to trail affects probably amount to 30 percent to 40 percent of the associated backlog repair and reconstruction cost in any given area.

Trail Density

In Chapter 3, the approximate density of system trails is described for the AA/JM Wildernesses and within each geographic unit. There is slight variation of trail density evident between various units. For instance, Florence/Bear GU had the lowest density at ½ mile of trail per square mile of land, which equates to approximately four linear feet of trail per acre. For the AA/JM Wilderness, the density of trails equates to 6.3 feet of trail per acre or 0.00043 of the total wilderness area. The highest density of system trail was found in the Fish Creek/Convict/McGee Geographic Unit, at 1.3 miles of trail per square mile, which equates to about 10 linear feet of trail per acre. Even at this highest density, the trail area equates to 0.00073 of the total geographic unit.

While such density analyses show that certain broad areas have a higher density of trails, the densities are so low that they do not provide a good basis for comparison. Nor do these help to

establish evaluative thresholds for determining impacts. Additionally, in and of itself, such analysis cannot reflect variations in terrain or shapes of each of the geographic unit polygons or individual areas that may affect thresholds of resource or social effect caused by system trail or use trail density.

The importance of comparing densities of trail for this analysis would be to demonstrate measurable differences in effects between the alternatives. However, the variation of trail density between alternatives is so low as to be inconsequential – even at the geographic unit scale. The greatest variation in trail density between action alternatives was in the Florence/Bear GU where there was a difference of 8 miles of trail in the 88,500-acre unit. The variation between alternatives in each geographic unit was generally between one-half percent and three percent as a function of total trail miles in each geographic unit. For these reasons, trail density is not being used as a measure in differentiating between alternatives.

Table 4.2. Trail density summaries (by alternative)

Trail Density Summary - Acres to Mile of Trail	Alt. 1	Alt. 2 Modified	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Total Acres - AA/JM	811000					
Total System Miles - AA/JM	964	977	967	985	956	956
Density - Acres to 1 mile system trail	841	830	838	823	848	848

Trail Density Summary- Trail Length per Acre Wilderness	Alt. 1	Alt. 2 Modified	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Total acres - AA/JM	811000					
Total system miles - AA/JM	964.3	977.0	967.4	985.2	956.4	955.9
Mile of system trail to acre	0.00119	0.00120	0.00119	0.00121	0.00118	0.00118
Linear feet of system trail per acre	6.3	6.4	6.3	6.4	6.2	6.2

Approved use trails have a greater variation between the alternative with lowest density (Alternative 4) and the other alternatives that have approved use trails. Alternative 4 has approximately a third of the total approved trails, compared to the No Action alternative and the other action alternatives. Alternative 5 has no commercial pack stations, so no use trails would be designated. Approved use trail densities are displayed by alternative.

Table 4.3. Wilderness-wide use trail density summary by alternative

Use Trail Density Summary Wilderness Scale	Alt. 1	Alt. 2 Modified	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Total acres - AA/JM	811000.0					NA
Total approved use trail miles	99.0	111.0	102.0	103.0	30.0	NA
Approved use trails density - total miles use trails per acre	0.0001221	0.0001369	0.0001258	0.0001270	0.0000370	NA
Linear feet of all trails per acre wilderness	0.64	0.72	0.66	0.67	0.20	NA

Densities of system or use trails measured relative to any broad land base – including at the geographic unit and analysis unit scales – do not provide a meaningful measure of relative effect. Other factors, such as connectivity to hydrology, effects on riparian, impacts to specific resources, and the social impacts of allowing use to a specific destination each of these has a substantially greater and more quantifiable measurement between alternatives.

Alternative 1

Summary of Impacts – Alternative 1

The “No Action” Alternative has the fewest control mechanisms on use types and levels, the least amount of alignment between trail management levels and desired condition and management of destinations, and the highest conflict with physical resources. This allows for the continuation and possible expansion of degraded conditions in some areas, and continued negative effects as described in “general effects” above.

There is substantial conflict with recreation categories and trail management in this alternative. If implemented, many trails would have an unnecessarily high level of development and management intrusion on the wilderness character and on physical resources (for instance, over 15 percent of the total system and 28 percent of the Inyo National Forest system is designated at Class 4, a level defined as “rarely present in wilderness”). There are major inconsistencies with on-the-ground conditions and a high probability of physical resource impacts from inadequately developed and maintained trails (for instance, 37 percent of the Sierra system is designated TC1, and nearly 50 miles of managed trail is not on this inventory). Trail management designations for trails with similar characteristics are highly inconsistent between forests in this alternative.

This alternative allows commercial stock on any system trail. With no internal controls, there is very low predictability of use type and level on each system trail. This will likely cause some continued and potential expansion of resource effects, including some localized severe impacts and inefficient distribution of maintenance funds. Various use trails could be requested, approved, or prohibited annually, meaning this alternative would provide very little long-term predictability of use trail approvals, prohibitions or use levels. Currently, 102 use trails (99 miles) are approved for commercial use.

Since any trail could potentially be requested for sanding of snow to allow early season passage (though very few are requested in most years), there is a higher potential for expansion of effects from sanding—both beneficial effects in the immediate vicinity of the sanding, and potential adverse effects at trails and destinations accessed earlier in the season.

Overall, physical trail-related impacts in this alternative will be minor to moderate at the local level, with some isolated moderate to severe effects on certain resources at highly localized sites. Most localized adverse impacts are short-term and could be actively mitigated, but without active repair, many will likely continue into the long term (20 years or more). Trail impacts to physical resources at the watershed scale are negligible to minor intensity, while regional impacts resulting from inconsistency with area management are moderate.

Analysis

In this “No Action” Alternative, the trail inventory and management levels for trails on the Sierra National Forest are based on the inventory included in the 2001 Wilderness Plan (USDA Forest

Service 2001, Appendix C) and trails on the Inyo National Forest are based on the 1987 inventory. Both of these inventories have known inaccuracies, and were developed based on inconsistent direction and in some cases, minimal or no field assessment of each trail. Some trails that did not exist on the ground were added to the inventory, and others that do exist were not included. In general, it appears that maintenance levels in the 1987 Inyo N.F. inventory were designated at higher levels than exist on the ground, while in the 2001 Wilderness Plan, trails generally seemed to be designated at lower levels.

Both of these inventories were developed prior to the Wilderness Plan, which defined desired conditions for all areas through recreation categories. Recreation categories were therefore not considered when developing the inventories. The 2001 Wilderness Plan directed that recreation category should be one consideration when developing trail classes and maintenance levels. Recreation Category is only one of the various factors considered in trail management decisions, and any trail class could potentially be found in any recreation category. While there will always be some acceptable exceptions, in general, higher development trails (TC3) should be relatively uncommon in primitive (RC1) areas. Likewise, very low development trails (TC1) should be relatively uncommon in high use areas (RC3).

Table 4.4. Alternative 1 system trails summary

SYSTEM TRAILS SUMMARY AA/JM Wilderness Totals	Alt. 1
Total System Miles	964.3
TC1	227.6
TC2	170.7
TC3	416
TC4	150.3

This alternative has the most inaccurate inventory information and the least amount of consistency with both the current conditions on the ground and with the intended management of wilderness destinations. The effects of implementing potentially inaccurate trail service levels are either excessive expenditure of resources on trails that would not otherwise need a high level of development and maintenance or, conversely, inadequate development of trails which have very heavy use and/or resource demands exceeding the trail level designation.

In this alternative, there appears to be an oversight of approximately 50 miles of trail that have formerly been managed as part of the trail system but not included in this inventory. While this would not prohibit public use on the trails, they technically would not be maintained or managed as system trails under this alternative, and would likely degrade. The trails could become impractical for use by stock, and would likely have increasing effects on the resources in the trail corridor.

In some cases, no trail exists on the ground where a trail is shown in this inventory. Implementing this alternative would technically call for the construction of new trails where no existing path or only a poorly defined use trail exists on the ground, at the management level described in this inventory. Approximately 35 miles of such trail would need to be constructed to implement this inventory, including some sections that are currently rough mountaineering routes through rocky cols. Nearly half of these trails would be built at Level 2 and 3. This

conflicts with the 2001 Wilderness Plan direction, which states that no new trails will be constructed in the planning area. It also would have various unpredictable effects on new areas that these trails would provide access to, in addition to the site-specific disturbance of resources in the immediate vicinity of the trail footprint. When site-specific NEPA is completed for constructing each trail, they would likely not be approved for implementation, due to these substantial conflicts.

In Alternative 1, nearly 70 miles of Level 3 trail accesses Recreation Category 1 (primitive) destinations, indicating a disparity between trail management and intended area management. The effect is that the designated system, if fully implemented, would be incongruent with other management direction of the areas. Certain areas managed in a very primitive manner would be accessed by very highly developed trails, which would be out of place with the general character of these wilderness destinations and with the demands of wilderness visitors.

Table 4.5: Alternative 1 system trail summary by recreation category

Alternative 1 Maint. Level by Rec. Category	TC1	TC2	TC3	TC4	Total System
RC1	91	40	68	0	199
RC2	136	123	288	69	616
RC3	0	8	60	81	149
Total	227	171	416	150	964

This alternative shows over 15 percent of the system managed at Level 4, which is described in the Service Level definitions as an “exception in wilderness.” More than half of the remaining system is maintained at Level 3, which is most appropriate for high-use corridor trails. This alternative also has a large number of Class 1 trails (227 miles), and is tied with Alternative 5 for the highest number of TC1 trails in Recreation Category 2. While these discrepancies do not follow a consistent trend, it is obvious that there is vast inconsistency with direction for desired conditions as defined in the 2001 Wilderness Plan. If implemented, these trail development levels would be inconsistent with the destination management of the areas and would likely directly affect the wilderness character of the destinations. The extent of the inconsistencies would effectively render the trail plan meaningless. Table 4.5 summarizes the system mile breakdown by maintenance/service level and how these align with the destination recreation categories for Alternative 1.

Compared to the current development levels that actually exist on the ground, the trail classes described in this alternative have the least consistency – with only 46 percent of the trails generally consistent to current field conditions. This alternative has the most trails designated with trail classes higher than what is currently on the ground – 43 percent of the system. Implementing this alternative to the standards described in this alternative is exceedingly unlikely, since many of the trails appear to be designated at high levels. As stated above, funding for both forests has been generally inadequate to maintain all system trails to a stable standard under existing uses, and funding is expected to continue a gradual decline.

Even if funding were available at this level, developing trails to this level would be out of character with the desired conditions of the destinations, and would be highly impractical – especially for the relatively low anticipated levels of use.

Table 4.6. Alternative 1 trail class comparisons

Alternative 1 Trail Class Compared to Field-Observed level of Development	Miles
Miles of trail designated LOWER than existing development	103
Miles of trail designated HIGHER than existing development	412
Miles of trail designated CONSISTENT with existing development	449

There is a substantial discrepancy in the distribution of trail management levels between forests in this alternative, in part due to the different inventories that the forests used, and the slightly different definitions of “Trail Maintenance Level” for the 1987 inventory and “Service Level” in the 2001 Wilderness Plan. Different interpretations of both systems may have also added to this discrepancy. In general, it appears that maintenance levels in the 1987 Inyo inventory were designated at higher levels than exist on the ground, while in the 2001 Wilderness Plan inventory, trails generally seemed designated at lower levels for trails with similar characteristics. Since use levels on trails on the Sierra National Forest are somewhat lower, there is some basis for lower management levels, but not to the extent shown on the inventories. The two opposite variances tend to balance each other out when combined. The following tables compare the trail management level distribution between the two forests.

Table 4.7: Trail management level distribution between the Inyo and Sierra National Forests

INYO NF Maintenance Level Summary	Miles	Percent of system	SIERRA NF Service Level Summary	Miles	Percent of system
ML1	31	7%	SL1	196	37%
ML2	69	16%	SL2	102	19%
ML3	211	49%	SL3	204	39%
ML4	123	28%	SL4	27	5%
Total	434		Total	529	

Under this alternative, commercial operators are limited to traveling on system trails and on use trails that were approved during the most recent annual use trail approval process in 2004. There is no formal mechanism for designating trails as “Not Suitable for Commercial Stock” (NSCS) or “Not Recommended for [private] Stock” (NRFS), so all system trails in this unit are technically available to commercial stock, except where specifically addressed in operating plans. Roughly nine miles of system trails are specifically closed to commercial stock in their operating plans because of known conflicts with resource or destination conditions, and the rest of the system would be open.

Since operators are only limited by trailhead quotas and an overall service day cap, there are no controls on the frequency that the trail gets used by commercial stock. In some cases, this may result in commercial stock using trails that were not adequately designed for the level of recurring use. As noted in “Common to All,” the effects on these trails will likely be continuing degraded trail and resource condition. Since there are no caps at specific destinations, the extent

of effects would be limited only by the demand of clients to visit certain destinations, and whether the resulting level of use exceeds each trail's capacity.

Since 2001, the determination of what constituted a “system” trail used by commercial operators as compared to a “use” trail requiring approval prior to use, was based upon the system inventory included in the 2001 Wilderness Plan, which during the annual approval process was used as the baseline reference inventory. Commercial operators requested specific use trails to access areas where no system trail provides similar access. Under this alternative, use trails could be approved or prohibited annually. Because the approval process would occur annually, it is also possible that use trails that are currently approved could be prohibited in the future based on new information, or additional trails could be approved. This alternative provides the least long-term predictability of user trail approvals and prohibitions.

The lack of destination controls at each destination accessed by use trails means that in many cases, use trails could receive unpredictable use levels that are beyond the capability of the use trails. Though the extent of these situations is hard to predict, if use did increase on such trails, there is a high chance that impacts to resources in the trail corridor would increase. Due to this unpredictability, this alternative has potential for increased effects from use trails or the potential for barely defined routes to become more defined.

There are 202 use trails addressed in this alternative. All or part of six of these assumed use trails were technically system trails in the inventories for this alternative, so they are shown separately. Those trails are automatically approved because they are technically system trails, but are discussed here for comparison purposes because they will be use trails in one or more other alternatives (see Table 4.8 for a summary of the Use Trails in Alternative 1).

Table 4.8: Alternative 1 use trail summary

USE TRAILS Summary Alternative 1	Use Trails	Est. Miles
Use Trails/Miles Addressed	202	209
Approved Trails/Miles	102	99
Prohibited Trails/Miles	94	102
System in this Alternative	6	8

See Table 2.27 in Chapter 2 for the specific use trails approved in each alternative.

Additionally, based on court ordered direction, operators have approval to use non-system access paths to campsites or grazing areas that are within ¼ mile of system trails. Due to the short lengths and relatively dispersed low use that this type of trail receives, the effects of each specific use trail are likely to be of relatively limited extent and intensity. However, this alternative allows for expansion of the total number of these use trails.

In this alternative, sanding of trails to melt snowdrifts—generally to allow earlier access over passes—is allowed on a case-by-case basis approval in annual operating plans. The number of trails potentially affected by these approvals varies annually, depending on the snow pack and the rate at which natural melt clears the trails. In recent low-snow years, there has been no need or requests for sanding.

Annual and Backlog Maintenance costs – Alternative 1

Fully maintaining trails to standard in this alternative is estimated to cost just over \$500,000 per year. This assumes simply performing maintenance that would keep trails at their designated level, once the trail is at that level. Since the Forests are currently spending approximately \$170,000 a year on AA/JM trails, this leaves an annual maintenance deficit of nearly \$340,000 – the highest deferral of annual maintenance work of all the alternatives.

Table 4.9. Alternative 1 annual and backlog maintenance costs

Trail Annual Maintenance Costs AA/JM Wildernesses	Alt. 1
Total Estimated Cost	\$ 509,355
Current Annual Funding	\$ 170,000
Annual Maintenance Shortfall	\$ 339,355
Current Backlog (Repairs to Standard)	
Estimated Current Backlog	\$12,411,600.00

This alternative also shows the highest deferred maintenance and repair deficit – over 12 million dollars. This appears to be due to the high number of trails designated at Levels 3 and 4, as well as having the highest number of trails available to recurring commercial stock use. If implemented as shown in the Alternative 1 inventory, many trails would need to be upgraded from current field conditions to meet an exceedingly high standard. It would be expensive and physically impractical to bring trails from their current development levels and condition to the standards shown in the Alternative 1 inventory.

In addition to trail infrastructure maintenance and repair costs, repairing and stabilizing trail related effects on resources in the trail corridor is estimated to cost between 3 million and 4 million dollars.

Table 4.10. Summary of alternative 1 trail system by geographic unit

	Total system Alt 1	TC1	TC2	TC3	TC4	NRFS (Not Rec. for Private Stock)
AAEA	137.8	2.7	23.1	77.1	34.8	
AAWE	185.4	61.4	40.7	83.3	0	
FICR	169.2	37.2	12.5	85.5	34	
FLBR	62.3	25.5	12.8	9	15	
MORO	89.3	1.5	21.5	41.2	25.1	
BIHU	75.7	7.9	7.8	40	20	
JMSE	114.2	26.5	29.2	37	21.5	
JMSW	130.3	64.9	23	42.4	0	
TOTAL	964.2	227.6	170.6	415.5	150.4	na

Cumulative Impacts

Other past, present, and future actions, which may have an incremental or added effect when combined with trail-related actions in this alternative, include:

- Funding levels for maintenance and repair.
- Trail maintenance activities and reconstruction projects.
- Unclear past management direction for the wilderness transportation system.
- Management activities of adjacent or cooperating agencies.
- Recreational activities along the borders of these wilderness areas.
- Various different trail user types and levels.

Annual Maintenance and Funding: Annual maintenance, when performed, keeps trails stable by ensuring that drainage structures are cleaned and functional, tread structures are maintained to prevent loss of soil, and trail structures are stabilized before failure. Most important, the timely removal of obstacles and awkward sections that are out of character with the trail standard, keeps the trail in a readily travelable and appropriately comfortable condition so trail users will stay on the trail instead of bypassing it. Over time, the effect of not performing any part of this maintenance is a gradual loss of trail infrastructure and likely impacts to resources in the trail corridor. When obstacles block passage to trail users, typically trail users form a parallel, bypass trail. Since these bypasses are not designed, they can have major localized effects – especially in areas with high use combined with high risk factors, such as steepness, loose soils, riparian or hydrologic connectivity. Generally, less maintenance performed, especially over the long-term, results in a less stable trail and higher effects on resources in the trail corridor.



Poor trail alignment and inadequate development, combined with moderate risk factors has led to long-term off-trail impacts, incision, headcutting and meadow damage on this primary system trail

Past and current funding levels are inadequate to maintain all trails to standard. This means that fewer Forest Service personnel and/or contractors are performing annual maintenance and incidental repairs on system trails. The effect of this is that many trails have become degraded to the point that they are either unstable under existing uses or are not fully serving their intended purpose. Reduced budgets will likely result in the need to either perform less maintenance on all trails, or increase the numbers of trails that receive greatly substandard levels of maintenance in order to allow continued maintenance on the highest use trails. This long-term funding deficit will have continued effects, since even a fully-funded maintenance program would not be able to immediately correct all of the trail problems and resource impacts.

Low funding levels combined with the actions in this alternative and the highly inconsistent management levels in the “No Action Alternative” inventory (described below), create an

unmanageable and unmaintainable system with no effective way to prioritize the extremely limited funds. At the wilderness scale, the effect of substandard maintenance is low to moderate. There will likely be some localized severe impacts that are exacerbated by the unrealistically high and low trail class designations in the Alternative 1 trail inventory.

Reconstruction: Trail reconstruction and stabilization efforts have been implemented on various trails in these wilderness areas in the past. In general, these have mostly occurred on primary trails, and have restored the trails to their original standard. Spur trails associated with those reconstructed trails were typically also repaired. Generally, once a trail has been reconstructed, maintenance needs on that trail are somewhat reduced for roughly the next decade or more. Since the repair and addition of drainage structures and other tread retention structures ensure a higher level of stability, these trails generally have a lower direct impact to resources in the immediate trail corridor. Historically, 20-30 miles of trail (or approximately 2-3 percent of the system) are reconstructed annually. In the past decade, this has occurred at a greater rate on the Inyo NF than on the Sierra NF.

Funding for recurring maintenance and major reconstruction efforts has been decreasing during the past decade and will likely continue to gradually decline, resulting in a large number of trails that receive very low maintenance. This has caused, and will likely continue, a loss of trail infrastructure, more substandard conditions, and resource impacts to resources within the trail corridor. Reductions in opportunities for large-scale repairs have resulted in an increasing backlog of repair “deferred maintenance”. It is not expected that funding will increase during the next decade, and it is more likely that it will continue to decline.

Trail reconstruction is currently occurring on a number of trails on the Inyo National Forest. They include completing reconstruction of the Bishop Pass Trail and the Pine Creek Pass Trail. The Pacific Crest Trail from Agnew Meadows to Donohue Pass is also slated for reconstruction work in summer 2006 and 2007. The McGee Pass Trail (and the associated spur trails from it) will be submitted for funding with implementation expected within the next 3-5 years. No large-scale reconstruction projects are expected to be funded on the Sierra NF trails in these wildernesses during the next three years. Other smaller-scale repair and rehabilitation efforts will occur on a variety of system and use trails as funding opportunities become available.

The effects on the trail system on the Sierra NF are expected to be moderate to major substandard conditions on the trail system, with localized major impacts to trail users and resources, until and unless additional funding allows for extensive repairs. Since trails on the Inyo NF have had more recent reconstruction activities, the effects on the Inyo of reduced reconstruction budgets will not have an immediately noticeable effect on most trails. Over the long term, if budget trends continue, eventually minor to moderate effects on trail condition and associated resource condition will expand, with potential severe effects at certain localized areas on trails.

Combined with the inaccurate inventories and lack of specific transportation system direction (described below), the potential effects of implementing Alternative 1 when reconstructing the McGee Pass Trail and the associated spur trails would be that McGee Pass trail would be upgraded to an exceedingly high development level (TC4), and most of the short, lower-use spurs would be constructed to Trail Class 3 – a level usually reserved for high use corridors. Since McGee Pass Trail is in a Recreation Category 2 and receives moderate use over its 14-mile

wilderness length, the direction in the Alternative 1 inventory would clearly conflict with the desired condition of the wilderness area and the demands of the trail use.

Unclear Past Management Direction for the Wilderness Transportation System: Past and current inventories on both forests are incongruent with existing trail development, in some cases were out of line with the realities of on-the-ground management, and (until the 2001 Wilderness Plan) there were no site-specific desired conditions for trail destinations in these wilderness areas. Because of this, the inventory was given very little credence, and it became generally meaningless. Managers have intuitively maintained and repaired the trail system, based on their subjective assessment of trail uses and demands. In many cases, these assessments have been on target, and management of the trail system has been well balanced with wilderness character and trails are stable under the recurring uses. In other cases, trails have either been over developed and maintained compared to the recreational demands, or have been inadequately managed for the uses, resulting in unstable trails.

The effect is a high level of inconsistency with existing (2001) desired conditions in wilderness areas, and localized moderate to major trail instability where trail demands exceed trail capability. Without an accurate inventory, expenditure of funds is potentially inefficient, with excessive funds spent on trails that are barely utilized, while heavily used trails in high-use areas may be under-funded. Under this alternative, the potential for such inconsistency remains and, if implemented, would continue to lead to locally major conflicts with wilderness recreation Category standards and available trail funding.

Unclear and inaccurate past and current inventories have also resulted in confusion for wilderness visitors and unrealistic expectations for their travel experience. While this is mostly an experiential impact, there are related effects on resources and trails when multiple visitors attempt to access an area with no actual trail after seeing a trail on a map. Additionally, under this alternative, trails are not yet designated as “Not Recommended for [private] Stock,” so it is likely that equestrian visitors may unknowingly attempt to access trails with exceedingly difficult obstacles and backtrack before attaining a destination. This has potential to create multiple trailing and off-trail impacts, as well as excessive use of a low-development trail, which may lead to localized moderate or major resource impacts.

Actions of Other Agencies: Decisions by other agencies may also have effects on trails in these wilderness areas. The California Department of Fish and Game anticipates changes in managing fish stocking at some lakes served by system trails – potentially removing fish from some lakes, and enhancing fisheries at other lakes. Past actions have changed the quantity of trail users, both commercially served and private, on individual trails.

In some trails, future actions would likely mean a change in use by those interested in fishing activities. Some trails would receive fewer stock and hikers, while others would see a slight increase. Over the short term, a reduction in total users on a trail would likely lead to a moderate increase in trail stability, and slightly less required maintenance. Over time, depending on the continuing use levels and trail-specific considerations, it may lead to a future determination that the trail class could be reduced and still meet the needs for stability and area desired conditions. Other destinations may see an increase in hiker and stock use, which could likely have minor to moderate increase in effects on a few localized trails. This may require the need for greater maintenance expenditures and over the long term may require a higher trail maintenance and development level.

The extent and severity of impacts related to potential Department of Fish and Game actions is highly dependent upon many currently unknown factors, and borders on the speculative. Most likely, the effects would not be immediately noticeable and would be minor at both the wilderness and local scale.

Many trails on the two Forests lead into National Park Service (NPS) lands, connecting with trails administered by that agency. In Alternative 1, little if any consideration was given to the existing or desired conditions at the destinations on NPS lands. This has led to a high level of inconsistency and, in some cases conflict with management with the national parks. Implementing Alternative 1 would perpetuate these conditions, which will likely have a minor effect regionally, with incidental moderate effects at specific destinations.

The NPS has not instituted a similar trail classification system to that used by the USFS, so there is not a direct comparison; but generally, trails in this alternative appear designated at levels higher than on the NPS side of boundaries. This is most evident in cases such as the PCT, which traverses through Kings Canyon National Park, Sierra National Forest, Inyo National Forest, Devils Postpile Monument, and Yosemite National Park. The PCT is designated Trail Class 4 in this alternative, which if implemented, would be highly inconsistent with the way the trail is managed in the National Parks. Other trails leading to the park would be developed at high levels in this alternative, including trails in Sierra Nevada Bighorn habitat.

Future management decisions on the National Parks could have effects on the development levels of system trails or commercial activities on the Inyo and Sierra National Forest, though these are unknown, and describing potential effects would be merely speculative.

Other Uses – Past, Current, and Anticipated: Past trail uses in these wilderness areas include access to mining operations, logging, sheep grazing, and other high intensity recreational services, such as boat services. Mining and logging activities often required substantial trail infrastructure – either as motorized roads or wide trails that could accommodate heavily laden wheeled vehicles or draft animals. Some of these operations had substantial numbers of workers and needs for equipment, requiring long, developed access trails.

As these activities declined, some roads and trails no longer received use – or at only an inconsequential level compared to the original purpose of the route. Mining roads on steep mountain sides, which once saw hundreds of workers every day, may only see a handful of curious recreationists each year. In many cases, these routes have not been on forest transportation inventories, and have not received maintenance since the original activity ceased. Some remain on forest inventories, including the inventory for this alternative, though they may have received very little maintenance, unless use demand appeared to be high.

Most of these trails/roads that no longer receive their original use have naturalized to varying degrees, and in most cases are not currently affecting resources. However, some of these abandoned routes continue to channel water, causing locally moderate to severe impacts to riparian and aquatic habitat. In this alternative, there are no restrictions on commercial operators if such trails if they are on the system inventory. Continued or new use of these unmaintained routes has potential to cause moderate to major localized effects.

In addition to commercial operations, an average of 700 private equestrian visitors to these wilderness areas use approximately 1100 private pack and saddle animals annually. This constitutes about 13 percent of total equestrian use. The majority of this private equestrian use is

on the west side of the sierra crest, on the Sierra NF. Additionally, there are between 60,000 and 70,000 overnight backpackers and hikers who use the same trail system annually. In general, the use is concentrated in the same areas, so in most cases it is nearly impossible to attribute the various effects on system and use trails to one type of activity or user group.

On trails and use trails where there is no (or very limited) evidence of commercial use, the effect from non-commercial use is dependent on local conditions and intensity of use, but can be substantial. Since non-commercial equestrians and hikers are not restricted to system trails, there are an exceedingly high number and mileage of user-created trails throughout these wildernesses with impacts ranging from negligible to severe. This is most evident on user-created trails in the immediate vicinity of stream banks and lakeshores – most commonly caused by anglers or hikers accessing camps. These effects are additive and in some cases may exceed the effects of commercial pack stock use in the same areas. Because of the proximity to riparian and aquatic habitat and other risk factors, these unrestricted use trails have potential to cause moderate to severe localized impacts.

Non-commercial equestrian and hiker use constitutes the vast majority of trail use. The physical effects on trails from hiker use and the very limited non-commercial equestrian use are generally minor, with occasional moderate to severe localized impacts, especially at stream crossings, where hikers often attempt to find “dry crossings,” creating use trails and bank damage on both sides of a creek. At the wilderness scale, the effects on the trail system and associated resources are minor, with localized major impacts.

Alternative 2 – Modified

Summary of Impacts – Alternative 2 – Modified

In general, the primary consequences from trail-related actions in this alternative would be a net improvement in the trail system and on the associated resources in the trail corridor and improved consistency between trail and area management. These benefits will be primarily evident in the following ways.

Trail management and desired area management are most closely aligned, with few anomalies between trail classes and desired conditions. For example, less than 1 percent of the total system is designated TC4 in this alternative and only four miles of TC3 trail access the most primitive (Recreation Category 1) areas. This will result in reduced potential trail conflicts with wilderness character.

Trail classes are closely aligned with current observed trail development levels. This will have beneficial effects by avoiding the need to upgrade many trails, unless there is an overarching benefit to do so. It also prevents the gradual loss of infrastructure that could lead to resource impacts if use continues at current levels.

Trail system management shows a very high level of consistency between the two managing forests.

Internal controls using the “destination management” concept ensures a high level of predictability of use types and numbers. Trail development will likely be very consistent with anticipated use and on-the-ground conditions, resulting in greater trail stability and reduced physical resource impacts.

Commercial stock is prohibited from approximately 10 percent of system trails, which were determined unstable with even low levels of recurring stock use, ensuring that the majority of stock use is limited to trails most capable of remaining stable under anticipated use. Reduced maintenance costs on these trails allows for more efficient distribution of trail maintenance and reconstruction funds and more stable conditions on other system trails.

This alternative allows for stabilizing nine miles of NSCS trail, then allowing future commercial use. This provides added flexibility for commercial operators to access areas, once resource and trail stability issues are corrected.

Commercial stock is limited to use trails that have relatively few risk factors and a high likelihood of continued stability. Highly dispersed undefined routes are approved for very limited use with temporal controls. In this alternative, anticipated use is highly predictable, and these use trails should remain stable or even improve slightly under the prescribed use levels.

Limiting commercial stock access over snow-drifted passes until the destination system and use trails are ready for such use will have moderate beneficial effects to these destination trails and resources.

Over the short term, this alternative will have negligible to minor localized and regional beneficial impacts, by reducing one of the contributing sources of adverse effects on the most susceptible trails. Physical trail and resource stability will not likely improve substantially during the short term, but will improve over the long term as physical treatments and/or natural recovery occurs. Over the long term, it is expected that there will be minor beneficial effects at the wilderness scale, with moderate to beneficial effects to resources and trails at the local level. There will likely be some minor reduction in user conflicts at remote destinations.

Analysis

In this alternative, as directed by the 2001 Wilderness Plan, a system of trails would be designated considering the desired conditions of destinations within the wilderness areas. Trail management levels and other trail management decisions must also consider the anticipated use types and levels on each trail, to provide a trail system that meets the transportation needs of wilderness visitors while limiting the effects on resources from the trail system.

The key difference affecting trails in Alternatives 2 – Modified and 2 compared to other alternatives is that commercial operators are limited by quotas and other specific management guidance at destinations. In this alternative, there is a very high level of predictability in anticipating use types and levels. This makes it easier for the Forests to designate appropriate trail management levels to ensure that trails are capable of stably handling commercial stock use at the predetermined level, in addition to anticipated private stock and hiker use. This will have long-term beneficial effects in aligning trail management with more predictable levels and types of use.

Trail Classes

In this alternative (and in the other action alternatives), management guidelines and trail class descriptions specific to the Ansel Adams and John Muir Wilderness trails are incorporated to clarify how the Forests intend to manage each trail. These are intended to mirror national standards so that conceptually the characteristics and costs associated with each trail are consistent with other forests. Implementing this guidance should allow expectations that are

more consistent for managers, work crews, and trail users, and lead to a more consistently managed system over the long term.

Table 4.11. Alternative 2 – Modified system trail summary

TRAIL CLASS SUMMARY AA/JM Wilderness	Number of miles
Total System Miles	977.1
TC1	166.5
TC2	410.9
TC3	391.9
TC4	7.8

The Pacific Crest National Scenic Trail (PCT) is one of very few trails in the planning area that has been designated as Trail Class 4 (or “Maintenance Level 4”) in past inventories. In this alternative, the PCT has been adjusted to TC3 to match recreation categories and wilderness direction – as well as to align its development more closely to what exists on the ground. This will have no effect on the trail infrastructure and physical resources, since the current definition of Trail Class 3 matches well with the existing and past management and development of the PCT on both Forests. Because the PCT is a high-profile and popular trail, it will continue to be a high priority for maintenance, and will continue to be cleared and maintained as early in the use season as is practical.

The eight miles of Mt. Whitney Trail on the Inyo National Forest is designated TC4 in this alternative. Due to the extremely high levels of use, the massive level of development and frequency of maintenance needed to keep a stable trail in place in the severe terrain and climate of the Mt. Whitney area, the trail is currently managed consistently with the definition of a Trail Class 4, so there would be no physical change from current management under this alternative.

Table 4.12 compares Alternative 1 and 2 – Modified in terms of system trail actions. Compared to the no action trail system, there is a total addition of roughly 10 miles of trail to the system inventory. About 48 miles of trail were added to the system inventory and 38 miles of trail were deleted. Additionally, adjustments in trail management levels were made, resulting in 135 miles of trail having an increase in designated trail class, and 241 miles of trail receiving decreased trail class. Since this was intended to match conditions on the ground with recreation categories and anticipated commercial and private use levels, it is expected that the overall effect will be a more stable system where use is present. There could also be reduced costs where unnecessary trails were removed from the system or where management levels are reduced to match anticipated use.

Table 4.12: System trail actions comparison of Alternative 1 and 2 - Modified

ACTION SUMMARY Compared to Alternative 1 (No Action)	Miles
Added	48
Deleted	38
TC Down	355
No Change	442
TC Up	136

See Table 2.26 in Chapter 2 for specific actions on each trail by alternative.

Given the regional differences in terrain and use levels, this alternative shows the highest consistency in trail class distribution between forests. In this alternative, both forests use the same trail class definitions and a more consistent interpretation of classes in determining management levels. Additionally, recreation categories and use levels were considered, so a consistent distribution of trail classes is evident in the Alternative 2 – Modified trail inventory. Since trail use levels on the Sierra National Forest are somewhat lower, there is some basis for slight differences in trail management levels between forests. Alternative 2 – Modified demonstrates a much higher level of consistency in the spread of trail class designations across the wilderness areas between forests as compared to the substantial differences in Alternative 1. Table 4.13 compares system trails on the Inyo and Sierra National Forests.

Table 4.13: Alternative 2 - Modified Inyo and Sierra N.F. trail class comparison

INYO NF Trail Class Summary	Miles	Percent of system	SIERRA NF Trail Class Summary	Miles	Percent of system
TC1	61	14%	TC1	105	19%
TC2	149	35%	TC2	262	48%
TC3	208	49%	TC3	184	34%
TC4	8	2%	TC4	0	0%
Total	426		Total	551	

In this alternative, the trail plan responds to the 2001 Wilderness Plan by designating a system of trails consistent with the desired conditions of the wilderness area, as defined by recreation categories. This alternative takes into consideration the anticipated level of commercial and private equestrian and hiker use, as well as the recreation category of destinations when designating trail classes. The goal of this alternative is to provide a system of trails that is generally stable for the anticipated use, without exceeding the desired condition of the wilderness area. In this alternative, only 4.3 miles of TC3 trail provide access to Recreation Category 1 areas and this is a “through-trail” (CA Riding and Hiking Trail), which continues on to other higher use areas. See Table 2.26 for a detailed listing of individual trail information.

Table 4.14. Alternative 2 – Modified trail class summary

Alternative 2 Modified	TC1	TC2	TC3	TC4	Total Miles in RC
RC1	85	111	4	0	200
RC2	80	285	257	0	622
RC3	1	15	130	8	154
Total	166	411	391	8	976

In this alternative, as in Alternatives 3, 4 and 5, a small number of recreation categories are adjusted to reflect the characteristics and intended management of the destinations. This better aligns the recreation categories to social and desired management conditions, including trail development and anticipated use types and levels. The effect of this will be more consistent alignment of management, and generally more stable trails that are responsive to the use types and levels at destinations. There is less likelihood that the trail system will either be inadequately developed or developed beyond the needs and character of the destinations. This alternative has the fewest anomalies of relationship between development levels and destination recreation categories. Over the long term, this will have a beneficial effect on the trail infrastructure and the associated resources, as well as wilderness character.

One consideration in designating trail classes for each trail is its current observed level of development on the ground. This is important for a number of reasons. First, considering limited maintenance funds, it is important that trails are not upgraded above their current levels unless there is a clear management need and resource benefit to increasing the development level in order to provide a stable trail under anticipated uses and terrain conditions. Secondly, the current level of development gives a good initial indication of how much development is needed for the existing trail demands. If trails appear to be stable under current use levels, and no dramatic changes in anticipated future levels are expected, then there is not likely a need to adjust trail classes from the observed development level. Since trails have been intuitively maintained and repaired by trail managers in response to perceived trail use and demands, there is a reasonable assumption that this level of development has some historical basis. Downgrading trails below their current observed development is prudent only if it is clear that the new (lower) development and maintenance level will not lead to degraded trail or resource conditions under the anticipated use.

Table 4.15. Alternative 2 – Modified trail class comparisons

Alternative 2 Modified - Trail Class compared to observed level of Development	Miles
Miles of trail designated LOWER than existing development	32
Miles of trail designated HIGHER than existing development	72
Miles of trail designated CONSISTENT with existing development	872

As shown in Table 4.15, comparing observed trail development with classes designated in this inventory, Alternative 2 – Modified has the greatest consistency with what is currently on the ground. The effect of this should be the least amount of change to the existing system, and the least need for structural improvement on trails.

Suitability

In this alternative, the term “Not Recommended for Stock” (NRFS), which was intended in the 2001 Wilderness Plan to both provide an advisory to private stock and to prohibit commercial stock use, has been changed to “Not Suitable for Commercial Stock” (NSCS). Trails designated NSCS in this alternative are driven by resource or destination limitations and/or risk factors along the trail.

Table 4.16: Alternative 2 – Modified, trail suitability summary

SYSTEM TRAILS SUITABILITY - Wilderness Totals	Alt. 2 Modified
Total System Miles	977.1
Not Suitable for Comm. Stock	*89.3
NSCS until repaired	9.2
Available to Comm. Stock	878.6
Percent of System Available to commercial stock	90%
*Includes 16.4 mi Whitney Area Closures	

Table 4.16 summarizes the system trails available to commercial stock in Alternative 2 – Modified. In this alternative, there will be roughly 977 miles of system trails in the two wildernesses, of which approximately 98 miles (or 10 percent) would be considered unsuitable for commercial stock. This means that approximately 880 miles of system trail would be accessible to commercial operators. Approximately 88 percent of the trails approved for commercial stock are Trail Class 2, 3, and 4, which should generally be managed to handle relatively high levels of recurring stock use. The remaining 12 percent TC1 trails with commercial stock present generally serve areas where very low quotas have been established. These low-development trails are expected to remain stable under these low levels of use.

By designating which system and use trails commercial operators can use, the vast majority of equestrian use will be limited to trails which are the most stable under stock use, and that require relatively low investment of maintenance resources. Most of these trails may also have some localized sections that are substandard, but are generally due to lack of maintenance rather than the trail’s designated class or design standards, so there would be no reason to adjust the current trail classes for the trails. Removing 89 miles of trail from recurring commercial stock use and

restricting the use from nine miles of trail until it is stabilized will reduce the potential for resource damage caused by stock using trails inadequately designed for such use. In turn, this may free up maintenance funds for other trails with heavier stock and hiker use, with the beneficial effect of stabilizing higher priority trails.

Destination controls on commercial operations will help ensure that recurring equestrian use will generally be on those trails that are sufficiently designed and managed to handle this type and level of use without excessive impacts to the trail system and to surrounding resources. Some system and use trails in the planning area are capable of handling only limited amounts of stock use, and corresponding destination quotas in this alternative will help ensure that each trail's capability will not be exceeded. In some cases, this has allowed certain trails to remain available to stock that would have otherwise likely been designated as NSCS. This also has a beneficial effect on the operators, who are able to access certain destinations (albeit at limited levels), which may otherwise have been unavailable to them.

Many trails, which may have conditions that are purely awkward or potentially risky for stock but which are not likely to cause substantial resource impacts, are still available to commercial stock in this alternative. Most of these trails are low-development (TC1) trails with minimal commercial or private equestrian use. Since commercial operators have familiarity with the trail system and likely have high skill levels and knowledge of the capability of stock and clients, decisions to utilize these trails would be based on the judgment of the operator. It is anticipated that use will remain low on these trails, so the effects to physical resources and wilderness character would be negligible.

In this alternative, trails will not be specifically designated as Not Recommended for [private] Stock, since this is purely an advisory to private equestrians that may not be familiar with trail conditions that are potentially impractical to stock on a particular trail. These advisories are considered an administrative action and, in the future, will be applied as needed either to trails that are permanently or temporarily in a condition which would be exceedingly difficult or risky for equestrian travel.

Use Trails

This alternative specifically addressed 202 use trails, totaling roughly 209 miles, (see Table 4.17). Based on either limiting factors of the use trails themselves or the destinations they accessed, 86 use trails totaling 81 miles were prohibited. There were 107 use trails, totaling about 111 miles, approved. Nine trails that were previously managed as use trails would be all or in part on the Alternative 2 – Modified trail inventory, so their use by commercial operators would be addressed as system trails in this alternative.

In this alternative, the ability to restrict commercial stock to low use levels to destinations through quotas has allowed for a number of use trails to be approved that can sustain only limited amounts of use. In other alternatives, these may have been closed completely. Most use trails approved in this alternative have relatively few risk factors, and are inherently stable. By keeping commercial stock off the most susceptible trails in this area and limiting use at destinations where trails can only sustain limited use, resource effects would be substantially reduced.

Table 4.17: Alternative 2 use trails summary

USE TRAILS Summary Alternative 2 - Modified	Use Trails	Est. Miles
Use Trails/Miles Addressed	202	209
Approved Trails/Miles	107	111
Prohibited Trails/Miles	86	81
System in this Alternative	9	17

See Table 2.27 in Chapter 2 for the specific use trails approved in each alternative.

Additionally, in this alternative operators have implicit approval to use non-system access routes to designated campsites or grazing areas or spot and dunnage sites which are within a reasonable travel distance (generally <1/4 mile) of system trails. Due to the short lengths and relatively dispersed low use that this type of trail receives, the effects are likely to be of a very limited extent and intensity.

Sanding – Early Season Access

In Alternative 2 – Modified, early season access over passes that would require sanding or shoveling snow will only be approved after a determination that trails, use trails, and other factors at the destination are capable of handling commercial stock parties without unacceptable impacts. This will have minor to moderate beneficial effects (as described in the general effects section) on trails beyond the passes and resources in the trail corridor and destination. Erosion will be reduced in trails that may otherwise have surface water flows, and use trails would likely remain more stable if soils are not saturated during early season use.

The need to shovel or sand snowdrifts will likely occur less than annually on typically fewer than four or five passes, and will depend upon seasonal snowfall and rate of snowmelt each season. The Piute Creek Trail and the area west of Piute Pass (primarily Golden Trout Lake) are the areas that are most affected by early-season access, and will see the greatest beneficial effect from delaying access until destination readiness.

Annual and Backlog Maintenance costs – Alternative 2 – Modified

Fully maintaining trails to standard in this alternative is estimated to cost approximately \$440,000 per year, assuming the trails were repaired so that annual maintenance would be effective. Since the Forests are currently spending approximately 170,000 dollars a year on AA/JM trails, this leaves an annual maintenance deficit of approximately \$270,000.

Table 4.18. Alternative 2 – Modified annual and backlog maintenance costs

Trail Annual Maintenance Costs	Alt. 2 - Mod
Total Estimated Cost	\$ 439,425
Current Annual Funding	\$ 170,000
Annual Maintenance Shortfall	\$ 269,425
Current Backlog (Repairs to Standard)	
Estimated Current Backlog	\$8,414,860.00

Though this shortfall is smaller than most other alternatives, it still means that the trail system cannot be fully maintained at standard using just the available forest funding. Funding levels below those needed to fully maintain the trail system would lead to the need to defer basic maintenance and repairs on certain trails. Trail classes provide guidance in prioritizing trail maintenance activities and funding expenditures. In general, trails with a higher-class designation will receive earlier and more frequent maintenance work, assuming other factors are equal. With reduced budgets, lower level trails may receive only the most basic of maintenance, such as clearing the most substantial obstacles or safety concerns to keep the trail open, but not repair structures or clean drainage structures as frequently. Other factors that are considered in prioritizing trail repair are described in Chapter 2.

In this alternative, trails are most consistently aligned with their existing development levels, and have been assigned the minimum development level that would be expected to maintain a stable transportation system under anticipated use. The effect of this is a reduction in maintenance shortfall as compared to Alternatives 1, 2 and 3. More significant is the reduction in backlog repairs and reconstruction. In this alternative, repairing trails to standard is estimated to cost approximately \$4 million less than in Alternative 1.

Restricting recurring commercial pack stock from roughly 10 percent of the trail system slightly reduces the costs of both maintenance and reconstruction for these sections. The cost savings in this alternative (and others), however, are somewhat limited, since the trails closed to commercial stock are trails rarely used or lightly used by commercial operators currently. In addition, most of these trails are lower development trails – roughly half are TC1 and half are TC2 – which cost less to repair and maintain than the overall average.

In addition to trail infrastructure maintenance and repair costs, repairing and stabilizing trail related effects on resources in the trail corridor is estimated to cost between \$3 million and \$4 million – as in all other alternatives.

Table 4.19. Alternative 2 – Modified trail summary by geographic unit

	Total system miles – Alt 2 Modified	NSCS (Not Suitable for Comm Stock)	NSCS (until Repaired)	Avail to comm. stock	TC1	TC2	TC3	TC4
AAEA	136.4	13.5	1.6	127.5	12.5	43.3	80.6	0
AAWE	186.8	0.1		185.9	42.2	88.9	55.7	0

	Total system miles – Alt 2 Modified	NSCS (Not Suitable for Comm Stock)	NSCS (until Repaired)	Avail to comm. stock	TC1	TC2	TC3	TC4
FICR	166.1	16.6	1.2	152.9	29.5	57.4	79.2	0
FLBR	74.2	6.3	1.3	67.3	20.4	26.9	26.9	0
MORO	102.5	5	5.1	92.3	6.8	38.9	56.7	0
BIHU	79.7	12.9		71.9	15	25.5	39.2	0
JMSE	100.5	34		66.3	25.8	44.1	22.8	7.8
JMSW	130.9	0.8		130.1	14.3	85.8	30.8	0
TOTAL	977.1	89.2	9.2	878.7	166.5	410.8	391.9	7.8

Cumulative Impacts: Alternative 2 – Modified

Other past, present, and future actions that may have an incremental or added effect when combined with trail-related actions in this alternative include:

- Funding levels for maintenance and repair.
- Trail maintenance activities and reconstruction projects.
- Unclear past management direction for the wilderness transportation system.
- Management activities of adjacent or cooperating agencies.
- Recreational activities along the borders of these wilderness areas.
- Various different trail user types and levels.

Annual Maintenance and Funding: The effects of historical maintenance performed and the past inadequate funding levels is the same in this alternative as in Alternative 1. This leaves both forests with a substantial backlog maintenance load, which would take substantial funding to repair (see description of reconstruction below).

The greatest difference in this alternative is that the future effects of low funding levels on the trail system and resources are substantially reduced. Removal of commercial stock from some trails, removing some unnecessary trails from the system, and bringing trail classes into better alignment with ground conditions reduces the need for maintenance, and could allow the deferral of maintenance work and funds to longer maintenance intervals with less effect on trail stability and resources. This beneficial effect is likely to be minor to moderate at the wilderness trail system scale, but may have major beneficial effects at the local level.

The relatively well-defined management objectives for trails will help to prioritize maintenance activities. Regardless of the level of future maintenance funding, this clearer description should make future expenditures more efficient and effective across the system.

Reconstruction: The effects of past and current reconstruction efforts and the gradually declining budgets for repairs and reconstruction are the same in this alternative as in Alternative 1. The general effect is that long-term deferrals of maintenance and repairs have led to trail and

resource instability that will require extensive investment. The declining funding for such work will make it more difficult to regain lost infrastructure and bring trails to standard.

Combined with the actions in this alternative, future repair and reconstruction efforts will have clearer design and management guidance than in the “No Action Alternative” scenario. The effect of this will be seen primarily in improved financial efficiency and reduced conflict with wilderness character. Trails will be repaired at the minimum necessary level to remain stable under anticipated use types and levels. Additionally, trails that will have no commercial stock (and likely minimal if any private stock) may be reconstructed with somewhat lower scale structure and remain adequately stable.

In the example of the planned reconstruction of the McGee Pass trail, the primary McGee Trail leading over the pass and to the PCT corridor will be reconstructed at the TC3 level, so that it can handle the high use – stock and hiker – in the difficult terrain. Spurs accessing side destinations, such as Baldwin Canyon, Steelhead Lake, Big McGee Lake, and Tully Lake will be repaired at the TC2 level, capable of handling anticipated moderate stock and hiker levels. The trail leading to Lee Lake, which will not have commercial stock present, will be realigned and repaired at a low TC1 level, which should remain sufficiently stable for anticipated low hiker use and only occasional private stock use. The Pacific Crest Trail, which will be repaired in 2006, will meet the TC3 standard.

The relatively well-defined management objectives for trails will help to prioritize reconstruction projects and provide a baseline for design for each project. Regardless of the level of future repair funding, this clearer description should make future expenditures more efficient and effective across the system. Over the long term, despite declining budgets, this will have a moderate beneficial effect across the system.

Unclear Past Management Direction for the Wilderness Transportation System: The effects of past inventories with unclear or incorrect direction are the same in this alternative as in Alternative 1. In general, the effect has been to make such direction mostly meaningless, and force trail managers on the forests to manage trails intuitively, with varied success.

As described in the maintenance and reconstruction sections above, this alternative defines clear direction for the trail system and individual trails. Over the long term, this will likely create a much greater level of consistency across the wilderness trail system. This should have minor to moderate beneficial effects at the trail system scale, and moderate benefits at the individual trail level.

Management Activities of Adjacent or Cooperating Agencies: The effects of past actions on or by adjacent or cooperating agencies, such as the Department of Fish and Game or Park Service are anticipated to be generally the same in this alternative as in Alternative 1.

In this alternative, trails that cross boundaries to contiguous trail systems on the NPS, have been aligned so that there should be a high level of consistency and negligible effects on trails and resources. In this alternative, the Pacific Crest Trail is designated Trail Class 3, which is consistent with its management by both agencies.

Future management decisions on the National Parks could have effects on the development levels of system trails or commercial activities on the Inyo and Sierra National Forest. These are unknown, and describing potential effects would be merely speculative.

Other Trail Uses – Past, Current, and Anticipated: The activities and effects of past, current, and future private hikers and equestrians on trails in these wilderness areas are the same as described in Alternative 1.

Regardless of any actions that restrict commercial pack stock operations on trails, the effects of hikers and private pack stock will continue at similar levels under existing controls. The types and levels of use that would continue to be accommodated under this alternative will continue to have minor to moderate effects at the wilderness trail system scale, and moderate to isolated severe effects at localized trails.

The actions of reducing or eliminating commercial stock use from certain remote trails may have minor short-term beneficial effects on the trail experience of hikers and/or those seeking a more primitive experience.

Non-wilderness Trails: This document does not designate a trail system outside of wilderness or determine commercial operations on trails outside of wilderness. It is expected that commercial operators will continue to access the wilderness areas using the current non-wilderness trail system. Where actions in this document reduce use – especially day use – within wilderness, commercial stock use will likely increase on non-wilderness trails, unless or until future controls are put into place.

These trails tend to be near pack stations and near trailheads, where both public and commercial use is already highly concentrated. Most trails in these areas are relatively well developed, in response to a long history of high use, so physical effects on the trails and resources are likely to be minor overall, but may be evident in the need to increase future maintenance efforts – especially on less-developed or non-system trails. There is also likelihood that further increases in day use in these already concentrated use areas may cause an increase in conflicts between stock and non-stock groups. The potential effects on the trails and associated resources would likely be minor to moderate at the forest scale, and would likely result in isolated locally moderate to major trail and resource impacts.

Alternative 2

Summary of Impacts – Alternative 2

In general, the primary consequence from trail-related actions in this alternative would be a net improvement in the trail system and on the associated resources in the trail corridor and improved congruency between trail and area management. These benefits will be primarily evident in the following ways.

Trail management and desired area management are closely aligned, resulting in reduced potential conflicts with wilderness character. For example, nine percent of the total system is designated TC4 in this alternative.

Trail system management shows greater inter-forest consistency. Internal controls allow for greater predictability of use types and numbers, so trail development will likely be very consistent with anticipated use and on-the-ground conditions, resulting in greater trail stability and reduced physical resource impacts.

Commercial stock is prohibited from eight percent of system trails, which were determined unstable with recurring stock use, ensuring that the majority of stock use is limited to trails most

capable of remaining stable under anticipated use. Private equestrians will be advised that these trails are not recommended for stock, resulting in improved visitor expectation and safety. Reduced maintenance costs on these trails allows for more efficient distribution of trail maintenance and reconstruction funds and more stable conditions on other system trails.

One trail would be approved for sanding in this alternative, ensuring relatively localized effects, and ensuring that there would be no expansion of these effects to other trails.

Commercial stock are limited to 100 use trails (102 miles), including some undefined (cross-country) routes, and use levels on each trail are limited by destination quotas. In this alternative, anticipated use is highly predictable, and these use trails should remain stable or improve slightly under these use levels.

Over the short term, this alternative will have minor localized and regional beneficial impacts, by reducing one of the contributing sources of adverse effects. Physical trail stability conditions will not likely improve substantially until the long term, as physical treatments and/or natural recovery occurs. Over the long term, the localized beneficial impacts will be moderate, as funding can be distributed across the system more effectively, and more trails are managed at stable levels. There should be some minor reduction in user conflicts at remote destinations.

Analysis

In this alternative, as directed by the 2001 Wilderness Plan, a system of trails would be designated considering the desired conditions of destinations within the wilderness areas.

Trail management levels and other trail management decisions must consider the anticipated use types and amounts on each trail, to provide a trail system that meets the transportation needs of wilderness visitors while limiting the effects on resources from the trail. In this alternative, the use levels of commercial operations on each trail, in addition to the anticipated use by private equestrian and hiker traffic, can be accurately predicted and considered in making trail management decisions, since quotas for each destination (and thereby each trail) will have limits set on use levels instead of just limiting use at trailheads. This will have long-term beneficial effects in aligning trail management with more predictable levels and types of use.

In the proposed action, trail classes are defined using the most recent draft version of National Trail Management Class definitions. These definitions are general and apply to all ground-based trails, with very little specific consideration of wilderness direction. In this alternative, a management strategy specific to the Ansel Adams and John Muir Wilderness trails are incorporated to further clarify how the forests intend to manage each trail. While not directly tied to national standards, which are still being developed, these are intended to mirror them so that when final standards are adopted, trails are managed consistently with other national forests. Providing this guidance should allow for more consistent expectations for managers, work crews, and trail users, and lead to a more consistently managed system over the long term.

Table 4.20. Alternative 2 system trail summary

SYSTEM TRAILS SUMMARY AA/JM Wilderness Totals	miles
Total System Miles	967.4
TC1	168.3
TC2	372.6
TC3	347.8
TC4	78.8

Table 4.21 compares Alternative 1 and 2 in terms of system trail actions. Compared to the no action trail system, there is a total addition of roughly three miles of trail on the system inventory. About 49 miles of trail were added to the system inventory and 46 miles of trail were deleted. Additionally, adjustments in trail management levels were made, resulting in 135 miles of trail having an increase in designated trail class, and 241 miles of trail receiving decreased trail class. Since this was intended to match conditions on the ground with recreation categories and anticipated commercial and private use levels, it is expected that the overall effect will be a more stable system where use is present. There could also be reduced costs where unnecessary trails were removed from the system or where management levels are reduced to match anticipated use.

Table 4.21: System trail actions comparison of Alternative 1 and 2

WILDERNESS-SCALE ACTION SUMMARY Compared to No Action	Miles
Added	49
Deleted	46
TC Down	255
TC Up	135

See Table 2.26 in Chapter 2 for specific actions on each trail by alternative.

In this alternative, both forests use the same trail class definitions and more consistent interpretation of classes in determining management levels. Additionally, recreation categories and use levels were considered, so a more consistent distribution of trail classes is evident in the Alternative 2 trail inventory. Since wilderness use levels on trails on the Sierra National Forest are somewhat lower, there is some basis for slight differences in trail management levels between forests. Alternative 2 demonstrates a much higher level of consistency in the spread of trail class designations across the wilderness areas as compared to the substantial differences in Alternative 1. Table 4.22 compares system trails on the Inyo and Sierra National Forests.

Table 4.22: Alternative 2 Inyo and Sierra trail class comparison

INYO NF Trail Class Summary	Miles	Percent of system	SIERRA NF Trail Class Summary	Miles	Percent of system
TC1	47	11%	TC1	121	22%
TC2	146	35%	TC2	226	41%
TC3	173	41%	TC3	174	32%
TC4	52	12%	TC4	27	5%
Total	418		Total	548	

In this alternative, the trail plan responds to the 2001 Wilderness Plan by designating a system of trails consistent with the desired conditions of the wilderness area, as defined by recreation categories. This alternative takes into consideration the anticipated level of commercial and private equestrian and hiker use, as well as the recreation category of destinations when designating trail classes. The Forest Service would then be providing a system of trails that is generally stable for the anticipated use, without exceeding the desired management level of the wilderness area. In this alternative, only 6.5 miles of TC3 trail provide access to Recreation Category 1 areas and six miles of this is a thru-trail (CA Riding and Hiking Trail), which continues on to other higher use areas. See Chapter 2 for a summary of trail classes by alternative, and Tables 2.26 for a detailed listing of individual trail information.

Table 4.23: Alternative 2 System trail class summary by recreation category

Alternative 2- Trail Class by Rec Category	TC1	TC2	TC3	TC4	Total System
RC1	80	96	6	0	182
RC2	88	261	254	27	630
RC3	0	16	88	52	156
Total	168	373	348	79	968

In this alternative, a total of almost 80 miles (approximately 8 percent of system) of trail are designated as TC4, a very high level of development and management that is exceedingly rare in wilderness. About 71 miles of this is the Pacific Crest National Scenic Trail (PCT), which traverses multiple geographic units. Due to its high profile and direction in the 1988 Inyo Forest LRMP to maintain it at “Maintenance Level 4,” it has always been maintained with a higher priority, if not necessarily a higher development level than other primary trails. Under Alternative 2, it would remain TC4 to be consistent with the 1988 Forest LRMP. However, under the current definition in National Trail Management Classes, this level of development may exceed the needs of users and desired management goals in the areas through which it travels. Although it will remain TC4 in this alternative, it would be extremely costly and unrealistic to maintain to the targets of this class. Reconstructing it at a TC4 level, if funding at such a high level were available, would be out of character with most of the wilderness area the trail goes

through. In the following table, the 71 miles of PCT designation at TC4 (versus its current observed level of TC3) skews the numbers substantially.

Table 4.24. Alternative 2 annual and backlog maintenance costs

Alternative 2 Trail Class compared to Field-Observed level of Development	Miles
Miles of trail designated LOWER than existing development	34
Miles of trail designated HIGHER than existing development	189
Miles of trail designated CONSISTENT with existing development	745

The eight miles of Mt. Whitney Trail on the Inyo National Forest is designated TC4 in this alternative. Due to the extremely high levels of use, the massive level of development and frequency of maintenance needed to keep a stable trail in place in the severe terrain and climate of the Mt. Whitney area, the trail is currently managed consistently with the definition of a Trail Class 4, so there would be no physical change from current management under this alternative.

This alternative also provides for designating trails as “Not Recommended for Stock,” which provides an advisory to private equestrians that trail conditions may be impractical for stock; and restricts commercial stock from the trail. In this alternative, the same trails designated as “Not Recommended for Stock” for public advisory purposes are also closed to commercial stock use, as described in “Not Suitable for Commercial Stock.”

This means that all trails which have either awkward conditions especially difficult for stock OR resource/instability issues are designated both as “Not Recommended for [private] Stock” (NRFS) and closed to commercial stock. In some cases, this means that trails that have no notable resource issues are closed to commercial operators; and conversely, on some trails which have some resource problems but that are not particularly awkward for travel, private stock would be warned about awkward trail conditions that may not actually exist. This has the potential consequence of creating confusion about the NRFS designation and how private equestrians should interpret the advisory.

These spatial controls on commercial operations will help ensure that recurring equestrian use will generally be on those trails that are sufficiently designed and managed to handle this use without excessive impacts to the trail system and to surrounding resources. Some system and use trails in the planning area are capable of handling only limited amounts of stock use, and corresponding destination quotas in this alternative will help ensure that each trail’s capability will not be exceeded.

Table 4.25 summarizes the system trails available to commercial stock in Alternative 2. In this alternative, there will be roughly 970 miles of system trails in the two wildernesses, of which approximately 73 miles (or 8 percent) would be considered unsuitable for commercial stock and not recommended for private stock. This means that approximately 895 miles of system trail would be accessible to commercial operators in Alternative 2. These trails would be managed and maintained at various trail classes. More than 85 percent of the trails approved for commercial stock are Trail Class 2, 3, and 4, which generally are managed to handle relatively high levels of recurring stock use. The remaining 14 percent TC1 trails with commercial stock present generally serve areas where very low quotas are established. These low-development trails are expected to remain stable under this level of use.

Table 4.25. Alternative 2 summary of trails not recommended for stock and closed to commercial

ALTERNATIVE 2 Trails Not Recommended for Stock (and closed to Commercial)	Miles
Total System Miles	967.4
NRFS (and closed to commercial)	73.2
Trails Available to Comm. Stock	894.2
Percent of system available to commercial	92%

By designating which system and use trails commercial operators can use, the vast majority of equestrian use will be limited to trails which are the most stable under stock use, and that require relatively low investment of maintenance resources. Most of these trails will still have some sections that are substandard, but are generally due to lack of maintenance rather than the trail's level or design standards, so there would be no reason to change current design standards for the trails. Removing 73 miles of trail from recurring commercial stock use will reduce the potential resource damage caused by trails inadequately designed for such use, freeing up maintenance funds for other trails with heavier stock and hiker use. Most trails with designated NRFS probably have received little or no recent private equestrian use since conditions have not been desirable for most private stock users on these trails.

Although the effect might be minor overall, there should be reduced resource impacts on the trails designated NRFS and closed to commercial stock. Considering limited maintenance funding, it may also allow greater trail and resource stability on the remainder of the system. Assuming that maintenance funds remain basically stable, the net effect would likely be a slight improvement in trail condition on those trails which remain open to commercial use, and which are most commonly used by private equestrians. Most of these effects may be relatively minor in the short term, but will have increasing significance over the long term.

One hundred and eighty-seven use trails, totaling roughly 195 miles, were specifically addressed in the proposed action (see Table 4.26). Based on limiting factors of either the use trails themselves or the destinations they accessed, 82 use trails totaling 80 miles were prohibited. One-hundred use trails totaling about 102 miles were approved. Five trails that were previously managed as use trails would be all or in part on the Alternative 2 trail system, so their use would be approved in this alternative as system trails.

In this alternative, the ability to limit the number of commercial stock on use trails through destination quotas has allowed for a number of use trails to be approved that can sustain only limited amounts of use. Most use trails approved in this alternative have relatively few risk factors, and are inherently stable. By keeping commercial stock off the most susceptible trails in this area and limiting use at destinations where trails can only sustain limited use, resource effects would be substantially reduced.

Table 4.26: Alternative 2 use trails summary

USE TRAILS Summary Alternative 2	Use Trails	Est. Miles
Use Trails/Miles Addressed	187	195
Approved Trails/Miles	100	102
Prohibited Trails/Miles	82	80
System in this Alternative	5	13

See Table 2.27 in Chapter 2 for the specific use trails approved in each alternative.

Additionally, operators have implicit approval to use non-system access paths to designated campsites, grazing areas, or non-designated camps that are within ¼ mile of system trails. Due to the short lengths and relatively dispersed low use that this type of trail receives, the effects are likely to be of relatively limited extent and intensity.

Early-season Access

Since sanding of snowdrifts on Piute Pass Trail is allowed in this alternative, which would allow crossing of the pass prior to full snowmelt, there are potential effects on both trails and resources in the trail corridor. These are described in the general effects section above. The Piute Creek Trail and the area west of Piute Pass (primarily Golden Trout Lake) are the areas most affected by early-season access.

Annual and Backlog Maintenance Costs – Alternative 2

Fully maintaining trails to standard in this alternative is estimated to cost approximately \$470,000 per year once the trails are repaired, so that annual maintenance would be effective. Since the forests are currently spending approximately \$170,000 a year on AA/JM trails, this leaves an annual maintenance deficit of approximately \$300,000.

This alternative still shows a high-deferred maintenance and repair deficit – over \$10 million. A factor in this is having 70 miles of the Pacific Crest Trail at a level much above its current development and condition.

In addition to trail infrastructure maintenance and repair costs, repairing and stabilizing trail related effects on resources in the trail corridor is estimated to cost between \$3 million and \$4 million – as in all other alternatives.

Table 4.27. Alternative 2 annual and backlog maintenance costs

Trail Annual Maintenance Costs AA/JM Wilderness	Alt. 2
Total Estimated Cost	\$469,500
Current Annual Funding	\$170,000
Annual Maintenance Shortfall	\$299,500
Current Backlog (Repairs to Standard)	
Estimated Current Backlog	\$10,104,500.00

The restriction of recurring commercial pack stock from eight percent of the trail system slightly reduces the costs of both maintenance and reconstruction for these sections. The cost savings effect in this alternative (and others), however, is somewhat limited, since the trails closed to commercial stock are trails that are rarely or lightly used by commercial operators currently. In addition, most of these trails are lower development trails – roughly half are TC1 and half are TC2 – which cost less to repair and maintain than the overall average.

Table 4.28. Alternative 2 trail summary by geographic unit

Geo Unit	Total system miles – Alt 2	NSCS (Not Suitable for Comm Stock)	Avail to comm. stock	TC1	TC2	TC3	TC4	NRFS (Not Rec. for Private Stock)
AAEA	134.4	6.9	127.5	10.5	39.2	60.4	24.3	
AAWE	186.9	1	185.9	57.5	68.9	60.5	0	
FICR	166.6	13.7	152.9	23.5	57.7	65.8	19.6	
FLBR	73.6	6.3	67.3	20.2	25.4	13	15	
MORO	94.7	2.4	92.3	7	22.5	53.2	12	
BIHU	81.5	9.6	71.9	11.6	29.1	40.8	0	
JMSE	98.7	32.4*	66.3	23.7	43.9	23.3	7.8	
JMSW	130.9	0.8	130.1	14.3	85.8	30.8	0	
TOTAL	967.4	73.1*	894.2	168.3	372.5	347.8	78.7	73.1

Cumulative Impacts – Alternative 2

Other past, present, and future actions that may have an incremental or added effect when combined with trail-related actions in this alternative include:

- Funding levels for maintenance and repair.
- Trail maintenance activities and reconstruction projects.
- Unclear past management direction for the wilderness transportation system.
- Management activities of adjacent or cooperating agencies.

- Recreational activities along the borders of these wilderness areas.
- Various different trail user types and levels.

Annual Maintenance and Funding: The effects of historical maintenance performed and the past inadequate funding levels is the same in this alternative as in Alternative 2 – Modified. Low funding leaves both forests with a substantial backlog maintenance load, which would take substantial funding to repair [see description of reconstruction below].

Destination quotas have a similar beneficial effect as in Alternative 2 – Modified for predictability of use types and levels, which in turn increases the efficiency of maintenance expenditures. Low funding levels combined with the actions in this alternative will still have some moderate adverse effects on trail stability and resource conditions.

As in Alternative 2 – Modified, this alternative designates a moderate number of trails (approximately 75 miles) as “Not Recommended for [private] Stock” and “Not Suitable for Commercial Stock.” Since this allows approximately 25 more miles available to stock, the beneficial effects of decreasing maintenance costs will not be as substantial as in Alternative 2 – Modified. There will likely be a long-term minor to moderate beneficial effect at the trail system scale, with localized moderate beneficial effects.

Reconstruction: The effects of past and current reconstruction efforts and the gradually declining budgets for repairs and reconstruction are the same in this alternative as in Alternative 1 and Alternative 2 – Modified.

Cumulative effects at the wilderness scale are generally the same as those described in Alternative 2 – Modified. Locally, over the long term, certain trails will have slightly different effects, since 25 more miles of trail are available to stock in this alternative.

The Pacific Crest Trail, which will be repaired in 2006, is designated TC4 in this alternative, so at the time of reconstruction would be reconstructed to a standard exceeding the wilderness character of the areas it traverses. It would also cost nearly twice as much to upgrade to this level from its current observed level of TC3. If implemented, this would have a moderate detrimental effect on the trail system, requiring diversion of funds from other maintenance or repair efforts.

Unclear Past Management Direction for the Wilderness Transportation System: The effects of past inventories with unclear or incorrect direction are the same in this alternative as in Alternative 1 and all other alternatives. In general, the effect has been to make such direction mostly meaningless, and force trail managers on the forests to manage trails intuitively, with varied success.

As described in Alternative 2 – Modified, implementing the direction in this plan is likely to have minor to moderate beneficial effects at the trail system scale, and moderate benefits at the individual trail level.

Management Activities of Adjacent or Cooperating Agencies: The effects of past actions on or by adjacent or cooperating agencies, such as the Department of Fish and Game or National Park Service, are anticipated to be generally the same in this alternative as in Alternative 1 and 2 – Modified.

In this alternative, most trails that cross boundaries to contiguous trail systems on the NPS, have been aligned so that there should be a high level of consistency, and negligible effects on trails and resources, with one major exception. In this alternative, the Pacific Crest Trail is designated

Trail Class 4, which would be inconsistent with management of adjacent sections of the PCT administered by the NPS.

Other Trail Uses: Past, Current, and Anticipated: The activities and effects of past, current and future private hikers and equestrians on trails in these wilderness areas are the same as described in Alternative 2 – Modified.

Regardless of any actions that restrict commercial pack stock operations on trails, the effects of hikers and private pack stock will continue at similar levels under existing controls. The types and levels of use that would continue to be accommodated under this alternative will continue to have minor to moderate effects at the wilderness trail system scale, and moderate to isolated severe effects at localized trails.

The actions of reducing or eliminating commercial stock use from certain remote trails may have minor short-term beneficial effects on the trail experience of hikers and/or those seeking a more primitive experience.

Non-wilderness Trails: The cumulative effects on non-wilderness trails are the same as those described in Alternative 2 – Modified.

Alternative 3

Summary of Impacts – Alternative 3

Trail management levels are consistently aligned with desired destination management levels, with a minimal amount of conflict with recreation categories (for instance, less than one percent of trail system is TC4). This alternative very closely aligns trail management with anticipated use types and levels and on-the-ground conditions. There are fewer internal controls than Alternative 2, so there is less predictability about commercial use levels. This may cause slightly less efficient distribution of maintenance funding. There are 107 approved use trails, including undefined or cross-country routes. Fewer destination controls are present, so there is a higher potential for resource impacts and for increase of evidence of use trails until monitoring determines that mitigation or closure are needed. This would likely have a minor to moderate effect at the wilderness scale, and moderate to severe effects at specific use trails with high risk factors.

“Not recommended for stock” (NRFS) designation becomes a public advisory without restricting commercial use. There are 140 miles of trail (approximately 15 percent) designated NRFS due to trail difficulty and awkward conditions for stock. This will likely provide better and safer experiences to private equestrians. Alternative 3 has more trails available to commercial stock than Alternative 2, with 63 miles (approximately six percent) of system designated as “Not Suitable for Commercial Stock” (NSCS), but little or no noticeable effect likely, since additional trails available are simply awkward for stock, and should remain stable under anticipated use. Reduced costs of maintenance and reconstruction on NRFS and NSCS trails allows for slightly better condition on overall system, resulting in more stable trails and resource condition.

Over the short term, this alternative will have negligible to minor localized and regional impacts, by reducing one of the contributing causes of adverse effects, but physical trail stability conditions will not likely improve substantially until the long term, as physical treatments and/or natural recovery occurs. Some of these beneficial effects are highly dependent upon funding levels.

Over the long term, the beneficial impacts will be moderate, as more trails are managed at stable levels and which do not exceed area needs. At the regional scale, this alternative will have negligible adverse impact for both the long and short terms. Over the long term, the close alignment of trail management and desired area management would have moderate beneficial effects on wilderness resources.

Since any trail could potentially be requested and approved for sanding of snow to allow early season passage (though very few would likely be requested in most years), there is a higher potential for expansion of effects from sanding than in Alternative 2. Sanding will likely occur on between one and five trails annually, depending upon the severity of the winter. Sanding protects the immediate trail corridor from widening and multiple trails, but may allow early access to trails and areas still wet and easily damaged.

Analysis

As in the other action alternatives, this alternative designates a system of trails considering the desired conditions of destinations within the wilderness areas, as directed by the 2001 Wilderness Plan. The effects are somewhat different, as this alternative tends to provide a higher development trail system (with some exceptions) in order to remain stable under less predictable use types and levels.

The key difference affecting trails between Alternative 3 and Alternative 2 is that commercial operators are not limited by quotas at destinations, with the exception of a small number of areas. Instead, commercial pack stock user numbers are limited only at trailheads. This means that predicting an anticipated level of commercial stock use on each trail is much more difficult, especially trails farther from trailheads. This puts a higher burden on the forests to ensure that more trails are capable of stably handling commercial stock use at an undetermined level, in addition to anticipated private stock and hiker use, even if this use is only occasional or speculative.

Table 4.29. Alternative 3 system trail summary

SYSTEM TRAILS SUMMARY AA/JM Wilderness Totals	Alt. 3
Total System Miles	985.2
TC1	113
TC2	443.2
TC3	421.2
TC4	7.8

Compared to the Alternative 1 trail system, there is a total addition of roughly 20 miles of trail on the system inventory (see Table 4.30). In determining which trails should be on the system, about 51 miles of trail were added to the inventory and about 30 miles of trail were deleted. Additionally, adjustments in trail management levels were made, resulting in 130 miles of trail having an increase in designated trail class, and 293 miles of trail receiving decreased trail class. Since this was intended to match conditions on the ground with recreation categories and anticipated commercial and private use levels, it is expected that the overall effect will be a more

stable system where use is present. There could also be reduced costs where unnecessary trails are removed from the system or where management levels are reduced.

Table 4.30: System trail actions comparison of Alternative 1 and 3

WILDERNESS-SCALE ACTION SUMMARY Compared to No Action	Miles
Added	51
Deleted	30
TC Down	306
TC Up	159

See Table 2.26 in Chapter 2 for specific actions on each system trail by alternative.

Table 4.31 compares system trails between the Sierra and Inyo National Forests. In this alternative (as in Alternative 2), both forests use the same definitions and more consistent interpretation of trail classes in determining management levels. Additionally, recreation categories and use levels were considered, so a more consistent distribution of trail classes is evident in this trail inventory. Some modifications were also made based on better field knowledge and a better understanding of the anticipated use types and levels. Since wilderness use levels on trails on the Sierra National Forest are somewhat lower, there is some basis for slight differences in trail management levels between forests. This demonstrates a much higher level of consistency in the spread of trail class designations between the two forests as compared to the substantial differences in Alternative 1.

Table 4.31: Alternative 3 Inyo and Sierra N.F. trail class comparison

INYO NF Trail Class Summary	Miles	Percent of system	SIERRA NF Trail Class Summary	Miles	Percent of system
TC1	45	10%	TC1	70	13%
TC2	162	37%	TC2	278	50%
TC3	217	50%	TC3	204	37%
TC4	8	2%	TC4	0	0%
Total	432		Total	552	

In this alternative, a small number of recreation categories would be adjusted to reflect the characteristics and intended management of the destinations. This would align the recreation categories to social and management conditions, including trail development and anticipated use types and levels. The effect of this would be more consistent alignment of management, and generally more stable trails that are consistent with the use types and levels at destinations. There is less likelihood that the trail system would either be inadequately developed or developed beyond the needs and character of the destinations. Over the long term, this will have a beneficial effect on the trail infrastructure and the associated resources, as well as wilderness character.

Table 4.32: Alternative 3 system trail class summary by recreation category

Rec Category	TC1	TC2	TC3	TC4	Total System
RC1	70	132	6	0	208
RC2	46	292	283	0	621
RC3	0	16	131	8	155
Total	116	440	420	8	984

In this alternative, the Pacific Crest National Scenic Trail (PCT), one of very few trails in the planning area that has been designated as Trail Class 4 (or “Maintenance Level 4”) in past inventories, has been adjusted to TC3 to better match recreation categories and wilderness direction – as well as to align its development more closely to what exists on the ground. This will have no effect on the trail infrastructure and physical resources, since the current definition of Trail Class 3 matches well with the existing and past management and development of the PCT on both forests. Because the PCT is a high-profile and popular trail, it will continue to be a high priority for maintenance, and will continue to be cleared and maintained as early in the use season as is practical.

Table 4.33. Alternative 3 trail class comparisons

Alternative 3 Trail Class compared to Field-Observed level of Development	Miles
Miles of trail designated LOWER than existing development	27
Miles of trail designated HIGHER than existing development	180
Miles of trail designated CONSISTENT with existing development	778

This alternative, in general, designates a higher development trail system than other alternatives (with the exception of the Pacific Crest Trail). Part of the reason for this is that there are fewer controls and less ability to predict commercial use levels on trails, so there is a need to ensure that more trails are developed and maintained at suitable use levels. Additionally, more trails are available to commercial operators in this alternative. A total of 922 miles of trail (or 94 percent) of the system, are available to commercial stock. This has an effect on the financial needs for trails, but because the additional trails that are being allowed for commercial operators in this alternative versus Alternative 2 tend to be those with low commercial use and low development levels, this effect would be slight.

Assuming that these trail levels can be attained, this would provide a mostly stable trail system. Since funding is anticipated to be less than what is necessary to fully implement the classes in this alternative, many trails would remain at less than full standard. Depending on many factors, this could lead to some further instability in trails and resources in the trail corridor.

Table 4.34. Alternative 3 annual and backlog maintenance costs

Trail Annual Maintenance Costs AA/JM Wilderness	Alt. 3
Total Estimated Cost	\$467,500
Current Annual Funding	\$170,000
Annual Maintenance Shortfall	\$297,500
Current Backlog (Repairs to Standard)	
Estimated Current Backlog	\$9,274,680.00

With the 70 miles of PCT reduced to level three, the additional costs to reconstruct and maintain the remaining high development trails is offset in this financial analysis. Alternatives 2 and 3 have very similar costs and backlogs.

In Alternative 3, approximately 25-30 destinations (and the trails accessing these areas) will have quotas for a maximum number of commercial trips. Effects of these limitations on these particular trails are beneficial. In some cases, this is because the quota materially reduces the number and effect of commercial pack stock use on the trails; in other cases, the benefit lies in the ability to predict the likely stock use levels and to adjust the management of the trail for that use.

Generally, the trails that will benefit from the implementation of destination quotas in this alternative are relatively short segments that provide access between higher use corridor trails and the specific destination. The net benefit to the high use corridor will likely be negligible, as both commercial and other uses will continue at similar levels on these trails. In isolated cases, limiting the use at certain destinations may slightly increase the level of commercial use on a segment of primary trail since the use will not disperse to a particular destination. The effects of this displacement on the trail system and resources in the corridor would not likely be measurable.

Trails designated “Not Suitable for Commercial Stock” (NSCS) in this alternative are driven by either resource or destination limitations and/or resource risk factors along the trail. In this alternative, about 25 more miles of trail would be available to commercial stock use than in the proposed action (Alternative 2). Part of this increase is due to the addition of certain use trails to the system, and part is due to the different meaning of the term “not recommended for stock.” In Alternative 2, the NRFS designations would affect both the commercial operators and the public. In Alternative 3 and 4, two separate designations would allow some trails to be closed to commercial operators while private equestrians need not be warned about safety or difficult conditions. Conversely, these two designations would allow commercial operators to use their best judgment and knowledge of the trail system in operating on trails that do not have resource or destination limitations, but which may be extremely difficult or risky for private equestrians.

Table 4.35: Alternative 3 trail suitability summary

SYSTEM TRAILS SUMMARY Alternative 3	Miles
Total System Miles	985.2
NSCS	62.9
Trails Available to Comm.	922.3
NRFS (Approx)	135

Table 4.35 summarizes trail suitability and trails “not recommended for (private) stock” for Alternative 3. While approximately 25 more miles of trail are available to commercial stock in this alternative than in Alternative 2, the difference in effects to either physical resources or the costs of maintenance would be negligible and nearly undetectable. The trails that would become available to commercial stock under this alternative are almost all very low development (TC1) trails that also have very few risk factors that would lead to trail or resource degradation. They are mainly trails that are awkward for equestrians, and in many cases receive very low or no private equestrian use and are currently only occasionally visited by commercial stock. Since only trails, which are not particularly susceptible to the effects of stock use, are being made available to commercial stock in this alternative, it is unlikely that these additional trails or resources would show noticeable effects.

In this alternative, the designation of NRFS is defined to mean “Not Recommended for [private] Stock.” The effects of this designation are described in the “general effects” area at the beginning of Chapter 4. In Alternatives 3, 4, and 5, roughly 65 trails, totaling just over 135 miles, are designated “Not Recommended for Stock,” in addition to the 16 miles of trail which are closed to all stock in the Mt. Whitney area. While the same trails are designated “NRFS” in Alternatives 3, 4, and 5, variations between these alternatives is dependent upon whether some of these trails are on the system. If a trail is not on the system in this alternative, it does not receive the NRFS designation.

There are more use trails available to commercial operators in this alternative in order to provide access to additional grazing areas, campsite locations and areas that can sustain at least a certain amount of use. If use were to increase above current levels on any of these use trails, there is a potential for some additional impacts in isolated areas. However, since the total cap on use to most areas is based on the entry trailhead, the addition of certain approved use trails would allow for greater dispersal, which could slightly reduce impacts on some of the fewer use trails that were approved in Alternative 2. Table 4.36 summarizes use trails for Alternative 3. With 103 miles of use trail approved, there would be an average density of 0.67 feet (8”) of approved use trail per acre.

Table 4.36: Alternative 3 use trails summary

USE TRAILS SUMMARY Wilderness Scale	Use Trails	Est. Miles
Use Trails/Miles Addressed	202	209
Approved Trails/Miles	107	103

USE TRAILS SUMMARY Wilderness Scale	Use Trails	Est. Miles
Prohibited Trails/Miles	87	87
System in this Alternative	8	19

See Table 2.27 in Chapter 2 for specific actions on each use trail by alternative.

Sanding of passes to allow earlier season access can be authorized by the Forest Service on a case-by-case basis for a number of passes in this alternative. While the extent of the perceived need for sanding and the effects are highly dependent upon natural events (primarily quantity of snow fall and early season temperatures), trails affected by potential sanding would likely be limited to three to five trails. During heavy snow years, these trails would likely include Piute Pass, Pine Creek Pass, Bishop Pass, McGee Pass, and Kearsarge Pass, with isolated sections of other primary trails, where a drift may block access to otherwise clear trails. Low to moderate snow years may only affect two or fewer of these trails. The potential effects of sanding snow drifts, both beneficial and negative, are described in the “general effects” area above.

Table 4.37. Alternative 3 trail summary by geographic unit

	Total system miles – Alt 3	NSCS (Not Suitable for Comm Stock)	Avail to comm. stock	TC1	TC2	TC3	TC4	NRFS (Not Rec. for Private Stock)
AAEA	139.4	4.5	134.9	5.6	49.1	84.7	0	
AAWE	186.8	0	186.8	20.2	104.1	62.5	0	
FICR	169.9	9	160.9	22.5	62.1	85.3	0	
FLBR	74.2	5.3	68.9	13.6	32.1	28.5	0	
MORO	96.9	2.4	94.5	4.6	27.1	65.2	0	
BIHU	82	9.2	72.8	8.2	33	40.8	0	
JMSE	104.9	32.4*	72.5	26	47.8	23.3	7.8	
JMSW	130.9	0	130.9	12.3	87.8	30.8	0	
TOTAL	985	62.8*	922.2	113	443.1	421.1	7.8	135

Cumulative Impacts – Alternative 3

Other past, present, and future actions, which may have an incremental or added effect when combined with trail-related actions in this alternative, include:

- Funding levels for maintenance and repair.
- Trail maintenance activities and reconstruction projects.
- Unclear past management direction for the wilderness transportation system.
- Management activities of adjacent or cooperating agencies.
- Recreational activities along the borders of these wilderness areas.

- Various different trail user types and levels.

Annual Maintenance and Funding: The effects of historical maintenance performed and the past inadequate funding levels is the same in this alternative as in Alternative 2 – Modified. Low funding leaves both forests with a substantial backlog maintenance load, which would take substantial funding to repair [see description of reconstruction below].

Since there are very few destination quotas in this alternative and more trails are available to commercial stock than other action alternatives, this means a greater maintenance and repair expenditure to ensure trail stability over time. This could have moderate detrimental effects on trails and resources outside of these wilderness areas, as funding levels decrease and limited funds are prioritized.

As in Alternative 2 – Modified, this alternative designates a moderate number of trails (approximately 65 miles) as “Not Recommended for [private] Stock” and “Not Suitable for Commercial Stock.” Since this would allow approximately 35 more miles available to stock, the beneficial effects of decreasing maintenance costs would not be as substantial as in Alternative 2 – Modified. There would likely be a long-term, minor to moderate beneficial effect at the trail system scale, with localized moderate beneficial effects.

Reconstruction: The effects of past and current reconstruction efforts and the gradually declining budgets for repairs and reconstruction are generally the same in this alternative as in Alternative 1 and Alternative 2 – Modified.

Cumulative effects at the wilderness scale are generally the same as those described in Alternative 2 – Modified. Locally, over the long term, certain trails will have slightly increased effects, since 35 more miles of trail would be available to stock in this alternative.

The Pacific Crest Trail, which will be repaired in 2006, is designated TC3 in this alternative. As in Alternative 2 – Modified, this would repair the trail consistent with desired conditions of the areas it traverses.

Unclear Past Management Direction for the Wilderness Transportation System: The effects of past inventories with unclear or incorrect direction are the same in this alternative as in Alternative 1 and all other alternatives. In general, the effect has been to make such direction mostly meaningless, and force trail managers on the forests to manage trails intuitively, with varied success.

As described in Alternative 2 – Modified, implementing the direction in this plan would likely have minor to moderate beneficial effects at the trail system scale, and moderate benefits at the individual trail level.

Management Activities of Adjacent or Cooperating Agencies: The effects of past actions on or by adjacent or cooperating agencies, such as the Department of Fish and Game or National Park Service, are generally the same in this alternative as in Alternative 1 and 2 – Modified.

In Alternative 3, more trails are at a high development than Alternative 2 – Modified. A small number of these access the NPS, so may have a minor localized effect at those locations. The Pacific Crest Trail would be designated as TC3 in this alternative, making it consistent with contiguous sections of the trail in NPS lands.

Other Trail Uses – Past, Current, and Anticipated: The activities and effects of past, current, and future private hikers and equestrians on trails in these wilderness areas are the same as described in Alternative 2 – Modified.

Regardless of any actions that restrict commercial pack stock operations on trails, the effects of hikers and private pack stock would continue at similar levels under existing controls. The types and levels of use, which would continue to be accommodated under this alternative, would continue to have minor to moderate effects at the wilderness trail system scale, and moderate to isolated severe effects at localized trails.

The actions of reducing or eliminating commercial stock use from certain remote trails may have minor short-term beneficial effects on the trail experience of hikers and/or those seeking a more primitive experience.

Non-wilderness Trails: The cumulative effects on non-wilderness trails are the same as those described in Alternative 2 – Modified.

Alternative 4

Summary of Impacts – Alternative 4

This alternative provides the most restrictive controls to commercial stock use, and limits them to the lowest number of system and use trails. One hundred and seventy-three miles (approximately 18 percent of system) is designated Not Suitable for Commercial Stock (NSCS), effectively confining commercial stock to the 80 percent of higher development (and generally higher use) trails. Forty-three use trails (approximately 30 miles) are approved for commercial stock, and no undefined cross-country routes were approved, so this alternative provides the lowest potential for expansion of use trails. However, there is potential for adverse impacts on the limited number of approved use trails. With no destination controls, there is less predictability of how much use will be present on each system or use trail.

The trail system has the most primitive character, relative to anticipated use types and levels so will provide the least appearance of management intrusion and character that is more primitive. No trails are designated TC4, and over 25 percent of the system is designated TC1. Lower development levels are likely more susceptible to instability, so there is a higher likelihood of adverse physical resource and trail degradation over the long term. The same trails are designated “Not Recommended for [private] Stock” as in Alternatives 3 and 5, providing a clear expectation and better/safer experience to private equestrians.

In this alternative, no trails are eligible for sanding to provide early-season access, so there would be a reduction in impacts on trails and destinations beyond the drifts or passes that would otherwise be sanded. There would likely be an increase in site-specific impacts to trail structures and resources in the immediate trail vicinity from non-commercial equestrians and hikers bypassing snowdrifts.

In remote locations, there would be minor to moderate benefits through reduced conflicts between different user types, as users choose to segregate. It is likely there will be an increase in localized conflicts between users in high-use trail corridors and destinations. On the regional scale, there will be a minor reduction in conflict overall. Over the long term, there will be localized moderate improvements on stability of specific trails and resources with no commercial stock present. At the watershed scale, these improvements would be negligible to minor. In the

long term, the remainder of trails may have minor to moderate adverse localized impacts resulting from inadequate development relative to use levels.

Analysis

As in the other action alternatives, this alternative designates a system of trails considering the desired conditions of destinations within the wilderness areas, as directed by the 2001 Wilderness Plan. The effects are somewhat different. This alternative tends to provide a lower development trail system to reduce the perceived development of trails in wilderness.

The most substantial difference potentially affecting trails in this alternative compared to Alternatives 1 through 3 is that there will be an overall reduction in commercial stock use on the trail system. There would be a 20 percent reduction of commercially served visitors at most trailheads, and slightly larger reductions at certain trailheads where there are greater concerns. This reduction affects the number of visitors served by commercial pack stock, but does not necessarily reduce the number of stock by the same ratio, so actual stock numbers will not likely drop as much as 20 percent. As in Alternative 3, there would be very few other spatial controls that could provide greater predictability for commercial stock numbers at destinations and on each trail.

Table 4.38. Alternative 4 system trail summary

SYSTEM TRAILS SUMMARY AA/JM Wilderness Totals	Alt. 4
Total System Miles	956.4
TC1	244
TC2	393.4
TC3	319
TC4	0

Compared to the no action trail system, the Alternative 4 trail system has eight less total miles. About 48 miles of trails were added to the inventory and about 56 miles of trails were deleted. Additionally, adjustments in trail management levels were made, resulting in 69 miles of trails having an increase in designated trail class, and 427 miles of trails receiving decreased Trail Class (see Table 4.39).

Table 4.39: System trail miles comparison of Alternative 1 and 4

WILDERNESS-SCALE ACTION SUMMARY Compared to No Action	Miles
Added	48
Deleted	56
TC Down	427
TC Up	69

See Tables 2.26 in Chapter 2 for specific actions on each trail by alternative.

In Alternative 4, as in all action alternatives, both forests use the same definitions and more consistent interpretation of trail classes in determining management levels. Additionally, recreation categories and use levels were considered, so a more consistent distribution of trail classes across the wilderness areas is evident in this trail inventory. Some adjustments were made recognizing that a smaller number of trails would be available to commercial stock. Since wilderness use levels on trails on the Sierra National Forest are somewhat lower, trail management levels would also tend to be lower; however, many more trails on the Inyo National Forest were designated as “Not Suitable for Commercial Stock” in this alternative, so a few more trails could be managed at a lower level. In this alternative, the Inyo National Forest total inventory was also reduced 4.5 percent from the no-action inventory, while the Sierra National Forest inventory is increased by 2.5 percent (see Table 4.40).

Table 4.40: Alternative 4 Inyo and Sierra N.F. trail summary

INYO NF Trail Class Summary	Miles	Percent of system	SIERRA NF Trail Class Summary	Miles	Percent of system
TC1	84	20%	TC1	160	29%
TC2	141	34%	TC2	252	46%
TC3	187	45%	TC3	132	24%
TC4	0	0	TC4	0	0
Total	412		Total	544	

In this alternative, Trail Classes are determined based on the same general factors as described in Alternatives 2 and 3, with two additional considerations. First, fewer trails will be used by commercial stock and, as a result, these trails may not require as high a level of development to maintain stability. Secondly, this alternative provides a very primitive trail system—even in areas with moderately high use. The effects of this will depend largely upon the distribution of private equestrian use. Even with the removal of the vast majority of stock from a particular trail, private stock will still be accommodated on the trail, so a standard of development is needed which both provides for adequate travel ability and stability of a trail with continued stock use. In areas with heavy non-commercial equestrian and hiker use and a high recreation category, trails with low development levels would likely become highly degraded and cause moderate to severe localized effects under the anticipated use.

Table 4.41: Alternative 4 system trail class summary by recreation category

Alternative 4	TC1	TC2	TC3	TC4	Total System
RC1	106	72	1	0	179
RC2	133	298	191	0	622
RC3	5	23	127	0	155
Total	244	393	319	0	956

A key consideration in determining trail classes in this alternative is to provide a system of trails that would maximize the primitive character of trails, by limiting development to the lowest possible levels. This alternative minimizes visitor perception of management intrusion, by creating a system of minimally developed trails. This will result in more primitive trails, which may be more difficult to negotiate, but which may add to an increased feeling of remoteness. For other trail users, this alternative may make certain trails exceedingly difficult to travel, especially equestrians or hikers carrying heavy backpacks.

This alternative has the greatest number of trails designated with Trail Classes lower than what currently exists on the ground. For the short-term, this would have minimal effect, but over the long-term—as maintenance and reconstruction are performed at levels lower—trails would likely change character as they degrade from their current condition toward a lesser standard.

Table 4.42: Alternative 4 Inyo and Sierra trail class comparison

Alternative 4 Trail Class compared to Field-Observed level of Development	Miles
Miles of trail designated LOWER than existing development	170
Miles of trail designated HIGHER than existing development	43
Miles of trail designated CONSISTENT with existing development	743

As with undeveloped use trails, system trails with minimal development are more susceptible to catastrophic failure in high-risk areas or when a large climatic event occurs—likely causing resource impacts. Other effects could be increased impacts to physical resources in the trail corridor if trail conditions deteriorate beyond a certain threshold of difficulty, or if structures do not adequately withstand the use types and levels present on the trail. In such cases, it is likely that trail users would be forced to bypass obstacles and particularly rough sections of trail, causing multiple trailing or new trail alignments.

The Pacific Crest Trail will be reduced from a TC4 to a TC3 in this alternative, and (as described in Alternative 3), is not expected to have a material effect on the trail or associated resources, since the trail is currently being managed at a level consistent with the current TC3 definition.

In this alternative, the Mt. Whitney Trail is also reduced from TC4 to TC3. Currently, this trail is managed at a higher development level and more frequently and intensively maintained than any other wilderness trail in the planning area. Due to the extremely high level of overnight and day use present along the entire length of this trail, and the comparatively limited experience that many visitors have, actually managing this trail to a lower level would likely have minor beneficial effects and moderate detrimental resource effects at the trail level.

As described above, the primary potential benefit would be to provide a lower level of perceived management intrusion for those who prefer trails that are more primitive and less managed. It is likely, however, that most Mt. Whitney trail travelers—especially those carrying heavy packs—prefer a well-developed trail, and are less-inclined to feel that a high-development trail is an intrusion on their experience. Because of the nearly constant presence and passing of visitors traveling in both directions on the trail, and the severe terrain through which much of the trail passes, a more primitive trail could actually increase the perception of other visitors being an intrusion on their wilderness experience. In the most severe terrain, nearly constant structural improvement and substantial annual maintenance is needed simply to keep the trail in place.

Reducing this development and management level may lead to a gradual loss of trail infrastructure, increased instability, and moderate impacts to resources in the trail corridor.

In this alternative, fewer system trails would be available to commercial stock than in Alternatives 1 through 3, reducing the direct resource and infrastructure impacts to the trails closed to commercial stock. Approximately 783 miles would be available to commercial pack stock, while roughly 173 miles (almost 20 percent) of system trails would be designated Not Suitable for Commercial Stock (NSCS) (see Table 4.43).

The criteria used to designate additional trails beyond those in Alternatives 2 and 3 as NSCS in this alternative, are based primarily in reducing perceived social conflicts in relatively remote areas, rather than physical resource impacts, and trail stability on these trails. While these trails will have a slight benefit in reduced needs for maintenance, trail and resource stability will generally not see as great a beneficial effect as on those trails where current or potential physical impacts are the primary driver of an action (as in Alternatives 2 and 3).

The primary effect will be a reduction in interaction and potential conflict between commercial stock parties and non-stock-supported parties on certain remote trails and destinations. On trails with no commercial stock, trails would tend to have somewhat less dust and no manure, which would also have a beneficial effect on some hikers. At the wilderness trail system scale, there will likely be a minor beneficial effect, while at specific trails and destinations, the perceived benefits for some would be at least moderate.

The trails that are available to commercial stock would generally be higher development trails in higher use corridors. Since these trails are used heavily by other wilderness visitors, it may concentrate use further, increasing the amount of interaction and conflict between commercial stock parties and non-stock parties in the primary corridors. However, once off these main routes, the opportunities greatly increase for those seeking an experience with minimal or no stock presence, and a more primitive trail experience. Over time, those visitors seeking minimal interaction with stock would likely adjust their trip planning to maximize this experience.

Certain trails designated NSCS in this alternative are primary access routes that provide ingress and egress for loop trips into vast areas west of the sierra crest area, including some trails that have historically and consistently received low to moderate commercial and private equestrian use. Four of the five system trails providing access into the NPS in the JMSE Geographic Unit—Taboose, Sawmill, Baxter, and Shepherd Passes—are closed to commercial pack stock. Kearsarge Pass Trail would be the only trail available to commercial stock to access the Sequoia and Kings Canyon National Parks between Bishop Pass and New Army Pass, a distance of approximately 100-trail miles. These trails would still be maintained adequately to accommodate private equestrians, but stock use would drop substantially, reducing the overall frequency and intensity of maintenance.

The trails and areas west of the crest accessed by these trails would see some reduction in stock use, except where alternative routes provide access from other points. As in all alternatives, if there is an emergency need to evacuate via these routes, they could still be utilized; however, the frequency of this is anticipated to be extremely low.

Table 4.43: Alternative 4 system trails suitability summary

SYSTEM TRAILS SUMMARY AA/JM Wilderness Totals	Number of miles
Total System Miles	956.4
NSCS	173.2
Trails Available to Comm.	783.2
NRFS (Approx)	130

Not Recommended for [private] Stock (NRFS) trails are the same as described in Alternative 3, and the effects would be the same. It appears that slightly fewer trails are designated as NRFS in this alternative, because some of these trails are not on the system inventory in this alternative so would not show as being designated NRFS.

A very small number of use trails are approved for commercial operators in this alternative (see Table 4.1.15). Of 202 use trails (totaling 209 miles), only 43 use trails (totaling 30 miles) are approved. Use trails approved are generally those where analysis showed that the trails would be most stable under the anticipated use. The overall reduction in commercial pack stock visitors may mean a slight overall reduction in commercial stock on use trails as a whole, but distribution of this use is not predictable except where destination quotas are in effect. The reduction in the number of available use trails will likely lead to a slight increase in the numbers of commercial stock on the approved use trails or system spur trails unless controls, such as destination quotas, are in place for the trail's destination.

Certain grazing areas and other destinations will not be accessed by commercial operators in this alternative, so use trails which were formerly used or approved in other alternatives, will not be approved for use in Alternative 4. Also, "use trails" which were not readily found on the ground and had characteristics more like that of a cross-country route are not approved in this alternative. Since these undefined trails currently receive very low use, prohibiting use from them will not likely displace a substantial amount of use or contribute additional effects to more defined use trails. Prohibiting even light use on undefined routes will likely prevent the expansion of additional use trails over time, except for those created by non-commercial users. In this alternative, the average trail density is 0.20 feet (or 2.5") per acre. This is approximately one-third the density of approved use trails in other alternatives.

Table 4.44: Alternative 4 use trails summary

USE TRAILS SUMMARY Wilderness Scale	Use Trails	Est Miles
Use Trails/Miles Addressed	202	209
Approved Trails/Miles	43	30
Prohibited Trails/Miles	153	165
System in this Alternative	6	14

See Table 2.27 in Chapter 2 for specific actions on each use trail by alternative.

In this alternative, sanding would not be allowed on snowdrifts to allow earlier season access to destinations. As in all alternatives, commercial operators would be required to stay on system trails. In this alternative, they would not be allowed to bypass snowdrifts, unless they traveled directly over the snow. This would likely reduce impacts at destinations beyond the passes or drifts since commercial stock would not utilize the destinations until conditions were drier and more stable.

Hikers and private equestrians would still attempt to access the destinations. Private equestrians and hikers would likely cause some increased impact to trail structures and off-trail resources in the immediate vicinity of the drift, while attempting to bypass drifts that would otherwise be cleared. This will result in localized minor to moderate impacts to trail structures and off-trail resources in the immediate area of the snowdrifts. Since hikers and a small number of private equestrians will access the trails, use trails, and campsites at the destinations, there will be some continuing impacts. However, since commercial operators may not get to the destinations until the snow has melted from trails (and destinations will likely have dried out and stabilized), it is likely that there will be a moderate localized reduction of impacts at destination trails and camps.

If snow blocks a key operating area for a commercial operator, use could increase to other areas until the trail becomes passable. This may increase the effects to certain trails and areas that are snow-free, if there is not another control, such as a trailhead or destination quota.

Reconstruction costs will likely be slightly reduced at the time of repairs, or reconstruction if the trails and structures can be built to a lesser standard. For the short-term, less maintenance will need to be performed on some trails, and the interval for maintenance may be extended, which could reduce costs. However, there is a risk that the trail class assigned in this alternative may provide inadequate development to maintain stability under the anticipated use types and levels. Cost benefits may be offset over the long-term by the relative susceptibility of a less-developed trail to damage from natural events and heavy use. This condition would likely drive up annual maintenance needs, deferred maintenance, and costs over time, and ultimately may require repairs that are more extensive after damaging events.

Table 4.45. Alternative 4 annual and backlog maintenance costs

Trail Annual Maintenance Costs AA/JM Wilderness	Alt. 4
Total Estimated Cost	\$379,000
Current Annual Funding	\$170,000
Annual Maintenance Shortfall	\$209,000
Current Backlog (Repairs to Standard)	
Estimated Current Backlog	\$6,820,500

This alternative has the second lowest total trail backlog, at approximately seven million dollars. More trails are closed to commercial stock (almost 20 percent of the system) so certain trails will have fewer maintenance and reconstruction needs.

Table 4.46. Alternative 4 trail summary by geographic unit

Geo Unit	Total system miles – Alt 4	NSCS (Not Suitable for Comm Stock)	Avail to comm. stock	TC1	TC2	TC3	TC4	NRFS (Not Rec. for Private Stock)
AAEA	133.9	15.6	118.3	18.2	51.7	64	0	
AAWE	186.1	3.3	182.8	56.6	103.8	25.7	0	
FICR	163.3	23.3	140	44.4	49.2	69.7	0	
FLBR	70.2	13.6	56.6	35.6	10	24.6	0	
MORO	95.9	16.7	79.2	6.9	47.2	41.8	0	
BIHU	80.8	21.6	59.2	20	24.4	36.4	0	
JMSE	96	59.4*	36.6	37.8	30	28.2	0	
JMSW	130.4	19.4	111	24.7	77	28.7	0	
TOTAL	956.6	172.9	783.7	244.2	393.3	319.1	0	130

Cumulative Impacts—Alternative 4

Other past, present, and future actions, which may have an incremental or added effect when combined with trail-related actions in this alternative, include:

- Funding levels for maintenance and repair.
- Trail maintenance activities and reconstruction projects.
- Unclear past management direction for the wilderness transportation system.
- Management activities of adjacent or cooperating agencies.
- Recreational activities along the borders of these wilderness areas.
- Various different trail user types and levels.

Annual Maintenance and Funding: The effects of historical maintenance performed, and the past inadequate funding levels, is the same in this alternative as in Alternative 1. This leaves both forests with a substantial backlog maintenance load, which would take substantial funding to repair [see description of reconstruction below].

The greatest difference in this alternative is that the future effects of low funding levels on the trail system and resources are substantially reduced. Removal of commercial stock from 20 percent of system trails, removing more low standard trails from the system, and bringing trail classes into better alignment with what's on the ground reduces the need for maintenance, and could allow the deferral of maintenance work and funds to longer maintenance intervals with less effect on trail stability and resources. This beneficial effect is likely to be minor to moderate at the wilderness trail system scale, but may have major beneficial effects at the local level.

This alternative reduces trail classes on 50 percent of the trail system, which would reduce trail expenditures during the short term—especially when doing more substantial repairs, which could then be accomplished at a lower structural development. Over the long-term, however, it is

highly likely that a large number of the trails would not be developed, maintained, or repaired at a level capable of remaining stable with the continuing uses on the system—both commercial and non-commercial. These effects would be almost unnoticeable in the short-term, but would gradually increase over time, causing a higher level of future repair and resource stabilization cost.

Since non-commercial trail use is expected to continue at similar or slightly increased levels, and commercial use will still be present on 80 percent of the system, most impacts to the trail system that have occurred in the past, will continue to have effects on this lower-level trail system. As trails degrade, it is likely that there will be on and off trail effects to resources in the trail corridor. Less developed trails are more susceptible to climatic events and the effects of continued use, leading to erosion, sedimentation, and multiple trailing as stock and hikers bypass deteriorated sections of trail. Over the long-term, these effects would likely be moderate, with localized major impacts.

Reconstruction: The effects of past and current reconstruction efforts and the gradually declining budgets for repairs and reconstruction are the same in this alternative as in Alternative 1. The general effect is that long-term deferrals of maintenance and repairs have led to trail and resource instability that will require extensive investment. The declining funding for such work will make it more difficult to regain lost infrastructure and bring trails to standard.

The effects of implementing a clear management strategy and defined targets for trails on the system are the same as those described for Alternative 2 – Modified and the other action alternatives.

For reconstruction efforts on primary travel corridor (TC3) trails and spur trails in these high-use corridors, the effects should be generally similar to Alternative 2 – Modified, unless any of the spurs are additionally closed to commercial use. These trails would not require as high a scale of structural development for stability, so costs would be slightly reduced at the time of repairs.

Trails, which have degraded in recent decades, would likely be repaired to a lower standard than originally developed. Where use by commercial and non-commercial trail users is controlled or eliminated, this would not lead to instability, and would likely have some minor beneficial effects on wilderness character and resources in the trail corridor. Over the long-term, some trails that had once been primary corridor trails which provide access over the sierra crest (especially in the JMSE area) would likely be repaired to a lower standard than historically, and may become increasingly difficult to travel for all use types.

Past Management Direction for the Wilderness Transportation System: The effects of past inventories with unclear or incorrect direction are the same in this alternative as in Alternative 1. In general, the effect has been to make such direction mostly meaningless, and force trail managers on the forests to manage trails intuitively, with varied success.

As in other action alternatives, the effects of unclear management direction and inconsistent past trail inventories will gradually be corrected in this alternative as trails are managed with the new definitions, and consistently with area direction. In this alternative, there may be some long-term minor to moderate impacts on trails that may have inadequate development for anticipated use types and levels.

Adjacent or Cooperating Agencies: The effects of past actions on or by adjacent or cooperating agencies, such as the Department of Fish and Game or Park Service, are anticipated to be generally the same in this alternative as in Alternative 1.

In this alternative, trails that cross boundaries to contiguous trail systems on the NPS, have been aligned so that there should be a high level of consistency and negligible effects on trails and resources. Four of the five system trails providing access into the NPS in the JMSE Geographic Unit—Taboose, Sawmill, Baxter, and Shepherd Passes—are closed to commercial pack stock. Kearsarge Pass trail would be the only trail available to commercial stock to access the Sequoia and Kings Canyon National Parks between Bishop Pass and New Army Pass, a distance of approximately 100-trail miles. This will clearly affect travel patterns of commercial operators in the Parks, though it is unclear exactly how operators would adapt. It is likely commercial use would increase on trails near Bishop Pass, Kearsarge Pass, Cottonwood, and New Army Pass in order to provide services to some of the same destination in Sequoia and Kings Canyon, and use would decrease in areas immediately west of the four closed passes.

In this alternative, the Pacific Crest Trail is designated Trail Class 3, which is consistent with management by both agencies.

Future management decisions on the National Parks could have effects on the development levels of system trails or commercial activities on the Inyo and Sierra National Forests. These are unknown, and describing potential effects would be merely speculative.

Other Trail Uses—Past, Current, and Anticipated: The activities and effects of past, current, and future private hikers and equestrians on trails in these wilderness areas are the same as described in Alternative 1.

Regardless of any actions, which restrict commercial pack stock operations on trails, the effects of hikers and private pack stock will continue at similar levels under existing controls. The types and levels of use, which would continue to be accommodated under this alternative, will continue to have minor to moderate effects at the wilderness trail system scale, and moderate to isolated severe effects at localized trails.

The actions of reducing or eliminating commercial stock use from a large number of remote trails may have minor to moderate short-term beneficial effects on the trail experience of hikers and those seeking a more primitive experience. With only very rare use of these trails by private equestrians, it is likely that the trails will have less dust and little or no manure, which will improve the trail experience of some.

Non-wilderness Trails: Effects on non-wilderness trails are similar in this alternative as in Alternative 2 – Modified, except that there would be a slightly greater effect, due to greater limitations on wilderness use by commercial operators. There would likely be a displacement of use—primarily day use, but also overnight—to non-wilderness trails. It is expected that commercial operators will continue to access the wilderness areas using the current non-wilderness trail system. Where actions in this document reduce use—especially day use—within wilderness, commercial stock use will likely increase on non-wilderness trails, unless or until future controls are put into place.

These trails tend to be near pack stations and trailheads, where both public and commercial use is already highly concentrated. Most trails in these areas are relatively well developed, in response to a long history of high use, physical effects on the trails and resources are likely to be minor

overall, but may be evident in the need to increase future maintenance efforts—especially on less developed or non-system trails. There is also likelihood that further increases in day use in these already concentrated use areas may cause an increase in conflicts between stock and non-stock groups. The potential effects on the trails and associated resources would likely be minor to moderate at the Forest scale, and would likely result in isolated locally moderate to major trail and resource impacts.

Alternative 5

Summary of Impacts – Alternative 5

In this alternative, with the complete elimination of commercial stock from all trails, one of the contributors of trail-related impacts will not be present on any trail, so matching trail management to desired area management is more tied to the anticipated private use and recreation categories.

This alternative provides a very high consistency of trail management and desired area management. Reductions in overall stock use will result in some reduction in maintenance needs, reconstruction frequency and scale, and overall costs. This will allow mitigation of local resource problems on all trails, resulting in improved trail and resource stability.

The same trails as in Alternative 3 and 4 will be designated “Not Recommended for Stock,” which will provide clear visitor expectations and a better and safer experience for private equestrians. It is likely that private equestrian use will increase slightly, and would be expected to remain mostly on the more developed, comfortable, and stable trail system, which would result in very limited effect on trail or resource stability.

Use trails will not be used by commercial operators, but most will likely continue to be used at slightly lower levels by private equestrians and hikers. There is a lower likelihood for expansion of use trails, and slightly lower intensity of impacts, so some use trails would likely show minor improvement over the long term.

Overall, this alternative would provide a reduced intensity of adverse impacts on physical resources. Over the short term, there would be negligible to minor beneficial impacts, until physical mitigation is actually implemented. In the long term, this mitigation and other trail management would be more effective and long lasting, resulting in a more stable system. User conflicts between equestrians and non-stock users will be nearly eliminated, except in high-use corridors, where minor conflicts between private stock users and non-stock parties may continue.

Analysis

In Alternative 5, no commercial pack stock use would be present on the trail system. This would leave a very small number of privately owned pack and saddle animals using the system—currently estimated at 750 visitors using 1,100 animals each year. This constitutes less than 2 percent of overall current use, and just over 10 percent of the total equestrian use. The actual effect of such a small number of stock (assuming private stock did not increase substantially above current numbers) on the trail system is difficult to quantify, but would likely have very minimal trail infrastructure or resource effect.

Because no commercial stock would be present on 100 percent of the trail system, the resulting effects of stock on the trails would be minimal and on certain trails may cease altogether. Trail

development levels would not generally need to be as high and remain relatively stable, since the vast majority of stock use would cease. Trails would continue to be maintained at levels consistent with the anticipated use types, so non-commercial pack stock would still be allowed and accommodated. Trails which are currently very rugged and remote (and which are not practical for any but the most experienced stock and riders) would likely receive almost no recurring equestrian use, so trail and resource stability would increase over time. As shown in Table 4.47, this allows for the lowest development trail system.

Table 4.47. Alternative 5 system trail summary

SYSTEM TRAILS SUMMARY AA/JM Wilderness Totals	Number of miles
Total System Miles	955.9
TC1	229.6
TC2	417.3
TC3	301.2
TC4	7.8

It is expected private stock use would gradually increase somewhat above current levels since many who prefer to travel in this method, (and would otherwise have used commercial operations), would likely borrow or rent stock for their own use. It is unknown to what extent this use will expand, but the total would likely be considerably lower than current commercial stock levels.

Most private stock users would have somewhat less experience and skills with backcountry stock travel, and would have less knowledge of the specific trails and destinations than commercial packers. It is likely that most private or rented stock use would stay on the higher quality, well-developed trails, as compared to more remote and rugged trail systems. Primary TC3 trails—especially those serving busy trailheads—would still require high development and relatively frequent maintenance. Overall, there would likely be a reduced effect on trails and resources, because of the relative capability of well-developed trails to handle stock use.

Table 4.48: System trail miles comparison of Alternative 1 and 5

WILDERNESS-SCALE ACTION SUMMARY Compared to No Action	Miles
Added	46
Deleted	54
TC Down	421
TC Up	69

See Tables 2.26 in Chapter 2 for specific actions on each trail by alternative

As in Alternative 2, 3, and 4 in this alternative, both forests use the same definitions and more consistent interpretation of trail classes in determining management levels. Additionally, recreation categories and use levels were considered, so a more consistent distribution of trail

classes is evident in this trail inventory. Some adjustments were made recognizing that no commercial stock would be present on the trail system, and that private equestrians would still be present in low numbers. Since wilderness use levels on trails on the Sierra National Forest are somewhat lower, trail management levels would also tend to be lower. In this alternative, the Inyo National Forest total inventory was reduced 4.5 percent from the no action inventory, while the Sierra inventory was increased by 2.5 percent (see Table 4.49).

Table 4.49: Alternative 5 Inyo and Sierra N.F. trail summary

INYO NF Trail Class Summary	Miles	Percent of system	SIERRA NF Trail Class Summary	Miles	Percent of system
TC1	63	15%	TC1	167	31%
TC2	162	39%	TC2	255	47%
TC3	180	44%	TC3	121	22%
TC4	8	2%	TC4	0	0
Total	413		Total	543	

The greatest effect would be in the relative effectiveness and longevity of maintenance actions, which would reduce the long-term costs needed for maintaining the trails most heavily used by commercial stock. This would allow more trails to be maintained at close to their designated standard, improving the conditions for private equestrians and hikers on higher development, primary trails. Over time, it is likely that very little development of trails would be needed in more remote areas, and maintenance would be performed for resource stability. Higher development and maintenance would occur only in the highest recreation category areas.

Table 4.50: Alternative 5 system trail class summary by recreation category

Alternative 5	TC1	TC2	TC3	TC4	Total System
RC1	92	86	1	0	179
RC2	136	306	181	0	623
RC3	2	26	120	8	156
Total	230	418	302	8	958

In Alternative 5, some trails (which would then receive no commercial stock and very little private stock) could be managed at lower development levels than currently exist on the ground. However, since commercial stock make up less than 15 percent of current trail use, and since the majority of this use is on trails already heavily used by other wilderness visitors, most system trails would still require close to the same level of development and trail management.

Table 4.51: Alternative 5 trail class comparison

Alternative 5 Trail Class compared to Field-Observed level of Development	Miles
Miles of trail designated LOWER than existing development	155
Miles of trail designated HIGHER than existing development	52
Miles of trail designated CONSISTENT with existing development	749

Trails which currently receive commercial pack stock use (roughly 80 percent), especially those with moderate to high levels of recurring commercial stock use (50 to 60 percent of the trail system), would see the greatest improvement in condition and in reduced recurring maintenance needed. However, trails which are currently degraded and are subject to many risk factors—especially steepness and connectivity to water sources—would likely continue to degrade or, at best, remain in current condition. Conversely, the 20 percent of system trails, which have received little or no commercial or private pack stock, would see no noticeable change because of this alternative, and will mainly be influenced by trends in continuing hiker use of such trails.

The trails Not Recommended for Stock are the same as described in Alternative 3, and the effects would be the same. Since private equestrians would be the only stock present on the system, and private stock use might increase, this advisory would have an increased importance for educating and advising these trail users who may be less familiar with the trail system. There would be very incidental physical benefit to trail and resource stability, since fewer private stock parties may inadvertently travel these rough trails they may have otherwise avoided.

Table 4.52: Alternative 5 system trails suitability summary

SYSTEM TRAILS SUMMARY AA/JM Wilderness Totals	Alt. 5
Total System Miles	955.9
NSCS	All
Trails Available to Comm.	None
NRFS (Approx)	135

Compared to the trail system proposed in Alternative 1, there are a total of eight fewer miles of trail on the system inventory (see Table 4.52). About 46 miles of trail were added to the inventory and about 54 miles of trail were deleted. Additionally, adjustments in trail management levels were made, resulting in 68 miles of trail having an increase in designated trail class, and 407 miles of trail receiving decreased Trail Class. Since this was done to match conditions on the ground with Recreation Categories and anticipated commercial and private use levels, it is expected that the overall effect will be a more stable system where use is present. There could also be potential reduced costs where unnecessary trails were removed from the system or where management needs are reduced.

In this alternative, the primary factor affecting both the stability and the relative need for development on a trail, other than natural risk factors such as steepness or proximity to water, becomes the amount of non-commercial use by both hikers and equestrians. It is possible for large numbers of hikers to create effects similar to smaller numbers of stock—especially when certain risk factors exist, such as steepness, water connectivity, and loose soils. Currently, many trails are already degraded from the combined effects of past uses and will not improve unless all use is removed or physical mitigation performed. The most likely effect under Alternative 5 is trails, which have already degraded due to the combination of past uses, will continue to be disturbed by foot-traffic and occasional private equestrian use, which will keep vegetation from establishing in the trail tread. This leaves the potential for continued susceptibility to erosion and some resource damage, though somewhat less soil will be loosened and available for transport from the trail way, slowing the rate of degradation.

Commercial stock will not be present in the Ansel Adams and John Muir Wilderness areas under this alternative, so use trails that are currently serving their campsites and grazing areas would no longer be used by many equestrians. Since use levels will be reduced, and most equestrian use would be removed from the use trails, there would likely be some reduction in surface disturbance and soil loss. On a small percent of use trails, it is likely that there would be a slight upward trend in trail and resource stabilization over the long-term. However, most commercial stock operate in areas where there is a high level of other users, so most of the use trails addressed in this analysis will likely continue to be utilized by those other users at some level. Depending upon the level of use on each trail by private equestrians and hikers, most use trails that exist today would likely continue to exist, though many will become less evident over time.

With the reduction of stock use on highly degraded use trails, it is probable that the rate of degradation would slow and the trails would become somewhat more stable. However, current degraded use trails would not likely recover purely by the removal of commercial pack stock until physical mitigation is undertaken. Use trails in areas with many risk factors, whether used by commercial stock or only by other users, will likely continue to degrade. Physical stabilization of use trails will not likely occur during the short-term, as funding appropriate for such stabilization is highly limited and system trail funds cannot be utilized for stabilizing these non-system access routes. Over the long-term, these will gradually be repaired, with an emphasis on those with the greatest continuing resource effect.

Social conflicts between equestrians and non-stock users will be greatly reduced under this alternative, as the remaining private stock use will be considerably lower and more dispersed than current commercial stock use. Additionally, most private equestrians will likely utilize the most improved and least awkward trails of the system, and would probably self-limit their use away from those trails. Over time, hikers seeking an experience with little or no equestrian presence would likely adjust their trip planning to reduce interaction and potential conflict with the remaining private stock.

With the substantial reduction of pack stock, system trails will be subject to fewer impacts, such as those described in “common to all” above, which would otherwise degrade the trail surface and trail structures. In general, there would be reductions in resource effects, such as soil loss and off-trail sedimentation. Additionally, the trails would likely be more stable and easier to walk and ride on with a slightly reduced need for maintenance. This would allow maintenance resources to be allocated at higher levels and greater frequency to trails that currently receive substandard maintenance. This would also result in a reduction in the need for future larger-scale reconstruction efforts.

Table 4.53. Alternative 5 annual and backlog maintenance costs

Trail Annual Maintenance Costs AA/JM Wilderness	Cost
Total Estimated Cost	\$267,500
Current Annual Funding	\$170,000
Annual Maintenance Shortfall	\$97,500
Current Backlog (Repairs to Standard)	
Estimated Current Backlog	\$5,720,000

Alternative 5 has the lowest total maintenance costs, as well as the lowest backlog of heavy maintenance and reconstruction to bring trails to their designated standard. This is attributable to generally lower trail classes—with the rationale described above. With no commercial pack stock on any trails, and likely only small numbers of private stock on mostly higher development primary trails, trails will generally remain stable at lower development levels and lower annual maintenance treatments. It is likely that initial repair and mitigation of effects on resources in the trail corridor would be similar to the other alternatives—approximately three- to four-million dollars.

Long-term financial effects of removing all commercial stock from the wilderness trails would be a slight continuing reduction in maintenance expenditures. The greater cost reduction would be on heavy maintenance and reconstruction efforts over time, since trail structures would tend to last longer without the effects of frequent stock use. It is also likely that there would be somewhat less effect on resources within the trail corridor—primarily off-trail deposits of sedimentation transported by trails, and headcuts originating at trails. Over the long-term, this would reduce future expenditures for off-trail resource stabilization.

Cumulative Impacts—Alternative 5

Other past, present, and future actions, which may have an incremental or added effect when combined with trail-related actions in this alternative, include:

- Funding levels for maintenance and repair.
- Trail maintenance activities and reconstruction projects.
- Unclear past management direction for the wilderness transportation system.
- Management activities of adjacent or cooperating agencies.
- Recreational activities along the borders of these wilderness areas.
- Various different trail user types and levels.

Annual Maintenance and Funding: The effects of historical maintenance performed and the past inadequate funding levels is the same in this alternative as in Alternative 1. This leaves both forests with a substantial backlog maintenance load, which would take substantial funding to repair [see description of reconstruction below].

The greatest difference in this alternative is that the future effects of low funding levels on the trail system and resources are substantially reduced. Removal of commercial stock from all system trails, removing more low standard trails from the system, and bringing trail classes into better alignment with what's on the ground reduces the need for maintenance, and could allow the deferral of maintenance work and funds to longer maintenance intervals with less effect on trail stability and resources. This beneficial effect is likely to be moderate at the wilderness trail system scale, but will likely have major beneficial effects at the local level. These beneficial effects will increase over the long-term.

This alternative reduces trail classes on almost half of the trail system, which would reduce trail expenditures both short and long term—especially when doing more substantial repairs, which could then be accomplished at a lower structural development. Because there would be no commercial stock on any trail, and most private equestrians would be on higher development,

readily maintained trails, the development and maintenance levels in this alternative would be adequate to ensure a stable trail system over the long-term. These actions decrease the effects of reduced funding levels to a minor impact on trails and resources.

Reconstruction: The effects of past and current reconstruction efforts and the gradually declining budgets for repairs and reconstruction are the same in this alternative as in Alternative 1. The general effect is that long-term deferrals of maintenance and repairs have led to trail and resource instability that will require extensive investment. The declining funding for such work will make it more difficult to regain lost infrastructure and bring trails to standard.

The effects of implementing a clear management strategy and defined targets for trails on the system are the same as those described for Alternative 2 – Modified and the other action alternatives.

For reconstruction efforts on primary travel corridor (TC3) trails and spur trails in these high-use corridors, the effects should be generally similar to Alternative 2 – Modified, unless any of the spurs are additionally closed to commercial use. These trails would not require as high a scale of structural development for stability, so costs would be slightly reduced at the time of repairs.

Trails, which have degraded in recent decades, would likely be repaired to a lower standard than originally developed. Based on anticipated use and actions in this alternative, trails would still likely remain stable and adequate for both hikers and equestrians, though more trails would be of a primitive nature.

Past Management Direction for the Wilderness Transportation System: The effects of past inventories with unclear or incorrect direction are the same in this alternative as in Alternative 1. In general, the effect has been to make such direction mostly meaningless, and force trail managers on the forests to manage trails intuitively, with varied success.

As in other action alternatives, the effects of unclear management direction and inconsistent past trail inventories will gradually be corrected in this alternative as trails are managed with the new definitions, and consistently with area direction.

Adjacent or Cooperating Agencies: The effects of past actions on or by adjacent or cooperating agencies, such as the Department of Fish and Game or Park Service are anticipated to be generally the same in this alternative as in Alternative 1.

In this alternative, trails that cross boundaries to contiguous trail systems on the NPS, have been aligned so that there should be a high level of consistency and negligible effects on trails and resources. All trails leading to contiguous NPS trails would be closed to commercial stock. Many of these trails are long, rugged trails, and would probably have very little private equestrian use. This would likely have a minor beneficial effect on trails and resources in the trail corridors of NPS trails in the localized areas near the Forest boundaries.

In this alternative, the Pacific Crest Trail is designated Trail Class 3, which is consistent with its management by both agencies. Conditions of the PCT in the Parks would likely improve due to the elimination of commercial stock accessing it from the Forests.

Future management decisions on the National Parks could have effects on the development levels of system trails or commercial activities on the Inyo and Sierra National Forests. These are unknown, and describing potential effects would be merely speculative.

Other Trail Uses—Past, Current, and Anticipated: The activities and effects of past, current, and future private hikers and equestrians on trails in these wilderness areas are the same as described in Alternative 1.

Regardless of any actions that restrict commercial pack stock operations on trails, the effects of hikers and private pack stock will continue at similar levels under existing controls. The types and levels of use, which would continue to be accommodated under this alternative, will continue to have minor to moderate effects at the wilderness trail system scale, and moderate to isolated severe effects at localized trails.

The actions of reducing or eliminating commercial stock use from a large number of remote trails may have minor to moderate short-term beneficial effects on the trail experience of hikers and/or those seeking a more primitive experience. With only very rare use of these trails by private equestrians, it is likely that the trails will have less dust and little or no manure, which will improve the trail experience of some.

Non-wilderness Trails: Potential savings in trail expenditures on wilderness trails may allow additional maintenance work to be performed on non-wilderness system trails. If use did not change from current levels, this would help to create a more stable and enhanced non-wilderness trail system.

It is likely in the Alternative 5 scenario, that commercial use would be displaced to non-wilderness trails—primarily for day rides. Certain areas and trails would also provide overnight trail opportunities, and it is likely that additional maintenance funds would be expended to keep the non-wilderness trails stable under the anticipated increased use. There is also likelihood that further increases in day use in these already concentrated use areas may cause an increase in conflicts between stock and non-stock groups. It is likely that future controls would be necessary on pack station operations to ensure that physical resource impacts and social conflicts in these non-wilderness areas do not increase beyond an acceptable level.

These trails tend to be near pack stations and near trailheads, where both public and commercial use is already highly concentrated. Most trails in these areas are relatively well developed, in response to a long history of high use, so physical effects on the trails and resources are likely to be minor overall, but may be evident in the need to increase future maintenance efforts—especially on less developed or non-system trails. Non-system trails that currently receive incidental use may need to be added to the transportation system in future years. The potential effects on the trails and associated resources would likely be moderate at the Forest scale, and would result in isolated locally moderate to major trail and resource impacts.

Geographic Scale

The project file includes a geographic unit-level summary of system and use trails and use trail densities. These summaries include the following:

- System Trails Summary—Miles of trail-by-trail class and NSCS by alternative for each geographic unit.
- Use Trail Summary—Miles of use trail by alternative for each geographic unit.
- Use Trail Density—Densities of use trails per acre by geographic unit.

4.1.4 Heritage Resources and American Indian Concerns

Methodology

The specific methodology used in this analysis is provided in the Strategy for Compliance with Section 106 of the National Historic Preservation Act for Issuance of Special Use Permits for Pack Station Operations on the Inyo and Sierra National Forests. The strategy defines the area of potential effect, inventory methods, and determination of which resources are being impacted by the undertaking.

Context: The context of the impact considers whether the impact would be local or regional. For the purposes of this analysis, local impacts would be those that occur at site-specific locations within the wilderness. Regional impacts would be impacts to the entire wilderness, American Indian tribes, and communities with traditional cultural ties to the wilderness, and the academic community.

Intensity: The intensity of the impact considers whether the impact will be negligible, minor, moderate, or major.

Intensity of impact to heritage resources depends upon the data or commemorative value they contain and the extent of disturbance. If the resource is also traditional cultural sites, intensity considers access by traditional users and inappropriate use by others.

Duration: The duration of impacts is considered at short- and long-term scales. Impacts to resources of interest are irreversible and therefore long-term. Impacts to traditional plant collection areas may be short-term or long-term.

Type of Impact: Impacts to heritage resources were evaluated in terms of whether the impact is an adverse effect. An adverse effect is any action that alters the characteristics of a heritage resource that qualify it for eligibility to the National Register of Historic Places. Impacts to traditionally used plants are dealt with in the Biological Environment section.

Heritage Resources—Introduction

A number of Section 106 compliance documents (i.e., Archaeological Reconnaissance Reports, Cultural Resources Reports, and Heritage Resources Reports) and other reports were written about the Area of Potential Effects (APE) prior to the development of the Wilderness Programmatic Agreement. Work for the current analysis has focused on additional inventory, monitoring site condition, and updating vintage site records. Some sub-surface testing was conducted in the Mono Trail Corridor.

On the Sierra National Forest, data were collected on the location and condition of heritage sites during the 2000 through 2004 field seasons, resulting in intensive coverage of the majority of the APE. On the Inyo National Forest, work focused on rapid assessment conducted for the Cumulative Effects Analysis on both forests. This work included monitoring the condition of previously recorded sites and preliminary recording of newly discovered sites. Additional Section 106 work will be required. However, with four years of monitoring results and intensive inventory and rapid assessment data, sufficient information is available to determine the effects of the various alternatives on heritage resources. Specific inventory, evaluation, and assessment needs are identified in the Programmatic Agreement: Identification, Evaluation and Treatment of

Historic Properties within the Area of Potential Effect of Pack Station Operations on the Inyo and Sierra National Forests, California and Nevada.

A total of 506 individual heritage sites were found in the APE. Some of these are elements of historic landscapes and Traditional Cultural Properties (TCP) under consideration.

Methodology Discussion

Four steps will be taken to determine the effects of alternatives on heritage resources and the actions that will be taken to mitigate adverse effects:

1. Is the heritage resource a Resource of Interest?
2. Is the Resource of Interest affected by the alternative?
3. What is the nature of the effect?
4. What is the appropriate management option?

Resources of Interest

Resources of Interest are those heritage resources that may be affected by pack station operations and trail use. In 2001, a monitoring program was instituted to examine heritage resources in the wildernesses for condition and evidence of impacts. Over 300 sites were monitored. As can be seen in Table 4.54, impacts found were confined to some site types.

Table 4.54 Heritage monitoring results

Heritage Resource Type	Impacts	Resource of Interest
Historic trash dumps	Impacts noted near pack camps.	Yes
Historic drift fences	Removal will affect historic drift fences.	Yes
Historic mines	None noted.	No
Historic buildings	None noted.	No
Historic Dendroglyphs	None noted.	No
Historic & Prehistoric Rock structures (historic & prehistoric)	Structural elements removed for modern fire rings.	Yes
Heritage Resource Type	Impacts	Resource of Interest
Prehistoric Rock Art	None noted.	No
Prehistoric obsidian quarries & workshops	Trampling, erosion, soil compaction at campsites & in holding areas, disturbance of surface constituents, sub-surface disturbance in campsites, introduction of recent carbon in campsites, introduction of chemicals through manure spreading.	Yes
Sparse lithic scatters	Same as above	Yes
Prehistoric habitation sites	Same as above	Yes

Based on this analysis, Resources of Interest are historic trash dumps, rock structures, drift fences over 50-years old, and all prehistoric sites with the exception of rock art. Traditional American Indian values are discussed below.

It should be noted that archaeologists and historians also rely on fens and tephra deposits as sources of information about past environments and climates. Impacts to fens and soils are dealt with in other sections.

Historic Properties

Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies to consider the effects of their actions on historic properties. These are defined in the implementing regulations of the NHPA (36 CFR 00.16.1[1]): “Historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.”

Of the 506 known heritage resources within the APE, 458 were found to be Resources of Interest; 359 (88 percent) on the Sierra National Forest and 99 (22 percent) on the Inyo National Forest. For purposes of this analysis, Resources of Interest will be assumed historic properties as defined above unless further analysis demonstrates otherwise.

A table containing information on the Resources of Interest, including the effects of the alternatives, is available in the project record.

Type of Effect

Impacts to Resources of Interest may or may not constitute “adverse effects.” An adverse effect is one that diminishes the characteristics of a historic property that qualify it for inclusion in the National Register. Generally, these characteristics include integrity, association with important people and events, outstanding or the only remaining examples of architecture, etc., and scientific value (36 CFR 60).

We have classified effects as ambiguous and potentially adverse. Ambiguous effects are actions, which appear not to have an adverse effect on Resources of Interest; however, the current state of knowledge is not sufficient to positively state that such is the case. They comprise of dispersed grazing, existing trails going through sites in which it appears that continued trail use by either hikers or stock will not cause further impacts, and concentrated use (e.g., camping) near Resources of Interest.

Potentially adverse effects are those actions that directly affect Resources of Interest. Whether the impact is an adverse effect may require additional analysis in some cases. In some cases, consideration will be made regarding effects to the site as it stands alone and as it may contribute to a larger historic property type such as the Mono Trail Corridor TCP.

Table 4.55 provides a breakdown of the effects of particular pack station operations and trail use on Resources of Interest.

Table 4.55 Effects on resources of interest

Activity	Effect
Trail use	Ambiguous Effects/Potential Adverse Effects: Continued use in and of itself does not appear to be an adverse effect. Where use contributes to erosion, etc. there are adverse effects. Where the trail is of poor quality or blocked, thereby forcing detours, additional impacts may occur. Proximity to trails provides access to sites, some of which have backpacker camps on them.
Lunch stops, etc.	Potential Adverse Effects
Campsites	Potential Adverse Effects
Holding Areas	Potential Adverse Effects
Watering Areas	Potential Adverse Effects
Dispersed grazing	Ambiguous Effects

In addition to potentially adverse and ambiguous effects, there are heritage resources for which the impacts are not yet known, and heritage resources that are receiving no impacts from pack station operations or trail use.

Our present state of knowledge indicates that there are no impacts to 134 (29 percent) of the Resources of Interest, 86 (19 percent) are receiving potentially adverse effects, and 180 (39 percent) are in areas of ambiguity. Additional analysis will be required to determine whether impacts are occurring to 58 (13 percent) Resources of Interest (Table 4.1.20).

Management Options

Ambiguous Effects: A monitoring program to test the hypothesis that these impacts are not adverse effects will be designed when the final alternative is chosen. A representative sample will be chosen of Resources of Interest and effect type.

Adverse Effects: Where potential adverse effects to sparse lithic scatters are found, the Forests may make use of the CARIDAP: California Archaeological Resource Identification and Data Acquisition Program: Sparse Lithic Scatters (Jackson et al. 1988).

Where potential adverse effects to other Resources of Interest occur, one of the management options provided for in the Wilderness PA (VI)(a)(2) will be employed. These are:

- (a) No action, where after consulting with the PA parties, a Forest Supervisor determines that protective actions are inappropriate or infeasible;
- (b) Relocating or redirecting activities and programs causing impacts;
- (c) Capping or covering sites with earth, rock, plants, or plants that hold the soil and discourage excavation or other appropriate material;
- (d) Monitoring disturbance and intervention to halt, limit, or correct such disturbance;
- (e) Monitored deterioration without intervention;
- (f) Educational and interpretive use consistent with the Wilderness Act;
- (g) Law enforcement;
- (h) Stabilization; and

(i) Data recovery.

An implementation and monitoring program to monitor site condition and the effectiveness of mitigation measures will be designed when the final alternative is chosen. A representative sample of resource types, impacts, and mitigation measures will be chosen.

Unknown Effects: The treatment of unknown effects will be monitoring and conducting an assessment of effect. Assessment of effect will range from a review of existing information to data recovery depending upon the resource type and its location to pack stock operations and trail use.

Wilderness Scale

Analysis

Direct impacts include camping on sites, removal of structural elements of historic and prehistoric rock structures for campfire rings, trampling of flaked stone artifacts, loss of horizontal and vertical integrity due to erosion caused by soil compaction, loss of site constituents due to illegal collection, excavation into sites for latrines, and introduction of recent carbon and other chemical elements into site deposits.

Indirect effects to heritage resources include all the above activities that take place near but not directly on Resources of Interest. Impacts may be less severe but sufficiently damaging to warrant managerial treatment to reduce or eliminate impacts. Indirect effects also include illegal collection, excavation, and vandalism.

Adverse effects caused by illegal artifact collection and vandalism cannot be assigned to any one user group or activity. Evidence of illegal collection at prehistoric sites was found throughout the two wildernesses. This impact may be mitigated through educational partnerships between the Forests and the commercial stock packers and public education directed toward backpackers and day-use recreationalists.

Cumulative Impacts

A number of past actions have had impacts on existing heritage resources and, in some cases, given rise to new ones such as Gem Lake Dam, a significant historic structure. Past actions have also affected traditional Native American uses. Dam and water impoundments have caused inundation of heritage resources, traditionally used travel corridors, and plant collection areas, with continuing impacts to sites along shorelines through wave action and the raising and lowering of water levels. Mines and cabins appear to have had less impact to prehistoric sites and traditional activities. Grazing hugely affected the Sierran environment in the 19th century and affected the presence and abundance of traditionally used plants. Historic grazing that adversely affected prehistoric sites may be assumed based on the observed effects of modern grazing impacts. Where existing adverse effects are allowed to continue there will be a downward trend in heritage values, e.g., site integrity, data potential, and character.

Geographic Scale

Alternative 1

Analysis

The number and types of Resources of Interest impacted under this alternative are presented in the table below.

Because pack station operations may expand beyond existing areas, and all camps are open for use, new adverse effects may occur. Evidence of this is seen in holding areas that are spreading out. Removal of drift fences will require historic evaluation.

Table 4.56 Alternative 1 effects to resources of interest by geographic unit

Analysis Unit	Potential Adverse Effect	Ambiguous Effect	Unknown	No Effect	total
Ansel Adams East	21	45	5	14	85
Ansel Adams West	13	38	16	49	116
Fish Creek/Convict/McGee	18	20	5	15	58
Rock Creek/Mono Creek	25	26	8	16	75
Bishop/Humphreys	5	15	4	13	37
Florence/Bear	1	19	16	23	59
John Muir SW	2	16	3	4	25
John Muir SE	1	1	1	0	3
Total	86	180	58	134	458
	18.78%	39.30%	12.66%	29.26%	100.00%

Cumulative Impacts

The constant expansion of the effects of pack station operations will result in the loss of additional heritage values, leading to a wilderness-wide loss of prehistoric information. This would be particularly tragic because the area has received so little scientific study.

Alternative 2—Modified, Alternative 2, and Alternative 3

Analysis

With designated overnight camping and holding areas for pack station operations, adverse effects will be more confined and easier to mitigate. Impacts from trail use and non-commercial campsites will continue.

Drift fences scheduled for removal will require historic evaluation.

The following table summarizes the impacts of Alternatives 2 and 3 on heritage resources.

Table 4.57 Alternatives 2—Modified, 2 and 3 effects to resources of interest by geographic unit

Analysis Unit	Potentially Adverse Effects	Ambiguous Effects	Unknown Effects	No Effect	total
Ansel Adams East	22	45	4	14	85
Ansel Adams West	13	38	16	49	116
Fish Creek/Convict/McGee	18	20	5	15	58
Rock Creek/Mono Creek	25	26	8	16	75
Bishop/Humphreys	5	15	4	13	37
Florence/Bear	1	20	16	22	59
John Muir SW	2	16	3	4	25
John Muir SE	1	1	1	0	3
total	87	181	57	133	458
	19.00%	39.52%	12.45%	29.04%	100.00%

Cumulative Impacts

Where existing impacts are allowed to continue there will be a downward trend in heritage values.

Alternative 4

Analysis

With designated overnight camping, holding areas, and spot and dunnage sites for pack station operations, adverse effects will be even more confined and more easily mitigated. Impacts from trail use and non-commercial campsites will continue. Drift fences scheduled for removal will require historic evaluation.

The following table summarizes the impacts of Alternative 4 on heritage resources.

Table 4.58 Alternative 4 effects to resources of interest by geographic unit

Analysis Unit	Potentially Adverse	Ambiguous Effects	Unknown Effects	No Effect	total
Ansel Adams East	21	45	5	14	85
Ansel Adams West	13	38	16	49	116
Fish Creek/Convict/McGee	18	20	5	15	58
Rock Creek/Mono Creek	19	29	9	18	75
Bishop/Humphreys	3	17	4	13	37
Florence/Bear	1	20	16	22	59
John Muir SW	2	16	3	4	25
John Muir SE	1	1	1	0	3

Analysis Unit	Potentially Adverse	Ambiguous Effects	Unknown Effects	No Effect	total
total	78	186	59	135	458
	17.03%	40.61%	12.88%	29.48%	100.00%

Alternative 5

Analysis

With commercial packing removed from the project area, there will be a substantial decrease in impacts to Resources of Interest, however impacts from private stock and backpacking will continue.

The following table summarizes the impacts of Alternative 5 on heritage resources.

Table 4.59 Alternative 5 Effects to effects to resources of interest by geographic unit

Analysis Unit	Potentially Adverse Effects	Ambiguous Effects	Unknown Effects	No Effect	total
Ansel Adams East	8	42	8	27	85
Ansel Adams West	8	39	19	50	116
Fish Creek/Convict/McGee	11	24	5	18	58
Rock Creek/Mono Creek	13	32	11	19	75
Bishop/Humphreys	2	16	5	14	37
Florence/Bear	0	21	16	22	59
John Muir SW	0	18	3	4	25
John Muir SE	1	1	1	0	3
total	43	193	68	154	458
	9.39%	42.14%	14.85%	33.62%	100.00%

American Indian Concerns Common to All Alternatives

Analysis

While tribal communities may not focus on the scientific value as much as the archaeologist, they assign cultural value of all prehistoric and some historic sites. In addition to historic sites, there are traditionally used plants, collecting areas, and spiritual and cultural use areas impacted. The sacredness of some areas and access by traditional users may be affected by too many visits and activities by the public.

Areas of special American Indian concern are Blayne Hot Springs and Iva Bell Hot Springs sacred sites, Summit Lake mythological area, Hutchinson Meadow traditional meeting site, Quail Meadow basketry material gathering area, and the Bloody Canyon, Mono, Piute, and Taboose Pass traditional trails.

In the Ansel Adams East Analysis Unit, a Traditional Cultural Property evaluation of the Bloody Canyon Trail needs to be prepared and a management plan developed to protect traditional values and ensure access to traditional users.

In the Ansel Adams East and Bishop/Humphreys Analysis Units, a Traditional Cultural Property evaluation and management plan for the Mono Trail Corridor has been prepared and its recommendations included in this analysis.

In the Rock Creek/Mono Analysis Units, a traditional gathering area of *Carex* sp. in Quail Meadow (Second Recess Analysis Units) requires protection from grazing impacts.

In the Florence/Bear Analysis Units, the Summit Lake area in the Dutch Analysis Unit, and Blayney Hot Springs in Sallie Keyes Analysis Unit are areas of traditional cultural value.

Access to the Taboose Pass trail in Taboose Analysis Unit and Kearsarge Pass trail in Kearsarge Analysis Unit for traditional uses will be protected.

In addition to prehistoric sites, there are traditionally used plants and collecting areas impacted by current use. The sacredness of some areas may be affected by too many visits and activities. On the positive side, traditional activities and access by elders to traditional areas is facilitated by pack stock.

Cumulative Impacts

Unabated adverse effects to prehistoric sites also affect traditional cultural values and erase the landscape history of native people. Impacts to spiritual and cultural use areas, as well as traditionally used plants, adversely affect the ability of the people to practice traditional lifeways. Degradation of what the western world terms “wilderness values” affects the sacred quality of the wilderness to Native Americans.

Downward trend in heritage values, potential loss of sacred character of sacred sites. A discussion of plants is provided in the Botany section.

4.1.5 Socioeconomics and Operations

The impacts analysis evaluated two separate socioeconomic areas, the regional economy, and the pack station operators. Quantitative analysis of potential effects on socioeconomic conditions was measured with the IMPLAN model. In addition, professional judgment was applied to reach reasonable conclusions as to the context, intensity, and duration of potential impacts. The analysis identified how potential management actions under each alternative would affect operations operated by the primary permittees.

Context: The context of the impact considers whether the impact would be local or regional. For the purposes of this analysis, local impacts would be those that occur within the wilderness and cities and towns surrounding it. The regional impacts are the impacts at the county-level scale. As discussed in the analysis, the context for a majority of the effects analysis will be at the regional scale. There is little data available at the local scale.

Intensity: The intensity of the impact considers whether the impact would be negligible, minor, moderate, or major. Negligible impacts were effects considered not detectable and would have no discernible effect on the socioeconomic environment. Minor impacts were effects on the socioeconomic environment that would be slightly detectable but would not be expected to have an overall effect. Moderate impacts would be clearly detectable and could have an appreciable effect. Major impacts would have a substantial, highly noticeable influence on the socioeconomic environment and could permanently alter the socioeconomic environment. These designations, negligible, minor, moderate, and major are used to describe both beneficial and adverse impacts

Duration: The duration of the impact considers whether the impact would occur in the short term or the long term. A short-term impact would be temporary in duration and would be associated with transitional types of activities. A long-term impact would have a permanent effect on the socioeconomic environment.

Type of Impact: Impacts were evaluated in terms of whether the impact would be beneficial or adverse to the socioeconomic environment. Beneficial socioeconomic impacts would improve the social or economic conditions in the affected region. Adverse socioeconomic impacts would negatively alter social or economic conditions in the affected region.

Wilderness Scale – Summary of Effects

Alternative 1

This alternative will continue 2001 Wilderness Plan management and lift the 20 percent court-ordered reduction in use. This will likely lower some of the costs to commercial pack stock operations and may allow some increase in revenue. The regional economy will experience negligible economic gain from this revenue increase. Under this alternative, there are no known effects to the social environment.

Alternative 2 Modified

This alternative will provide some modest opportunities for growth in pack station revenue (compared to Alternative 1), but will also implement a number of controls that will likely increase the costs to pack stations providing commercial services in the Ansel Adams and John

Muir Wildernesses. Cost increases are likely to be minimal-to-moderate and long-term. This will likely push the costs of commercial pack stock supported trips higher than their current levels. Compared to the No Action alternative, the regional economy will likely experience increased employment and labor income contributions from commercial pack stock operations. When compared to the economy as a whole, however, these increases are likely to be negligible-to-minor. Under this alternative, there are no known effects to the social environment.

Alternative 2

For Alternative 2, the operations and economic effects are expected to be similar to that for Alternative 2 – Modified. There are no known social effects associated with Alternative 2.

Alternative 3

For Alternative 3, the operations and economic effects are expected to be similar to that for Alternative 2 – Modified. There are no known social effects associated with Alternative 3.

Alternative 4

This alternative will impose restrictions on commercial pack stations that will likely cause the greatest cost increases when Alternatives 1 through 4 are compared. Compared to Alternative 2 – Modified and Alternatives 2 and 3, Alternative 4 will likely result in decreased commercial pack stock related employment and labor income contributions. The effects to the regional economy are expected to be negligible and virtually undetectable. There may be some minor social effects as some low income groups find the price of commercial packs stock trips have increased to unaffordable levels.

Alternative 5

This alternative eliminates commercial pack stock in the Ansel Adams and John Muir Wildernesses. With this alternative, there will be no commercial pack stock related labor income and employment contributions to the regional economy. The effect of this is likely to be minor and long-term. There may be some social effects associated with this alternative. Groups and individuals that rely upon commercial pack stock to access the wilderness will experience major effects. Likewise, those that have close ties to the historical and cultural significance of pack stock in the wilderness will experience major effects (although there is no abolishment of private stock under this alternative). Conversely, others will approve of the elimination of commercial pack stock in the wilderness and will likely believe that their wilderness experience will be enhanced.

Introduction

This section combines the operations and economics section and discusses the effects of the six alternatives on the regional economy and the operations of the pack stations. First, using the IMPLAN model, the regional economic contribution of pack station operations of Alternatives 1 through 5 will be analyzed. The alternatives will be compared using labor income and employment figures. Next, the impact of the six alternatives on the operations of the pack stations will be analyzed. Lastly, using reported pack station revenue figures, use numbers, and prices of various pack supported services, the impacts of the six alternatives on the public's

demand for the service will be examined. A short discussion of the social effects of the six alternatives will follow the economic and operations analysis.

This discussion focuses on the wilderness activities of the pack stations. Most, if not all, of the pack stations also have activities on non-wilderness lands that are not analyzed in the discussion below.

Regional Economic Analysis—All Alternatives

Analysis

The Impact Analysis for Planning (IMPLAN) model was used in Chapter 3 to provide the baseline or current economic contribution of commercial pack station operations. The economic analysis in Chapter 3 is at the county scale; reliable economic data is generally available at this scale. Reliable economic data is generally not available at the city or town scale. In Chapter 3, then, the economic analysis is at the county scale and it reveals that commercial pack stations make up a relatively small percentage of labor income and jobs in the project area.

It is important to note that while at the county scale, impacts to commercial pack station operations would not cause a noticeable effect to county economies; the changes to this baseline may be profoundly felt in small communities located in close proximity to a pack station. Big Pine, California, a small town in Eastern Sierra Nevada (population 1,200), for example, is located close to Glacier Pack Station. Glacier Pack Station employs a handful of full time and seasonal employees and in 2003 serviced 437 people. Although this is considered a small pack station in terms of gross revenue and people serviced, the economy of Big Pine will surely feel the economic impact to Glacier Pack (both in terms of local employment and visitor spending) more profoundly than the county as a whole. The drawback of an analysis at the county scale is that these localized economic impacts go virtually undetected.

The IMPLAN model will be used to determine the economic impact of the different alternatives. As discussed in Chapter 3, this model is a standard input/output model. For this project, the inputs needed to determine the economic contribution of commercial pack stations is the gross revenue generated by commercial pack stations and the number of people serviced by the operations. The output is the number of jobs and labor income generated from commercial pack station activities.

Table 4.60 shows the number of people serviced and gross revenue figures for the east and west side pack stations. The five alternatives that permit commercial pack stock have different control mechanisms to regulate use and these mechanisms are not easy to compare to one another. The intent of the analysis is to determine the maximum number of people that may be served under each alternative. In order to generate the number of overnight people serviced for Alternatives 1 and 4, the overall service day numbers were used. To reflect the average night stay of commercial pack clients, the service day number was divided by two. This number was added to the day ride service day allocations. For Alternative 2 – Modified, a range of economic impacts are given. The range is derived from the description of Alternative 2 – Modified which provides an overnight range of 3,000 to 5,500 clients and a day use range of 3,000 to 4,000 clients. In Alternatives 2 and 3, the stock number threshold is used and multiplied by .58 (the average number of stock per person in a party) to generate the total number of people serviced. This number is added to the day use numbers provided for Alternatives 2 and 3. To generate the gross revenue of all the pack stations, the overnight people serviced number is multiplied by \$250 (the

average cost per person of an individual utilizing overnight pack station services) and the day ride number is multiplied by \$100 (the average amount of money spent for day ride commercial pack services). Table 4.60 shows these calculations and the total number of people serviced under each alternative and the expected gross revenue to the pack stations from these clients.

Table 4.60 Overnight people serviced and gross revenue by alternative

	Alternative 1	Alternative 2 - Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
East Side Pack Stations						
People Serviced	10,750 (13,300 service days /2 + 4,100 day rides)	6,000-9,500 (3,000-5,500 overnight + 3,000-4,000 day rides)	11,001 (Seasonal Stock Threshold 10950 x .58 + 4650 day rides)	10,216 (Seasonal Stock Threshold 9510 x .58 + 4700 day rides)	8320 (10,640 service days/2 + 3000 day rides)	0
Gross Revenue	\$2,072,500 (6,650 x \$250/person + 4,100 x \$100/person)	\$1,050,000-\$1,775,000 (3,000-5,500 x \$250 + 3,000-4,000 x \$100)	\$2,052,750 (6,351 x \$250 + 4,650 x \$100)	\$1,849,000 (5,516 x \$250 + 4,700 x \$100)	\$1,630,000 (5320 x \$250 + 3000 x \$100)	\$0
West Side Pack Stations						
People Serviced	2,028 (2855 service days/2 + 600 day rides)	Included above in Alternative 2 – Modified	3,191 (Seasonal Stock Threshold 3605 x .58 + 1100 day rides)	3,158 (Seasonal Stock Threshold 3980 x .58 + 850 day rides)	1,492 (2284 service days/2 + 350 day rides)	0
Gross Revenue	\$417,000 (1428 x \$250/person + 600 x \$100/person)	Included above in Alternative 2 – Modified	\$632,750 (2091 x \$250 + 1100 x \$100)	\$662,000 (2308 x \$250 + 850 x \$100)	\$320,500 (1142 x \$250 + 350 x \$100)	\$0

Using the IMPLAN model, the labor income and employment by alternative were determined. Both the labor income and employment numbers were generated using the gross revenue figures from above and taking the people serviced, dividing by two (the average party size on the forest) and multiplying that number by the average spending per party as described in the Spending Profiles of National Forest Visitors report. This study identifies the average spending per party as approximately \$200 per day. The IMPLAN model determines the labor income and employment contributions of commercial pack station wilderness-based activities. The gross revenue of pack stations and the public's spending associated with the visit (on gas, lodging, food, etc.) are inputted into the model. Both the labor income and employment figures represent the results from the combined contribution of direct, indirect, and induced pack station related spending.

Table 4.61 Labor income and employment contribution by alternatives

	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
East Side Pack Stations						
Labor income (in dollars from gross revenue and visitor spending)	\$2,177,162	\$1,157,523-\$1,893,490	\$2,191,203	\$2,003,921	\$1,669,052	\$0
Employment (in number of jobs from gross revenue and visitor spending)	118.9	62.5-103.1	119.3	108.8	93.1	0
West Side Pack Stations						
Labor income (in dollars from gross revenue and visitor spending)	\$477,306	Included above in Alternative 2 – Modified	\$740,306	\$749,058	\$357,440	\$0
Employment (in number of jobs from gross revenue and visitor spending)	18.5	Included above in Alternative 2 – Modified	28.6	29	13.8	0

As shown in Table 4.61, Alternative 2 provides the greatest economic contribution to the east side project area—\$2,191,203 in labor income and 119 direct, indirect, and induced jobs created. By comparison, the east side project area, in 2000, had 19,176 jobs and total personal income of \$783,593,000. Comparing these numbers to those of Alternative 2 shows that pack station activities are a small percentage of the overall county economy (approximately .3 percent of the total county employment and approximately .4 percent of total personal income).

In the west side project area, in 2000, there were a total of 270,482 jobs and \$20,218,630,000 in total personal income. In Alternative 3 (the alternative with the greatest labor income and employment numbers), the economic contribution of the pack station industry is .01 percent of total project area employment and .004 percent of total personal income. Again, these economic outputs reflect inputs that may overstate the number of clients serviced under each alternative. The intent of the analysis is to provide a maximum labor income and employment number for each alternative.

Similarly, under Alternative 2 – Modified commercial pack stations provide a small percentage of the personal income and employment when compared to overall county numbers. For the entire project area, the employment contribution of commercial pack stations is .02 to .04 percent of all employment. In terms of labor income, commercial pack station operations make up .006 to .009 percent of the income for the entire project area.

The discussion above needs to be balanced with the uncertainty associated with how all the various components and mechanisms in the alternatives will interact. Alternative 2 – Modified, for example, has a number of mechanisms to control commercial pack station use. Exactly how a destination quota, combined with a grazing zone strategy, along with a maximum stock in the wilderness at one time, concept will affect the pack stations' gross revenue is difficult to determine. Likewise, the effect of these mechanisms on the public's use of the service is difficult to quantify. It may be that the operators can pass their increased costs of doing business on to consumers in the form of increased prices and there will be no effect to the public's demand for

the service. It may also be, however, that increased costs associated with the alternatives cannot be passed on to the customer and will be simply absorbed by the business.

The discussion below focuses on the impact of the alternatives on various aspects of the commercial pack station operations. These impacts are discussed in a context of how the alternatives affect the overall costs and ultimately the gross revenues of the commercial pack stations. No attempt is made to quantify the effects that these alternatives may have on the costs and gross revenue of commercial packers. Rather, the discussion centers on portions of the commercial pack station business that would expect to see increased costs as a result of the six alternatives. Likewise, where the alternatives provide opportunities for revenue growth, these opportunities are also discussed.

Effects to Operations—All Alternatives

Analysis

Methodology: A team of Forest Service employees, including auditors, was assembled to analyze and determine the impact that the six alternatives would have on the operations and the revenue stream of commercial pack station operators. This analysis had several steps. First, all known records of commercial pack stock use and operations data were assembled and examined. Next, the six alternatives were thoroughly reviewed and analyzed. These alternatives were deconstructed to determine the individual components that might effect pack station operations and revenue. The following components were identified and analyzed using the indicators (see indicators below):

- Use Levels and Stock Numbers
- Grazing Management
- Trail Suitability
- Campsites
- Campfires

Once the components of each alternative were identified, indicators were developed that would help measure the impact of a particular alternative component on pack station revenue or operations. These indicators were also used as a means to compare and contrast the alternatives. The team concluded that the following operational indicators would effectively measure the differences between alternatives and their effects to commercial pack stock operations.

- Number of employees
- Number of stock (including training, veterinarian care, shoeing, stock-related facilities, tack)
- Stock support needs while in wilderness (including additional animals to pack in feed and/or holding facilities)
- Truck transportation to alternative trailheads (including fuel costs, contracting for transportation services, and cost of time for transport)
- Revenue (overall expected increase or decrease in revenue)

To analyze the operations at an industry scale, the team determined that current and proposed pack stock operations fall into three “complexity” groups. These complexity groups are high complexity, moderate complexity, and low complexity. Of the twenty-one current or proposed commercial pack stock operations eight are low complexity, eight are moderate complexity, and five are high complexity.

Eight low complexity operations had these practices in common:

- largest proportion of business is day rides, dunnage, and/or spot trips
- generally operate within a discrete area, utilizing trailheads closest to pack station base facility; trucking seldom used to access these main trailheads
- generally service groups of 8 to 10 clients per trip, very seldom maximize allowed party size and stock numbers
- generally hold less than 50 head of stock at the base facility for overall operation (including wilderness, non-wilderness, and other lands)
- minimal to no (less than 5 percent of trips) holding stock overnight in the wilderness
- grazing of stock within wilderness not critical to, and is not used, for current operations

Eight moderate complexity operations had these practices in common:

- largest proportion of business is day rides, dunnage, and/or spot trips
- generally operate within a discrete area, utilizing trailheads closest to pack station base facility; trucking may be used to access these main trailheads
- generally service groups of 8 to 10 clients per trip, maximize allowed party size and stock numbers a few trips per year
- generally hold between 50 to 100 head of stock at the base facility for overall operation (including wilderness, non-wilderness, and other lands)
- moderate to minimal (20 to 30 percent of trips) holding stock overnight in the wilderness
- grazing of stock within wilderness not critical to current operations, though it is a benefit when grazing can be utilized

Five high complexity operations had these practices in common:

- extensive operating area, use of in-house or commercial trucking to access distant trailheads
- often maximizes allowable group size and stock numbers
- generally higher percentage of business (relative to other pack stations) are full service as opposed to day rides, dunnage, and/or spot trips
- generally hold more than 100 head of stock at the base facility for overall operation (including wilderness, non-wilderness, and other lands)
- extensive (greater than 30 percent of trips) holding stock overnight in the wilderness
- grazing of stock both inside and outside wilderness critical to current operations

The indicators were used to analyze the various components of the alternatives and determine whether the component would, for example, increase or decrease the number of employees needed. Each alternative is discussed and analyzed in terms of the impact to low, moderate, and high complexity operations. Alternative 1 is the baseline alternative (and, essentially, the current situation) and all other alternatives are compared to it.

Summary of Operational and Expected Revenue Changes for All Alternatives

A full analysis of the expected effects to operations and revenues is available at the end of the section. Comparing alternatives, the following proposed management components are likely to result in no measurable change to commercial pack stock operations or expected revenue: primary operating areas and trail suitability for system and user trails (with the exception of Alternative 4 which does not allow commercial pack stock on some trails currently utilized by these operations).

Comparing alternatives, the proposed grazing strategy is likely to result in the greatest change to commercial pack stock operations (specifically, the high complexity operations). This change will likely take the form of packing in more feed with an increased number of stock and employees needed for the average overnight trip. Increased costs associated with increased stock and employees per trip will likely result in a decrease in net revenue.

Operational Changes by Alternative

Alternative 1 should result in no measurable operational changes. The removal of the court-ordered 20 percent reduction, however, may increase gross revenue.

In Alternative 2 – Modified, the following components are likely to result in the greatest change to commercial pack stock operations and expected revenue:

- Destinations quotas/management
- Maximum stock in the wilderness at one time limit
- Grazing Strategy
- Decreased group size at identified locations
- Campfire policy

In Alternative 2 the following components are likely to result in the greatest change to commercial pack stock operations and expected revenue:

- Destination quotas
- Grazing strategy
- Decreased group size at identified locations
- Campfire policy

In Alternative 3 the following components are likely to result in the greatest change to commercial pack stock operations expected revenue:

- Decreased group size at identified locations
- Grazing strategy

In Alternative 4 the following components are likely to result in the greatest change to commercial pack stock operations expected revenue:

- Day ride allocation
- Service day allocation
- Trailhead quotas (no borrowing)
- Decreased party size
- Designated campsites
- Grazing strategy
- Trail Suitability

In Alternative 5, the elimination of commercial pack stock operations in the project area will severely affect operations and expected revenue.

Results of Operations Effects Analysis

The indicators were used to analyze the various components of the alternatives and determine whether the component would, for example, increase or decrease the number of employees needed. Each alternative is discussed and analyzed in terms of the impact to low, moderate, and high complexity operations. Alternative 1 is the baseline alternative (and, essentially, the current situation) and all others alternatives are compared to it.

Alternative 1

Low Complexity Operations:

Determination: No change in number of employees, number of stock, wilderness stock support, or transportation practices is expected. Availability of temporary service day pool (unassigned service days) allows for some flexibility in meeting market demand if grazing and other resource concerns are within prescribed standards. No increase or decrease in revenue is expected.

Moderate Complexity Operation:

Determination: No change in number of employees, number of stock, wilderness stock support, or transportation practices is expected. Availability of temporary service day pool (unassigned service days) allows for some flexibility in meeting market demand, if grazing and other resource concerns are within prescribed standards. No increase or decrease in revenue is expected.

High Complexity Operation:

Determination: No change in number of employees, number of stock, wilderness stock support, or transportation practices is expected. Availability of temporary service day pool (unassigned service days) allows for some flexibility in meeting market demand, if grazing and other resource concerns are within prescribed standards. No increase or decrease in revenue is expected.

Alternative 2 – Modified

Low Complexity Operations:

Change in number of employees, number of stock, stock support in wilderness, and/or transportation needed:

1. Determination: No change in number of employees, stock, or transportation needs expected as a result of the institution of destination quotas, limits on the number of stock in the wilderness at one time, party size of 15 to 25, grazing strategy, system and user trail suitability determinations, or overnight stock holding campsite designations. No increase or decrease in revenue is expected.

Rationale: In general, even though destination quotas should be less restrictive than trailhead quotas for total number of trips available, the maximum number of stock in the wilderness at one time limit are likely to result in no operational changes compared to Alternative 1. Low complexity operations rarely expand their use outside existing “operating areas,” rarely reach the 15 to 25 party size limit, and as a rule, do not utilize overnight campsites or overnight stock grazing in the project area. Most of the trails identified as “not suitable for commercial stock” have minimal or no current pack station use, although there are some significant exceptions, particularly in the John Muir Southeast Geographic Unit.

2. Determination: If fully utilized by operators in this category, day ride use allocations and the campfire policy in this alternative could result in an opportunity for increased revenue for commercial pack station operations.

Rationale: In general, these operators would realize an increase in allocated day use days (from those described in Alternative 1). Expanding the business in this arena would result in increased need for both employees and number of stock. Allowing pack station operators case-by-case exceptions to the elevation fire closure and the ability to have charcoal fires above the current 10,000 foot closure in Alternative 1 is likely to draw customers who want campfires at higher elevations, resulting in increased number of employees and stock to provide for additional clients and presumably a potential increase in revenue for pack stations.

Moderate Complexity Operation:

Change in number of employees, number of stock, stock support in wilderness, and/or transportation needed:

1. Determination: No change in number of employees, stock, or transportation needs expected as a result of the institution of day-ride allocations, destination quotas, limits on the number of stock in the wilderness at one time, party size of 15 to 25, system and user trail suitability determinations, or overnight stock holding campsite designations. No increase or decrease in revenue is expected.

Rationale: In general, day-ride allocations remain similar to those allocated in Alternative 1. Even though destination quotas should be less restrictive than trailhead quotas for total number of trips available, the maximum number of stock in the wilderness at one time limit are likely to result in no operational changes compared to Alternative 1. Generally, moderately complex operations rarely service clients in areas outside the assigned destination management zones. There is no expected change in transportation operations. Most of the trails identified as “not

suitable for commercial stock” have minimal or no current pack station use, although there are some significant exceptions, particularly in the John Muir Southeast Geographic Unit.

Designated campsites are those identified with historic use and should not limit or increase business operations.

2. Determination: If fully utilized by operators in the moderate complexity category, instituting the campfire policy in this alternative could result in an opportunity for increased revenue for commercial pack station operations.

Rationale: By allowing pack station operators case-by-case exceptions to the elevation fire closure and the ability to have charcoal fires above the current 10,000 foot closure in Alternative 1 is likely to draw customers who want campfires at higher elevations, resulting in increased number of employees and stock to provide for additional clients.

3. Determination: Grazing strategy identified in Alternative 2 – Modified may require an increased number of employees and wilderness stock support. While this will likely increase costs for commercial pack stations, it is unknown if revenue would decrease or remain stable.

Rationale: In general, moderate complexity pack station operations do not rely on overnight grazing in the project area. However, grazing limitations proposed in Alternative 2 – Modified are nonetheless likely to require more wilderness pack stock support, including increased employee time supervising grazing stock to keep them out of sensitive meadow areas and the need to pack feed in for stock where grazing nights are not available. Since most of these operators, either graze little or pack in feed as a matter of business, implementing these grazing limitations may require a few additional pack stock and additional employees to manage the stock. Furthermore, Alternative 2 – Modified proposes to rest, rather than close, approximately ten meadows. These meadows will be reevaluated for grazing suitability in three to five years. If these meadows are reopened to grazing, commercial operators may find they need to pack less feed into some areas.

High Complexity Operation:

Change in number of employees, number of stock, stock support in wilderness, and/or transportation needed:

1. Determination: No change in number of employees, stock, or transportation needs expected as a result of Alternative 2 – Modified day ride allocation, institution of destination quotas, limits on the number of stock in the wilderness at one time, party size of 15 to 25, system and user trail suitability determinations, or overnight stock holding campsite designations. No increase or decrease in revenue is expected.

Rationale: In general, day-ride allocations remain similar to those allocated in Alternative 1. Even though destination quotas should be less restrictive than trailhead quotas for total number of trips available, the maximum number of stock in the wilderness at one time limit are likely to result in no operational changes compared to Alternative 1. Instituting destination management for pack station operators in this category may reduce some flexibility, but since there is some allowance made for all-expense trips, this concept should not result in either more or fewer employees or stock. The majority of trails identified as “not suitable for commercial stock” have minimal or no current pack station use. Designated campsites are those identified with historic use and should not limit or increase business operations.

2. Determination: If fully utilized by operators in the high complexity category, institution of the campfire policy in this alternative should result in an increased number of employees and stock. An increase in revenue could be realized.

Rationale: Allowing pack station operators case-by-case exceptions to the elevation fire closure and the ability to have charcoal fires above the current 10,000 foot closure in Alternative 1 is likely to draw customers who want campfires at higher elevations, resulting in increased number of employees and stock to provide for additional clients and presumably a potential increase in revenue for pack stations.

3. Determination: Grazing strategy identified in Alternative 2 – Modified will likely result in increased number of employees and will result in increased stock numbers. While this will undoubtedly drive costs up, it is unknown if revenue would decrease or remain stable.

Rationale: In general, moderate complexity pack station operations do not rely on overnight grazing in the project area. However, grazing limitations proposed in Alternative 2 – Modified are nonetheless likely to require more wilderness pack stock support, including increased employee time supervising grazing stock to keep them out of sensitive meadow areas and the need to pack feed in for stock where grazing nights are not available. Since most of these operators, either graze little or pack in feed as a matter of business, implementing these grazing limitations are likely to be a small change in business operations but may require a few additional pack stock and additional employees to manage the stock. Alternative 2 – Modified proposes to rest, rather than close, approximately ten meadows. These meadows will be reevaluated for grazing suitability in three to five years. If these meadows are reopened to grazing, commercial operators may find they need to pack less feed into some areas.

Alternative 2

Low Complexity Operations:

Change in number of employees, number of stock, stock support in wilderness, and/or transportation needed:

1. Determination: No change in number of employees, stock, or transportation needs expected as a result of Alternative Two's institution of destination quotas, seasonal and daily stock number limits, primary operating areas, party size of 15 to 25, grazing strategy, system and user trail suitability determinations, or overnight stock holding campsite designations. No increase or decrease in revenue is expected.

Rationale: In general, even though destination quotas should be less restrictive than trailhead quotas for total number of trips available, daily trailhead stock number limits and seasonal stock total limits are likely to result in no operational changes compared to Alternative 1. Low complexity operations rarely expand their use outside existing "operating areas," rarely reach the 15 to 25 party size limit, and as a rule, do not utilize overnight campsites or overnight stock grazing in the project area. Most of the trails identified as "not suitable for commercial stock" have minimal or no current pack station use, although there are some significant exceptions, particularly in the John Muir Southeast Geographic Unit.

2. Determination: If fully utilized by operators in this category, day ride use allocations and the campfire policy in this alternative could result in an opportunity for increased revenue for commercial pack station operations.

Rationale: In general, these operators would realize an increase in allocated day use days (from those described in Alternative 1). Expanding the business in this arena would result in increased need for both employees and number of stock. Allowing pack station operators to provide firewood and firepans for clients above the current 10,000' closure in Alternative 1 is likely to draw customers who want campfires at higher elevations, resulting in increased number of employees and stock to provide for additional clients.

Moderate Complexity Operation:

Change in number of employees, number of stock, stock support in wilderness, and/or transportation needed:

1. Determination: No change in number of employees, stock, or transportation needs expected as a result of Alternative Two's institution of day ride allocations, destination quotas, seasonal and daily stock number limits, implementation of primary operating area, party size of 15 to 25, system and user trail suitability determinations, or overnight stock holding campsite designations. No increase or decrease in revenue is expected.

Rationale: In general, day ride allocations remain similar to those allocated in Alternative 1. Even though destination quotas should be less restrictive than trailhead quotas for total number of trips available, daily trailhead stock number limits and seasonal stock total limits are likely to result in no operational changes compared to Alternative 1. Generally, moderately complex operations rarely service clients in areas outside the proposed primary operating areas. The relatively small number of trips outside the primary operating area would be accounted for by the allowance of unassigned trips in the destination quota in Alternative 2. There is no expected change in transportation operations. Most of the trails identified as "not suitable for commercial stock" have minimal or no current pack station use, although there are some significant exceptions, particularly in the John Muir Southeast Geographic Unit.

Designated campsites are those identified with historic use and should not limit or increase business operations.

2. Determination: If fully utilized by operators in the moderate complexity category, instituting the campfire policy in this alternative could result in an opportunity for increased revenue for commercial pack station operations.

Rationale: By allowing pack station operators to provide firewood and firepans for clients above the current 10,000' closure, Alternative 1 is likely to draw customers who want campfires at higher elevations resulting in an increased opportunity for revenue for commercial operators.

3. Determination: Grazing strategy identified in Alternative 2 may require an increased number of employees and wilderness stock support. While this will likely increase costs for commercial pack stations, it is unknown if revenue would decrease or remain stable.

Rationale: In general, moderate complexity pack station operations do not rely on overnight grazing in the project area. However, grazing limitations proposed in Alternative 2 are nonetheless likely to require more wilderness pack stock support, including increased employee time supervising grazing stock to keep them out of sensitive meadow areas and the need to pack feed in for stock where grazing nights are not available. Since most of these operators, either graze little or pack in feed as a matter of business, implementing these grazing limitations may require a few additional pack stock and additional employees to manage the stock.

High Complexity Operation:

Change in number of employees, number of stock, stock support in wilderness, and/or transportation needed:

1. Determination: No change in number of employees, stock, or transportation needs expected as a result of Alternative 2 day ride allocation, institution of destination quotas, seasonal and daily stock number limits, implementation of primary operating area, party size of 15 to 25, system and user trail suitability determinations, or overnight stock holding campsite designations. No increase or decrease in revenue is expected.

Rationale: In general, day ride allocations remain similar to those allocated in Alternative 1. Even though destination quotas should be less restrictive than trailhead quotas for total number of trips available, daily trailhead stock number limits and seasonal stock total limits are likely to result no operational changes compared to Alternative 1. Instituting primary operating areas for pack station operators in this category may reduce some flexibility, but since primary operating areas, in some cases, can be shared by high complexity operations, this concept should not result in either more or fewer employees or stock. No change in transportation operations because number of trips requiring stock to be hauled distant trailheads in Alternative 1 should be accommodated in the allowance for unassigned trips in the destination quotas for Alternative 2. The majority of trails identified as “not suitable for commercial stock” have minimal or no current pack station use. Designated campsites are those identified with historic use and should not limit or increase business operations.

2. Determination: If fully utilized by operators in the high complexity category, institution of the campfire policy in this alternative should result in an increased number of employees and stock. An increase in revenue could be realized.

Rationale: Allowing pack station operators to provide firewood and firepans for clients above the current 10,000’ closure in Alternative 1 is likely to draw customers who want campfires at higher elevations resulting in increased number of employees and stock to provide for additional clients.

3. Determination: Grazing strategy identified in Alternative 2 will likely result in increased number of employees and will result in increased stock numbers. While this will undoubtedly drive costs up, it is unknown if revenue would decrease or remain stable.

Rationale: In general, high complexity pack station operations rely heavily on overnight grazing to provide needed feed for their stock. Limitations on grazing nights are likely to require more wilderness pack stock support operations, including increased employee time supervising grazing stock to keep them out of sensitive meadow area and the need to pack feed in for stock where grazing nights are not available. For these operators, changing from a high percentage of grazing to a substantial increase in packed feed will require additional pack stock and additional employees to manage the stock.

Alternative 3

All Operations:

Except in some areas of concern, Alternative 3 represents a 25 percent increase over the highest client numbers from the last eight years. The alternative attempts to lower the stock/client ratio.

The intention is to increase the number of clients serviced while lowering the number of stock used to service those clients. If this stock/client ratio can be lowered, there is an opportunity for increased revenues for the commercial operators.

Also in this alternative, the commercial packers have a separate quota that is essentially the same as now thereby eliminating the competition for quota between the packers and other outfitter/guides.

Low Complexity Operations:

Change in number of employees, number of stock, stock support in wilderness, and/or transportation needed:

1. Determination: No change in number of employees, stock, or transportation needs expected as a result of Alternative 3's implementation of the daily trailhead quota for number of people, seasonal thresholds for number of clients and stock, some destination quotas, primary operating area, party size of 15 to 25, grazing strategy, system and user trail suitability determinations, overnight stock holding campsite designations or campfire policy. No increase or decrease in revenue is expected.

Rationale: Daily quota for people serviced by commercial pack stock has decreased at some trailheads, but since operators are able to borrow from the next day's quota for larger groups sizes, no change for low complexity operations is expected. Seasonal thresholds were determined based on reported high use in the past four years and should not result in an increase or decrease in operations. Institution of some destination quotas are not likely to result in a change in operations due to the lack of restriction on areas that remain available for commercial pack stock use. In general, low complexity operations rarely service clients outside exiting "operating areas". These operations rarely reach the 15 to 25 party size limit and as a rule, do not utilize overnight campsites or overnight stock grazing in the project area. The majority of trails identified as "not suitable for commercial stock" have minimal or no current pack station use. Since the proposed campfire policy would only apply to full service trips, and these operations rarely provide full service trips, it is unlikely business operations would change.

2. Determination: If fully utilized by operators in this category, day ride use allocations in this alternative should result in an increased number of employees and stock. An increase in revenue could be realized.

Rationale: In general, these operators would realize an increase in allocated day use days (from those described in Alternative 1). Expanding the business in this arena could result in increased revenue for the operations.

Moderate Complexity Operation:

Change in number of employees, number of stock, stock support in wilderness, and/or transportation needed:

1. Determination: No change in number of employees, stock, or transportation needs expected as a result of Alternative Three's day ride allocation, daily trailhead quota for number of people, seasonal thresholds for number of clients and stock, some destination quotas, implementation of primary operating area, system and user trail suitability determinations, or overnight stock holding campsite designations. No increase or decrease in revenue is expected.

Rationale: Although day ride allocations seem to increase compared to those in identified in Alternative 1, the increased allocation should be accommodated without increasing employees, stock, or transportation operations. The quota is unlikely to change operations, as operators are able to borrow from the next day's quota for larger group size. This borrowing should also allow for the accommodation of smaller groups that would otherwise push the total number over the daily trailhead quota. In addition, in some cases a separate commercial pack stock quota would be established, which would result in less competition with either the public or non-stock commercial outfitters. Seasonal and daily thresholds were determined based on reported high use in the past four years and should not result in an increase or decrease in operations. Institution of some destination quotas are not likely to result in a change in operations due to the lack of restriction on areas that remain available for commercial pack stock use. Most moderately complex operations rarely service clients in areas outside the proposed primary operating areas. The majority of trails identified as "not suitable for commercial stock" have minimal or no current pack station use. Designated campsites are those identified with historic use and should not limit or increase business operations.

2. Determination: If fully utilized by operators, institution of the proposed campfire policy in Alternative 3 could result in a slight increase number of employees, stock, and stock support. This policy may also increase operational flexibility by adding destination areas that would be more attractive to clients wanting campfires. An increase in revenue could be realized.

Rationale: Allowing pack station operators to provide firewood and firepans for full service trips above the current 10,000' closure in Alternative 1, is likely to draw new full service customers who want campfires at higher elevations. If maximized, this new business opportunity should result in an increased opportunity for revenue.

3. Determination: Party size of 15 to 25 is limited further at specified locations in the project area. This rationing could result in a decrease in number of employees, stock, and stock support. A decrease in revenue could be expected.

Rationale: Some of the identified locations where party/stock size is further limited are relatively long distances in from the base operations. Longer trips are more cost effective when the operator can maximize the number of clients. A reduction in the number of clients to these areas is likely to reduce the number of employees, stock and stock support for moderate complexity operations.

4. Determination: The grazing strategy identified in Alternative 3 should result in increased number of employees. It is unknown if revenue would decrease or remain stable.

Rationale: In general, moderate complexity pack station operations do not rely on overnight grazing in the project area. However, grazing limitations proposed in Alternative 3 are nonetheless likely to require more wilderness pack stock support, including increased employee time supervising grazing stock to keep them out of sensitive meadow areas and the need to pack feed in for stock where grazing nights are not available. Since most of these operators, either graze little or pack in feed as a matter of business, implementing these grazing limitations are likely to be a small change in business operations but may require a few additional pack stock and additional employees to manage the stock.

High Complexity Operation:

Change in number of employees, number of stock, stock support in wilderness, and/or transportation needed:

1. Determination: No change in number of employees, stock, or transportation needs expected as a result of Alternative 3 day ride allocation, seasonal thresholds for number of clients and stock, some destination quotas, implementation of primary operating area, system and user trail suitability determinations, or overnight stock holding campsite designations. No increase or decrease in revenue is expected.

Rationale: In general, day ride allocations are a slight decrease from those allocated in Alternative 1. Seasonal and daily thresholds were determined based on reported high use in the past four years and should not result in an increase or decrease in operations. Institution of some destination quotas are not likely to result in a measurable change in operations due to the lack of restriction on areas that remain available for commercial pack stock use. Instituting primary operating areas for pack station operators in this category may reduce some flexibility, but since primary operating areas can be shared in some cases affecting high complexity operations, designating primary operating areas should not result in either more or fewer employees or stock. The majority of trails identified as “not suitable for commercial stock” have minimal or no current pack station use. Designated campsites are those identified with historic use and should not limit or increase business operations.

2. Determination: If fully utilized by operators, institution of the proposed campfire policy in Alternative 3 could result in a slight increase number of employees, stock, and stock support. This policy may also increase operational flexibility by adding destination areas that would be more attractive to clients wanting campfires. An increase in revenue could be realized.

Rationale: Allowing pack station operators to provide firewood and firepans for full service trips above the current 10,000 foot closure in Alternative 1, is likely to draw new full service customers who want campfires at higher elevations. If maximized this new business opportunity should result in an increased opportunity for increase pack station revenue.

3. Determination: Grazing strategy identified in Alternative 3 should result in increased number of employees and stock, and will result in increase stock support. It is unknown if revenue would decrease or remain stable.

Rationale: In general, high complexity pack station operations rely heavily on overnight grazing to provide needed feed for their stock. Limitations on grazing nights are likely to require more wilderness pack stock support operations, including increased employee time supervising grazing stock to keep them out of sensitive meadow areas, and the need to pack feed in for stock where grazing nights are not available. For these operators, changing from a high percentage of grazing to a substantial increase in packed in feed will require additional pack stock and additional employees to manage the stock.

4. Determination: Daily trailhead quota for number of people is decreased at some trailheads used mostly by high complexity operations. Party size of 15 to 25 is limited further at specified locations in the project area. Both could result in a decrease in number of employees, stock, and stock support. A decrease in revenue could also be expected.

Rationale: Daily quota for people serviced by commercial pack stock decreased at some trailheads, but there is no longer competition for quota. Borrowing on the next day’s quota

provides some level of flexibility for the operations. Some of the identified locations where party/stock size is further limited are relatively long distances in from the base operations. Longer trips are more cost effective when the operator can maximize the number of clients. A reduction in the number of clients to these areas is likely to reduce the number of employees, stock and stock support for high complexity operations.

Alternative 4

Low Complexity Operations:

Change in number of employees, number of stock, stock support in wilderness, and/or transportation needed:

1. Determination: No change in number of employees, stock, or transportation needs expected because of Alternative 4, day ride allocations, party size of 12/20, institution of primary operating areas, grazing strategy, system and user trail suitability determinations, or campfire closure policy. No increase or decrease in revenue is expected.

Rationale: Day ride allocations in Alternative 4 for low complexity operations change slightly from those in Alternative 1, no change in business operations should result. Low complexity operations service few parties over 12 people. In general, these pack stations rarely expand operations outside existing “operating areas” within the project area. These operations rarely utilize overnight campsites or overnight stock grazing in the project area. The majority of trails identified as “not suitable for commercial stock” have minimal or no current pack station use. Elevation campfire closures represent no change from current operations.

2. Determination: Allocated service days, trailhead quotas, campsite designations proposed in this alternative are likely to reduce number of employees and stock. Decrease in revenue could also be expected.

Rationale: Without alternative areas to provide overnight services outside the project area, the proposed decrease in overnight service days is likely to result in a concomitant decrease in operations. Compared to Alternative 1, Alternative 4 proposes decreases in overnight service days and daily quota for approximately 40 percent of trailheads in the project area. In addition, the practice of borrowing quota from the following day to allow for parties larger than the daily quota (but within the maximum group size limit) is no longer allowed. Since campsite designations include overnight, spot, and dunnage sites, the loss of flexibility and freedom to clients to choose a campsite would likely negatively affect business operations and expected revenue. Low complexity operations often have few employees and stock, these restrictions would likely reduce these operations even further.

Moderate Complexity Operation:

Change in number of employees, number of stock, stock support in wilderness, and/or transportation needed:

1. Determination: No change in number of employees, stock, or transportation needs expected as a result of Alternative 4, institution of primary operating areas, system and user trail suitability determinations, or campfire closure policy. No increase or decrease in revenue is expected.

Rationale: Most moderately complex operations rarely service clients in areas outside the proposed primary operating areas. The majority of trails identified as “not suitable for commercial stock” have minimal or no current pack station use. Designated campsites are those identified with historic use and should not limit or increase business operations. Elevation campfire closures represent no change from current operations.

2. Determination: The proposed 20 percent decrease in overnight service day allocation and variable (from 10 percent to over 100 percent) decreases in day use allocation is likely to result in a decrease in number of employees and stock, stock support and transportation operations to distant trailheads. Trailhead quotas, party size limitations, and campsite designations proposed in this alternative are likely to reduce number of employees and stock. A decrease in revenue could be expected.

Rationale: Without alternative areas to provide both day use overnight services outside the project area, the proposed decreases in both day use and overnight service days is likely to result in a concomitant decrease in operations. Compared to Alternative 1, Alternative 4 proposes decreases in daily quota for approximately 40 percent of trailheads in the project area. In addition, the practice of borrowing quota from the following day to allow for parties larger than the daily quota (but within the maximum group size limit) is no longer allowed. Without alternative areas to provide service these operations are likely to lose the business of larger groups completely thereby reducing the number of employees and stock needed. Over night stock holding campsites would be reduced and spot and dunnage trips would be allowed only at designated sites. This would result in the loss of flexibility to the operator and freedom of choice for the clients. This is expected to negatively affect business operations and expected revenue.

3. Determination: Grazing strategy identified in Alternative 4 should result in increased number of employees. It is unknown if revenue would decrease or be stable.

Rationale: In general, moderate complexity pack station operations do not rely on overnight grazing in the project area. However, grazing limitations proposed in Alternative 4 are none-the-less likely to require more wilderness pack stock support, including increased employee time monitoring grazing stock to keep them out of sensitive meadow areas and the need to pack feed in for stock where grazing nights are not available. Since most of these operators, either graze little or pack in feed as a matter of business, implementing these grazing limitations are likely to be a small change in business operations, but may require a few additional pack stock and additional employees to manage the stock.

High Complexity Operation:

Change in number of employees, number of stock, stock support in wilderness, and/or transportation needed:

1. Determination: No change in number of employees, stock, or transportation needs expected as a result of Alternative 4 institution of primary operating areas, system and user trail suitability determinations, or campfire closure policy. No increase or decrease in revenue is expected.

Rationale: Instituting primary operating areas for pack station operators in this category may reduce some flexibility, but since primary operating areas can be shared in some cases affecting high complexity operations, designating primary operating areas should not result in either more or fewer employees or stock. The majority of trails identified as “not suitable for commercial

stock” have minimal or no current pack station use. Elevation campfire closures represent no change from current operations.

2. Determination: General decreases in day use allocation, the proposed 20 percent decrease in overnight service day allocation, and campsite designations are likely to result in a decrease in number of employees and stock, stock support and transportation operations to distant trailheads. Trailhead quotas and party size limitations proposed in this alternative are likely to reduce number of employees and stock. A decrease in revenue could also be expected.

Rationale: Without alternative areas to provide both day use overnight services outside the project area, the proposed decreases in both day use and overnight service days is likely to result in a concomitant decrease in operations. Compared to Alternative 1, Alternative 4 proposes decreases in daily quota for approximately 40 percent of trailheads in the project area. In addition, the practice of borrowing quota from the following day to allow for parties larger than the daily quota (but within the maximum group size limit) is no longer allowed. Without alternative areas to provide service these operations are likely to lose the business of larger groups completely thereby reducing the number of employees and stock needed. Over night, stock holding campsites would be reduced and spot and dunnage trips would be allowed only at designated sites. This would result in the loss of flexibility to the operator and freedom of choice for the clients. This is expected to negatively affect business operations and expected revenue.

3. Determination: Grazing strategy identified in Alternative 4 should result in increased number of employees and stock, and will result in increase stock support. It is unknown if revenue would decrease or remain stable.

Rationale: In general, high complexity pack station operations rely heavily on overnight grazing to provide needed feed for their stock. Limitations on grazing nights are likely to require more wilderness pack stock support operations, including increased employee time supervising grazing stock to keep them out of sensitive meadow areas, and the need to pack feed in for stock where grazing nights are not available. For these operators, changing from a high percentage of grazing to a substantial increase in packed in feed will require additional pack stock and additional employees to manage the stock.

Alternative 5

Low Complexity Operations:

Assumption: similar business opportunities do not become available or are not authorized on alternative lands therefore a decrease or cessation of revenue can be expected.

Change in number of employees needed: Most low complexity operations need few if any employees outside the business owners/operators. These businesses would not have the margin to reduce employees further and still maintain an intact business.

Change in number of stock needed: Fewer, and in some cases no stock would be needed to meet client demand.

Change in stock support within wilderness: No change from Alternative 1, as most Low Complexity operations do not provide support to (feed, etc.) for overnight stock holding.

Change in transportation (trucking/hauling) practices: No change from Alternative 1, as most Low Complexity operations do not rely on trucking of stock to distant trailheads.

Moderate Complexity Operation:

Assumption: similar business opportunities do not become available or are not authorized on alternative lands therefore a decrease or cessation of revenue can be expected

Change in number of employees needed: Number of employees would decrease in relation to that portion of the business reliant on client services in the project area. Some operations would be unable to hire any employees beyond the owner/operator. Some operations would not have the margin to reduce employees further and still maintain an intact business.

Change in number of stock needed: Fewer, and in some cases no stock would be needed to meet client demand.

Change in stock support within wilderness: No stock support would be needed within the project area.

Change in transportation (trucking/hauling) practices: No hauling of stock would be needed to reach distant trailheads accessing the project area.

High Complexity Operation:

Assumption: If similar business opportunities do not become available or are not authorized on alternative lands, a decrease or cessation of revenue can be expected.

Change in number of employees and stock needed: Severe reduction of employees for operations with no alternatives to use in the project area.

Change in stock support within wilderness: No stock support will be needed in the project area.

Change in transportation (trucking/hauling) practices: No hauling of stock would be needed to reach distant trailheads accessing the project area.

Conclusions

The overall effect that the alternatives will have on pack station operations is not fully understood. While the alternatives can be taken apart and individual components can be analyzed (e.g., a destination quota), the cumulative effect of a destination quota, combined with a primary operating area, along with a seasonal stock threshold is difficult to determine. It may be that the cumulative impact of all the regulations will affect the greatest change to current pack station operations.

Overall, it is expected that the Alternatives 2 through 5 will have a profound effect on pack station operations. In many cases, this effect will take the form of increased costs associated with a need to pack in more feed and use additional stock/employees to service an overnight trip. Flexibility is also likely affected by the control mechanisms in the alternatives. Clearly, commercial operators offer some trips (e.g., full service trips) that are more profitable than others. Seasonal client and stock thresholds and destination quotas may force pack station operators to turn down a less profitable trip early in the season when there is a chance for a more profitable trip later on the year. Some operators may choose to hold on to threshold numbers until the right trip is booked. There is certainly the likelihood that some portion of the quota or threshold is unused when the desired trip never comes in. Flexibility and increased costs seem to

be the two main effects to pack station operators. The effect that this will have on public demand for commercial pack station services is discussed next.

Effects to Public Demand for Commercial Pack Station Services

All Alternatives

Based on the effects to operations discussion, it seems clear that the six alternatives, to varying degrees will change the operations of commercial pack stations and may impact the revenue stream of these operations. It should be noted that a number of other variables can affect the revenue of these operations and are not analyzed here. Some of these other variables include larger market forces (for example a downslide in the economy) and the ability of the pack stations themselves to accommodate the changes and continue to provide affordable services to the public. Like any other business, success will depend on the ability of the operation to incorporate the changing environment into their operations including using advertising and changing the focus of the business to more profitable ventures (for example, if full service trips are impossible because of new regulations, other opportunities may exist that can take the place of this service that may help provide a substitute revenue stream). Some of these variables are difficult to account for and do not lend themselves to a reasonable analysis.

A recurring theme in public comment and discussion is the effect that the 2001 Wilderness Plan and court-ordered restrictions have had on the revenue of commercial pack stations. Three elements will be examined: gross revenue from 2000 (pre court order) to 2003, use numbers from 2000 (pre court order) to 2003, and the prices of commercial trips over the last five years. These elements will be displayed and discussed in the context of public demand for commercial pack stock supported services.

Gross Revenue, Use Numbers, and Prices of Services

Table 4.1.27 displays the reported gross revenue of commercial pack stations operating in the Ansel Adams and John Muir Wildernesses (Inyo and Sierra National Forests, 2004). For all types of operations, the reported gross revenue either increased or stayed essentially the same from 2001 (the first year of the court-ordered restrictions) and 2003. This indicates that additional restrictions (including a 20 percent reduction in service days) did not affect the gross revenue of the pack stations.

Similar to 4.1.27, use numbers are compared for 2000/2001 and 2002/2003. Table 4.1.28 shows this comparison. Looking at Table 4.1.27 and Table 4.1.28, an interesting pattern is seen. Since the court ordered restrictions on pack station operations in 2001, gross revenue has generally increased while use of the services, particularly for moderate and high complexity operators, has decreased. It seems that for some services, however, the costs were passed on to the consumer and no change in demand was experienced. For other types of trips—presumably the types of trips that moderate and high complexity operators specialize in—the additional costs resulted in a decrease in demand. Curiously, even the decreased demand for the services of these types of operators did not result in a decrease in the gross revenue. For all three operators, gross revenue increased over the study period. This gross revenue increase may be explained, in part, by the increased ratio of stock to people on some types of trips. Compared to the period prior to the court-ordered reductions, 2002 through 2003 use figures indicate an increase in the average number of stock used to support pack stock operations in the wilderness. The increased costs of

stock would likely push the cost of the trip up and, therefore, push the gross revenue for these operations up.

Of course, a critical portion of this analysis is missing net revenue. It may very well be that commercial operators experienced an increase in gross revenue but if their costs also increased dramatically as a result of the court ordered restrictions, it may be that the net revenue either stayed the same or even decreased as the gross revenue increased.

A possible explanation for the increased gross revenue numbers in Table 4.1.27 is that the commercial packers increased their prices to accommodate the increased costs of doing business. A survey of the prices for different commercial pack station supported services reveals significant price increases from 2001 to 2004(5). Table 4.1.29 below shows the price increases for different services offered by commercial packers.

Table 4.62 Pack stations' gross revenue 2000-2003

Type of Pack Station	2000-2001 Gross Revenue (averaged)	2002-2003 Gross Revenue (averaged)	% Change
Low Complexity	\$47,714	54,028	+13%
Moderate Complexity	\$66,600	\$69,936	+5%
High Complexity	\$389,549	\$467,610	+20%

Note: These figures are raw numbers; they have not been adjusted for inflation

4.63 Clients serviced 2000-2003

Type of Pack Station	2000/2001 People Serviced (averaged)	2002/2003 People Serviced (averaged)	% Change
Low Complexity	239	285.25	+19%
Moderate Complexity	441.75	358.25	-19%
High Complexity	798	712	-11%

Table 4.64 Costs of stock-supported services 2000-2003

Type of trip	2001	2004/5	Increase from 2001 to 2004
All-expense trip (average costs of a trip with three people)	\$195 per person per day	\$300 per person per day	30% increase
Spot trip (round trip and depending on destination) (three people)	\$340-\$465	\$400-\$675	40% increase
Average charge (packer and mule per day)	\$85 per day	\$110-\$125 per day	50% increase
Average charge (packer and horse)	\$125 per day	\$200-\$235 per day	75% increase
All day ride	\$70 per person	\$125 per person	78% increase

Note: These are raw numbers only; no adjustment for inflation has been made.

**For many pack stations, a minimum fee is charged for any pack station related trips (industry average \$250 to \$300). For some operations, this is a new charge, for others this is as much as a 300 percent increase.

Conclusions

Looking at gross revenue and use figures from 2000 through 2003, it appears as though pack stations were able to incorporate the court-ordered restrictions into their business plans and maintain a constant stream of revenue. Undoubtedly, the court-ordered restrictions increased the price of doing business and the pack stations were able to pass these costs on to consumers in the form of more expensive trips. It appears that for Alternatives 2 through 4, additional regulations will further push up the costs of doing business. (It has been estimated by the packing industry that additional limitations on campsites, trailheads, meadows and number of trips, will push the costs of these trips further by at least 25 to 30 percent.)

It is not clear, however, how much more the public will be willing to pay for these services. At some point, the additional costs cannot be passed on to consumers. The pack stations may find that their gross revenue and use drops because of additional prices increases. It is not clear what that point is, but it may be that additional regulations, leading to additional costs to the pack stations cannot be passed along to the consumer. As with any other good, there is a point at which the price of a service or good affects the demand for that good or service. Research (Phaneuf and Smith, 2004) shows that prices for services such as those offered by commercial pack stations are elastic. That is, the demand for a good or service is responsive to a change in the price. In addition to price, other factors also contribute to the elasticity of demand for a service including the income of the consumer and the distance traveled to utilize the service. At some point, it would be expected that increased prices would result in a decreased demand for these services and subsequently a decrease in revenue.

These higher prices also carry along an equity issue. Some segments of the population may not be affected by the increased price of these trips. For this segment, the increased costs of a stock-supported will have little or no effect on the demand for the service. For other segments of the population, the increased price will have considerable effect on the demand for the service. It may be that even if commercial operators are able to continue supply pack stock supported services, these trips may be no longer affordable to the lower and middle class consumer.

Cumulative Impacts—All Alternatives

Cumulative impacts are impacts on the regional economy and commercial pack station operators when the proposed project is combined with past, present, and foreseeable activities. For the regional economy, a relevant past action is the Wilderness Plan and reasonably foreseeable actions include future wilderness designations in the project area along with other planning efforts including the Inyo National Forest route designation process. Recreation is an important part of the economy of the project area, particularly for the east side counties. The impact of future wilderness designation or greater reliance on non-motorized access into areas on the forest on the economy of the project area is not clear. Some studies (Power, 1996; Rasker 1994; 1994b; Loomis and Richardson in press) show wilderness designation or greater reliance on environmental protection as a valuable amenity that drives local economic expansion.

The cumulative impact of the alternatives on the commercial pack stock operators when combined with past, present, and reasonably foreseeable actions in the project area are also not fully known. Future wilderness designation, for example, may limit activities of these operators

as some proposed wilderness additions are in areas currently serviced by operators. As a past action, the Wilderness Plan certainly changed the way operators ran their businesses. It would be expected that additional restrictions or controls would have an impact on the commercial pack stock industry. Exactly what this impact will be is not known, as there are many factors that help to determine the viability of a particular operation including flexibility, use of advertising, and willingness and ability to create new business opportunities in a changing business environment. Overall, (with the exception of the Wilderness Plan) there are no known past, present, or future actions or activities that will definitively, when combined with the current project, have a cumulative impact on commercial pack station operations.

Social – All Alternatives

Analysis and Cumulative Impacts

With the exception of Alternative 5, it is not thought that the Proposed Action and alternatives will significantly affect the social environment of the project area. Alternatives 1 through 4 will continue to allow for the use of commercial pack stock in the Ansel Adams and John Muir Wildernesses although the additional control mechanisms certainly have the potential to push the costs of trips higher than they currently are. There are known direct, indirect, or cumulative impacts of the proposed project on specific races or ethnicities in the project area. Generally, wilderness research has found that the average wilderness user is white and affluent (Lucas 1980 and Hendee et al., 1976).

In terms of race and ethnicity, wilderness user surveys on the Inyo and Sierra National Forests show that the overwhelming majority of wilderness users are white. The 2003 National Visitor Use Monitoring Results study found that 87.6 percent of wilderness users reported a race/ethnicity of white. Similarly, on the Sierra National Forest, 94 percent of wilderness users surveyed reported a race/ethnicity of white. Wilderness research over the years has found that wilderness users (and outdoor recreationists in general) have a higher income than the public. Although socioeconomic data was not collected on pack station clients, there is no reason to expect that the socioeconomic composition of pack station clients differs much from the overall characteristics of forest wilderness visitors.

The 2003 National Visitor Use Monitoring Results study also found that a relatively high percentage of wilderness users were 50 or older. On the Inyo National Forest, for example, nearly a quarter of the wilderness visitors surveyed reported an age of 50 or older. On the Sierra National Forest, nearly 35 percent of wilderness users on the forest reported an age of 50 or older. Given the relatively high percentage of older wilderness users on both forests, reductions in commercial pack stock use may affect these groups.

Although it is unlikely that low-income visitors make up a significant percentage of wilderness users, there may be an impact to low-income users of commercial pack stock to access the wildernesses. This impact is difficult to analyze, as it is not clear what the future prices of these trips will be or the extent to which low-income groups utilize these services today. Likewise, handicapped or elderly users who rely on commercial pack stock may be impacted if these services are discontinued or priced out of the reach of the majority of the population. Again, there is no known data that specifically identifies elderly or handicapped individuals regularly relying upon commercial pack stock to access the Ansel Adams or John Muir Wildernesses. American Indian considerations as it relates to access into these wildernesses are discussed in the

Heritage Resources section. Overall, it is not believed that the project will have any known direct, indirect, or cumulative impacts to individual social and demographic groups in the project area.

Another consideration is the effect of the alternatives on the social environment of the project area in terms of custom and history. It is well documented in the public comment on past wilderness-related projects that a segment of the population feels that pack stock use in the wilderness is an important historical and cultural activity. Any actions that severely limit this type of activity may negatively affect these individuals and groups. Others, again well documented in public comment, view high levels of commercial pack stock in the wilderness as an affront to their wilderness experience. These individuals and groups do not agree with the perspective that providing commercial pack stock for wilderness visitors will continue an important historical and traditional activity. Clearly, the public is sharply divided on this issue. The intent of an environmental impact statement is to disclose the expected environmental effects of a decision but in this case there is little analysis—either quantitative or qualitative—that can point a decision maker to the “right” answer in resolving these social disagreements. This analysis acknowledges the very obvious disagreement as to the appropriateness of commercial pack stock use in the Ansel Adams and John Muir Wildernesses but makes no attempt to quantify or qualify the disagreement further.

4.2 Physical Environment

4.2.1 Soils and Hydrology

Wilderness Scale

Methodology

Context: The context of the impact considers whether the impact is local or regional. For the purposes of this analysis, local impacts are those that occur at site-specific locations and regional impacts are impacts on the watershed at the geographic unit to wilderness scale.

Intensity: The intensity of the impact considers whether the impact is negligible, minor, moderate, or major. Negligible impacts are effects considered not detectable and have no discernible effect on the hydrology, soil productivity, or water quality. Minor impacts are effects on hydrologic or soil processes that are slightly detectable but not expected to have an overall effect on the watershed. Moderate impacts are clearly detectable and could have an appreciable effect on the hydrologic function and processes. Major impacts have a substantial, highly noticeable, influence on the hydrologic environment and could significantly alter hydrologic functions and processes or soil productivity.

Duration: The duration of the impact considers whether the impact occurs in the short term or the long term. A short-term impact is temporary in duration and is associated with processes that can occur or recover within a few years. An example is sod fragmentation from one-time grazing, because as long as the meadow hydrology is not altered, vegetation can grow back and eliminate sod fragmentation within years. A long-term impact has a permanent effect on the hydrologic function of a meadow, wetland, stream, or other water body. An example is stream incision below the rooting depth of meadow vegetation. Incision can lower a meadow's water table, prevent a meadow stream from accessing its floodplain, and alter the vegetation composition of the meadow. Without active restoration, it is likely that stream aggradations to its previous depth would not occur within decades or centuries.

Type of Impact: Impacts are evaluated in terms of whether they are beneficial or adverse to the hydrologic environment. Beneficial impacts sustain or improve soil productivity, water quality, or hydrologic function of streams and meadows. Adverse impacts would negatively affect hydrologic or soil processes.

Analysis Common to All Alternatives

Commercial pack stock operating areas cover about 9 percent of the Ansel Adams and John Muir Wilderness Areas. This has been estimated as the area of campsites, trails, and grazing areas that are used by commercial pack stock, or their clients, and has a potential for hydrologic and soil effects from that use. (For a table showing area of requested use by geographic unit and wilderness-wide, see the table *Area of use within each commercial pack station's operating area* in the project record). Therefore, changes in commercial pack stock operations could have no effect on 91 percent of the wilderness area.

Water Quality – Animal Waste: Water-borne bacteria and nutrients from pack stock manure is a minor concern over most areas of the wilderness, although the risk is not understood very well.

Derlet and Carlson (2002) found that 15 of 81 samples (approximately 19 percent) of fresh pack stock manure on trails in Yosemite and Sequoia/Kings Canyon National Parks contained bacterial or protozoa pathogens capable of causing human disease. Because many of the same pack stock that are used in the Ansel Adams and John Muir Wildernesses are also used in the adjacent National Parks, it is assumed that pack stock using the forests have similar levels of pathogens in their waste. About 19 percent of the manure that is deposited directly into water, or is washed into water, contains the human pathogens sampled for in this study.

Giardia and *Cryptosporidium* are also human pathogens of concern in the Sierra Nevada area and both can be found at low levels in livestock or pack stock manure (Atwill et al., 2000; Atwill, 1995). In the Sierra Nevada area, few studies have sampled pack stock manure to determine whether *Giardia* or *Cryptosporidium* are present. Johnson et al. (1997) found no *Giardia* or *Cryptosporidium* cysts in 91 horses used in the California backcountry in 1993 and 1994. In a later study (Atwill et al., 2000), fecal specimens from 305 horses and mules used as pack stock in the backcountry were examined for *Giardia duodenalis* and *Cryptosporidium parvum*. They found 14 pack stock (4.6 percent) shedding *Giardia duodenalis* and none shedding *Cryptosporidium parvum*. Derlet and Carlson (2002) found *giardia* in one of their 81 samples of pack stock manure. Although these studies sampled a relatively small proportion of horses used in the backcountry of California, and the samples were not from pack stock used in the AA/JM Wildernesses, the information available suggests that the risk of *giardia* entering water from pack stock is low, but possible. The risk of *Cryptosporidium* entering water from pack stock is lower, as none has been found in pack stock manure.

In all of the above studies, the manure was relatively fresh. Although few studies have been completed on the bacterial retention qualities of pack stock manure, bacteria in cattle manure decreases logarithmically with time (Buckhouse and Gifford, 1976; Kress and Gifford, 1984), and solar radiation and drying reduces changes of bacterial contamination (McClaran, 2000). Derlet and Carlson (2003) found *E. coli* below cattle grazed meadows in the Golden Trout Wilderness nine months after the last cattle-grazing activity, suggesting that some human pathogens can remain in grazed areas through winter and contaminate water in the spring. It is unknown whether pack stock manure contains *E. coli* or whether grazing levels proposed in the alternatives are high enough to cause water contamination, as was found in Derlet and Carlson (2003).

In areas where pack stock cross streams, drink, or are held near water, the water body could have fecal contamination. Concentrations could be reduced by dilution to harmless quantities downstream. It is unknown how far downstream from a single manure pile the bacteria is diluted enough to be rendered harmless, and it likely varies based on flow, velocity, turbidity, temperature, and other factors.

Most of the lakes and streams in the study area have low nutrient levels, and therefore do not support bacteria preservation. In the few studies that have been completed on water quality impacts of recreational users in California wilderness, it has been found that there are generally higher coliform densities in watersheds where human, pack animal, or livestock use is higher (Derlet et al 2004, Derlet and Carlson 2004). It has not been determined whether pack stock or human users were responsible for the increased bacteria levels in those studies. However, Derlet et al. (2004) found that all sites sampled below alpine meadows used for sheep and cattle grazing contained coliforms. No sampling was completed below meadows used for pack stock grazing. Although there was presence of some fecal contamination (from unknown sources) in this study,

only one out of 37 water samples taken in the study was found to contain a known human pathogen.

Humans, beavers, deer, dogs, and other animals can also carry human pathogens and deposit them in soil, on the soil surface, or in water (Derlet et al., 2004; Derlet and Carlson, 2002; Atwill, 1995). While the few studies completed suggest that there may be a risk of pack stock transmitting human pathogens into surface water, the severity and extent of actual transmission is unknown. From the low prevalence of pathogens found in pack stock manure, and in most water sampled in the Sierra Nevada area the risk appears to be low.

Beyond human pathogens, pack stock manure could lead to increased nutrient levels in lakes. Alteration of nutrient levels can lead to alteration of aquatic ecosystems and create a more fertile environment for bacterial preservation and reproduction. It is unknown whether any nutrient level increase has occurred within the study area. Sickman et al. (2003) found that there was an increase in phosphorous (P) in over 70 percent of 28 lakes sampled between 1985 and 1999 in Yosemite and Sequoia Kings/Canyon National Parks, surrounding the AA/JM Wildernesses. The increased levels were found throughout the Sierra Nevada area, independent of use levels. Therefore, the authors believe that site-specific phosphorous sources, such as surface runoff, are not likely causes of the nutrient increase. It is currently impossible to determine whether changes in commercial pack stock use would alter nutrient levels in surface water.

Information about water quality within the wildernesses was mainly obtained by observing inputs into surface water, such as evidence of rilling reaching water, or evidence of manure in or adjacent to water. The Forest Service did not complete quantitative water quality sampling, because it was not deemed necessary to do so to make an informed decision about commercial pack stock management. Water quality degradation has not been found to be a major concern according to the few studies completed within the wilderness and downstream municipal sampling.

In summary, although pack stock manure deposited in water, or carried into water by runoff, is obviously a non-natural addition to the water, it is unknown whether the quantity and extent of manure in water is enough to cause measurable water quality degradation wilderness-wide or locally. It is not likely a significant issue, because the existing water quality sampling within the wilderness, observance of effects to beneficial uses, and downstream water quality sampling at the point of use does not indicate that there is degraded water quality within the AA/JM Wildernesses.

Meadow/Wetlands: Commercial pack stations requested 385 meadows for grazing. These 385 meadows are considered to have been grazed in the past, or likely to be grazed in the future. Due to lack of time, not all the requested meadows were visited in the field. Of those meadows, 227 were visited, including all with moderate to high recently reported grazing. Other meadows were analyzed in the office using historical records, past field visits, and air photos. The current meadow condition, suitability for grazing, and possible effects of pack stock grazing were determined in the field using rapid qualitative assessment methods explained in the Study Plan (available in the project record). This section describes the effects to soil productivity, hydrologic function, stream condition, and water quality.

The desired condition for meadows and other wetlands is that they are hydrologically functional (USDA Forest Service, 2004), and sites of accelerated erosion, such as gullies and headcuts, are stabilized or recovering.

Under the Wilderness Plan (2001) and the Sierra Nevada Forest Plan Amendment Riparian Conservation Objectives (2004), the direction for meadows and wetlands is as follows:

Assess the hydrologic function of meadow habitats and other special aquatic features during range management analysis. Ensure that characteristics of special features are, at a minimum, at Proper Functioning Condition, as defined in the appropriate Technical Reports (or their successor publications): (1) “Process for Assessing PFC” TR 1737-9 (1993), “PFC for Lotic Areas” USDI TR 1737-15 (1998) or (2) “PFC for Lentic Riparian-Wetland Areas” USDI TR 1737-11 (1994).

Over half of the meadows that were analyzed for condition and grazing suitability were analyzed for stream functional condition using the Proper Functioning Condition (PFC) protocol. The projected effects on stream functional condition are discussed under all alternatives, although the future PFC rating was not predicted. Instead, the trend toward or away from, potential stream functional condition was predicted. For example, a stream that is currently properly functioning could be predicted to have a trend away from its potential. It is impossible to predict whether the trend will move far enough away from its potential to change the stream rating to functional at-risk. Each stream was only projected as to whether it is likely to move away from or toward its potential, and not as to what the final condition of the stream may be.

All 227 meadows that were analyzed in the field for condition, grazing suitability, and overall meadow hydrologic function. Meadow hydrologic function differs from stream hydrologic function because it applies to the entire meadow, not just the stream corridor. Meadow hydrologic function depends on soil condition, the ability of the meadow to act as a floodplain and store groundwater, and the vegetation composition. The projected effect to meadow hydrologic function watershed-wide and at a site-specific scale is discussed under each alternative.

In general, if an area is not grazed, vegetation can recover relatively quickly with its water source unaltered, but hydrologic function and geomorphic recovery can take decades longer (Kondolf, 1993). The more severe the current alteration from a potential natural condition, the longer the recovery will likely take. Vegetation composition and vigor can quickly recover as long as the meadow hydrologic function is intact, with a water source remaining. In some cases, where the meadow hydrologic function is severely altered, vegetation vigor may improve, but vegetation composition may not return to its potential natural vegetation because there is an altered hydrologic regime.

Under all alternatives, the expected change to meadow hydrologic function was predicted to remain the same, improve, or have a downward trend. The predictions were based on the severity and extent of hydrologic function alteration, meadow productivity, water source type, source of current hydrologic function alteration, and type and levels of use expected. The process was completed by the biologists, physical scientists, and grazing specialist on the IDT. These predictions were made for a simple comparison between alternatives, but are qualitative and are considered rough estimates.

The Forest Service BMP program requires protection of wetlands. In this analysis, we did not map jurisdictional wetlands, but we did map all known moist and wet meadows. These meadows are considered wetlands, because they likely qualify as jurisdictional wetlands. BMP Practice 7-3 (USDA Forest Service, 2000), requires that:

The Forest Service will not permit the implementation of activities and new construction in wetlands whenever there is a practical alternative. Factors relevant to the effect of the proposal on the survival

and quality of the wetlands will be considered when evaluating proposed actions in wetlands. Factors to be evaluated include, but are not limited to water supply, water quality, recharge areas, functioning of the wetland during flood and storm events, flora and fauna, habitat diversity and stability, and hydrologic function of riparian areas...and that the actions maintain the hydrologic and biologic function of the wetlands.

The evaluations described above, including the meadow hydrologic function analysis and PFC determinations, as well as qualitative water quality observations and soil quality observations, fulfill the above requirement that these factors be evaluated. All action alternatives consider hydrologic and biologic function of the wetlands, and the degree of certainty in their maintenance is discussed under each alternative.

The predictions for the effects of each alternative on meadows/wetlands are estimates. It is difficult to predict any effects of natural changes in the environment, such as climate change. There is also little research about the long-term effects and recovery rates of light grazing such as would be done by commercial pack stock under Alternatives 1 through 4, and so assumptions are based on field observations and the little existing research available.

Air Quality: Forest Service actions have little effect on air quality in the Ansel Adams and John Muir Wildernesses. Most air pollutants originate outside of the wilderness (Sickman et al., 2003), and will not be affected by any of the alternatives. Air quality effects should be the same under all alternatives, because commercial pack stock use of the wilderness does not affect air quality either positively or negatively over more than local areas for a few minutes at a time. Stock traffic causes more dust to enter the air than foot traffic and, therefore, even total removal of commercial pack stock use would reduce, but not eliminate, the very short duration and very small volume of airborne dust caused by recreational use. Because air quality would not be affected by this action, it will not be discussed further.

Alternative 1

Summary of Alternative 1 Impacts

Water quality is generally good and will remain so except at few local areas where there may be slight adverse water quality impacts. There will remain areas of local soil erosion, bare soil, and sedimentation into surface water from commercial grazing, campsites, and trails. Of 60 streams found to be functional at-risk (151 evaluated), an estimated 30 percent could have improved condition, 15 percent could have a more degraded condition; and 55 percent will remain in their current condition. Meadow hydrologic function has the greatest potential for increased downward trend and least potential for improvement. Of the 41 meadows found to currently have hydrologic function alteration (237 evaluated), about 24 percent are projected to have improved condition, 63 percent should remain in the same condition, and about 12 percent could have a downward trend.

Past and present grazing from production livestock and pack stock is the largest contributor to meadow hydrologic function alteration. Although it is assumed that grazing would continue at the same levels, and in the same locations as in recent years, this is the only alternative where grazing would not be limited to certain meadows or limited by number of stock nights. Therefore, grazing could occur in almost any of the 1,500 meadows and grazing numbers could increase or decrease in almost any meadow.

Analysis

Under Alternative 1, it is likely there would be almost the same water and soil resource effects as there currently are, although effects may move from one location to another due to lack of Forest Service control over changes in pack station operations. The lack of site-specific controls over the locations and quantity of commercial pack stock use means that commercial packers have the most freedom under this alternative to change their operations and move to areas previously not used.

The main difference in potential effects to soil and water resources between Alternative 1 and Alternatives 2 through 4 would likely be the difference in meadow management and trail management. Under Alternative 1, all meadows are open to grazing until the Forest Service closes them. In Alternatives 2 through 4, all meadows are closed to grazing unless they are deemed suitable by the Forest Service.

There should be no major differences in effects from trails and campsites under Alternative 1 relative to current conditions. Depending on client desires, some trails and destinations could have increased use and impacts while others could have decreased use and impacts. As under all alternatives, campsites within 100 feet from water (or 50 feet if topography does not allow them to be 100 feet away) would, over time, be obliterated. Packers could continue to hold pack stock at any campsite, as long as the stock holding was over 100 feet from water and not contributing sediment or manure to surface water. Therefore, the number of stock holding sites could increase if the packers decide to access a new destination or move their stock holding sites. It is unlikely that more sites overall would be used annually.

Meadows/Wetlands: Under Alternative 1, soil and hydrologic resource effects in meadows would likely remain good overall, with a few local exceptions. About 6 percent of all existing meadows are known to have at least slight impacts to soil or hydrologic resources. Impacts would likely remain the same as today, because use should remain the same. Soil quality, vegetation utilization, and stream bank trampling standards would apply to all meadows suitable for grazing. However, even though the above standards would likely be met in most cases, continued grazing could slightly increase bare soil, soil compaction, sod fragmentation, stream bank trampling, and vegetation removal. In meadows where there is currently degradation of meadow or stream functional condition, it would likely continue.

Under all alternatives, where allowed, pack stations would continue to use the same destinations, campsites, trails, and grazing areas at the same levels as they have in the past, with annual differences based on client demand. Under Alternative 1, there would be no restriction on using new areas. Therefore, there could be entirely new areas that would have campsites and grazing areas that have never or rarely been used in the past.

Meadow/Wetland Hydrologic Function: Most meadows in the Wildernesses should remain in good hydrologic function condition. About 5 percent of all known meadows and 40 percent of all analyzed meadows have at least slight hydrologic function alteration. About 2 percent of all known meadows and 16 percent of analyzed meadows have moderate to severe hydrologic function alteration. Roughly, 90 percent of analyzed meadows should not show any major changes in hydrologic function under Alternative 1 (Figure 4.5). Wilderness-wide, there should be a very small difference between the effects of all alternatives. The change in hydrologic function alteration severity of individual meadows could be measurable, although in most cases is not likely to experience major change within 20 years.

It is estimated that, under continued current grazing practices, approximately 7 percent of meadows may have improved hydrologic function while about 5 percent could have hydrologic function move away from potential (Table 4.65). In most locations, the changes away from current condition should be minor. For a list of the projected change in meadow hydrologic function and PFC for each analyzed meadow, see the table, *Projected Changes to Meadow Stream Functional Condition and Meadow Hydrologic Function under All Alternatives* in the project record.

Most of the 19 meadows that are expected to have improved hydrologic function condition have not been recently grazed by commercial pack stock. They all currently have slight to severe hydrologic function alteration, all related to past cattle grazing, pack stock grazing, or incised trails. Only five of the meadows are currently grazed by commercial pack stock and are expected to be grazed in the future. These meadows are all expected to receive light grazing, similar as past use, at no more than 20 to 40 nights of grazing per year. Without substantial grazing, the meadows could have minor reductions in soil compaction, minor aggradations of slightly incised stream channels, or trail aggradations that could allow a minor improvement in water retention and possibly a higher water table. It is possible that any of these meadows could have increased grazing, because areas of use are seldom defined or regulated under Alternative 1. If these meadows were grazed to their full 30 to 40 percent vegetation utilization or 20 percent annual



Chetwood Cabin Meadow, in the Ansel Adams West Geographic Unit. This photo shows the widened stream and collapsing stream banks in the middle of the photograph. Vegetation is growing in the channel, suggesting that the stream functional condition has a static or upward trend. This meadow has not been recently grazed by pack stock, and effects are attributed to cattle grazing that continued until the mid 1990s or other unknown factors.

stream bank disturbance, it is likely that the hydrologic function in these previously impacted meadows would either stay the same or trend away from potential.

The meadows that would be expected to have no change in their current hydrologic function have variable reasons for the predicted static trend. Almost half have no altered hydrologic function currently and have not been grazed by commercial pack stock in the past, and so are not expected to be grazed in the future. There should not be a change in the hydrologic function in these meadows, unless grazing levels or other use changes substantially.

Other meadows, such as Alger Lakes and Superior Lake Meadows in the Ansel Adams East Geographic Unit, currently have substantial grazing, but do not appear to have altered hydrologic function. We assume those meadows will remain in good hydrologic functioning condition with continued grazing. Other meadows, including many in the Ansel Adams West Geographic Unit, currently have moderate to severe altered hydrologic function, likely from historical cattle grazing (see photo).

Some of these meadows would likely have light grazing and others would have no grazing under Alternative 1. Regardless, they have severe enough hydrologic function alteration, or low enough productivity, that any noticeable recovery of hydrologic function is unlikely within decades. Any of these meadows could begin to be grazed more heavily than recently reported, although it is not expected. If that occurred, some would likely have a downward trend in hydrologic function. Others could be grazed much less than reported in recent years. In that case, it is possible that hydrologic function could improve. It was assumed grazing would remain about the same in our projections of hydrologic function alteration.

Of the 14 meadows expected to have a downward trend in hydrologic function, 12 have a substantial commercial pack stock grazing under Alternative 1. All have previous hydrologic function alteration or areas that never reach range readiness, which makes them vulnerable to future impacts. Eleven of these meadows have current impacts that appear to be related to recent pack stock use (likely along with past uses or other stressors). The impacts include stream bank trampling and erosion, sod fragmentation, soil hummocking, and soil compaction. Two of these meadows, Martin's Meadow, (mcg4), and the meadow adjacent to Waterfall Camp (fre3) do not have recent reported grazing. However, they would both be expected to receive commercial pack stock grazing or travel in the future. Martin's Meadow was closed for Yosemite Toad protection, but would be open under Alternative 1. It has severe headcutting with an unknown cause. There was heavy commercial pack stock grazing in Martin's Meadow through the late 1980s and trails cross the creek where the headcuts occur. The meadow adjacent to Waterfall Camp is not grazed, but pack stock travel through the meadow when released from Waterfall Camp to graze at a nearby meadow.

Under Alternative 1, grazing numbers could increase substantially at any meadow in the wilderness other than in the four meadow complexes that are currently closed (Pioneer Basin, Second Crossing, Minnow Creek/Cascade Valley, and Holcomb Meadow). Therefore, the projections above could be under predicting negative impacts. However, as stated previously, increased grazing is not expected because overall overnight commercial pack stock use is expected to remain similar to today, or decrease.

Figure 4.5. A comparison of the effects of alternatives on meadow hydrologic function condition.

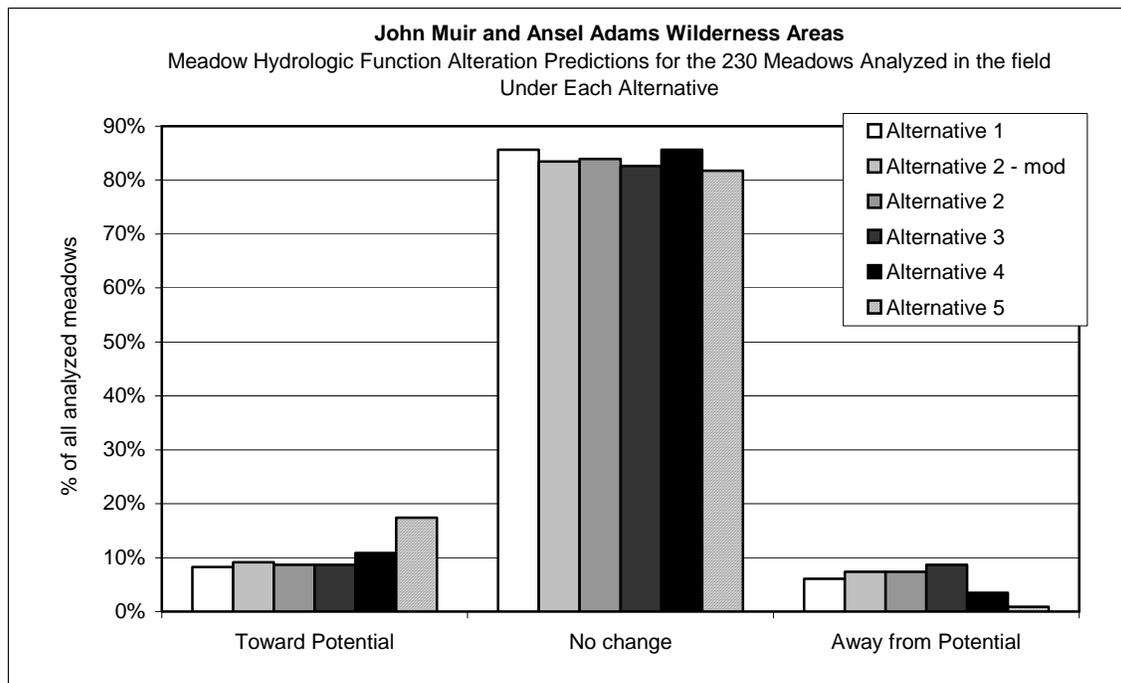


Table 4.65. Hydrologic function alteration predictions for all meadows visited in the field. The number of meadows predicted to have each trend was estimated by the IDT, using the meadow’s characteristics such as soil moisture, stream bank stability, and meadow productivity. The predictions assume that some meadows would not receive their allocated stock nights, if they were in an area not likely to received increased use. The prediction underestimates the worst possible effects, but is a more realistic estimation. The potential effects if all stock nights were used are included in the text.

Trends By Number of Meadows						
Current Meadow Hydrologic Function Condition (# of meadows with that condition)	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No hydro alteration (137)						
Toward Potential	0	0	0	0	0	0
No change	134	132	132	131	135	137
Away from Potential	3	5	5	6	2	0
Slight hydro alteration (52)						
Toward Potential	8	10	9	10	12	23
No change	37	35	35	34	36	28
Away from Potential	7	7	8	8	4	1
Mod hydro alteration (24)						
Toward Potential	9	9	9	8	9	13
No change	13	11	11	11	13	10
Away from Potential	2	4	4	5	2	1

Trends By Number of Meadows						
Current Meadow Hydrologic Function Condition (# of meadows with that condition)	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Severe hydro alteration (17)						
Toward Potential	2	2	2	2	4	4
No change	13	14	15	14	13	13
Away from Potential	2	1	0	1	0	0
All Meadows Analyzed (230)						
Toward Potential	19	21	20	20	25	40
No change	197	192	193	190	197	188
Away from Potential	14	17	17	20	8	2

Meadow Stream Functional Condition (PFC): Under Alternative 1, most meadow streams should remain in good condition, with about 5 percent of all meadows' streams known to be functional at-risk. More streams would likely have a downward trend in stream functional condition under Alternative 1 than under any other alternative (Figure 4.6). However, the difference between the effects of Alternative 1 and the current condition should be small. Under Alternative 1, it is expected that about 22 percent of analyzed meadows might see a minor change in their current condition. Grazing is less restricted than under all other alternatives. Meadows might be closed over time due to their unsuitability for grazing, but the changes would occur piecemeal and slowly. In the mean time, all meadows other than the few currently closed could be grazed, regardless of existing impacts or suitability for grazing. For a list of all meadows with predicted change to stream functional condition under all alternatives, see the table *Projected Changes to Meadow Stream Functional Condition and Meadow Hydrologic Function under All Alternatives* in the project record.

Management direction in the 2001 Wilderness Plan (USDA Forest Service 2001, p. 24) requires that meadows and streams, fens, springs, and other special aquatic features within potential grazing areas be at Proper Functioning Condition (PFC). Some meadows and streams currently are not at PFC, and the interpretation of the requirement in that case is that the meadow should trend toward PFC where possible. Of particular concern are streams that are functional at-risk with a downward trend, because they have the potential to move toward a non-functional condition that provides little to no aquatic or riparian habitat.

Table 4.66 shows that an estimated 19 of the 151 meadows analyzed for PFC might have improved stream functional condition under Alternative 1. Those projections are based on continued current use and were determined by the IDT. Assumptions about the potential for improved conditions were based on the degree and types of previous impacts, the stream resiliency, and the type of use expected.

Figure 4.6. A comparison of predicted changes to stream functional condition (PFC) among alternatives for the streams where PFC was analyzed. A total of 151 meadows were analyzed for PFC, all within meadows or other grazed areas. This chart includes all streams analyzed, whether they are at proper functioning condition or whether they are currently functional at-risk. Stream functional condition is moving closer to potential when it is moving closer to its highest ecological status the riparian-wetland area can attain. A stream that is currently at proper functioning condition can still move toward its potential, because properly functioning can be at a lower ecological state than its potential.

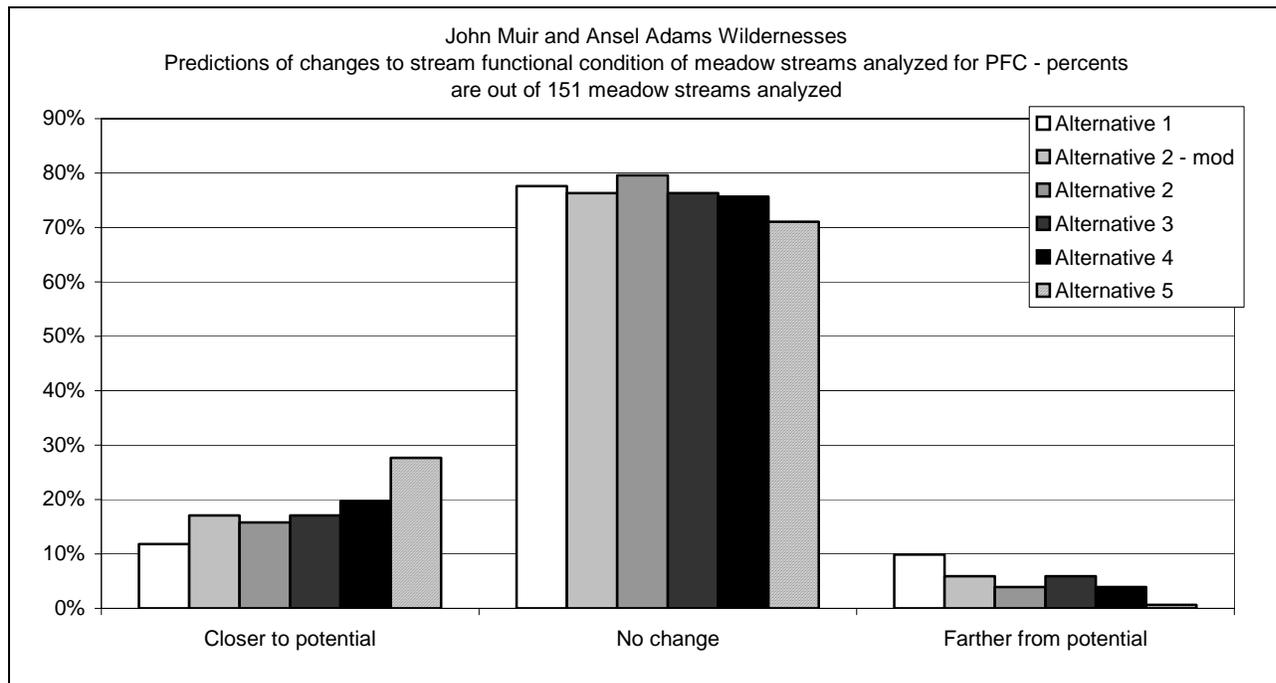


Table 4.66. A summary of all meadow stream functional condition predictions under all alternatives. Stream functional condition was determined using the Proper Functioning Condition (PFC) protocol. The streams are separated by those that are currently properly functioning, those that are functional at-risk with an upward trend, those that are functional at-risk with a non-apparent trend, and those that are functional at-risk with a downward trend. The predictions are based on assumptions that grazing will continue about as it has in the past in most areas, except in meadows that are closed to grazing and those nearby meadows where grazing might move to.

Current stream functional condition rating (# with each rating)	Number of Meadows expected to have each trend					
	Alternative 1	Alternative 2 - Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Proper Functioning Condition (91)						
Toward potential	2	1	2	1	2	7
No change	81	82	84	82	83	83
Away from potential	8	8	5	8	6	1
Functional at-risk upward trend (15)						
Toward potential	6	6	6	6	7	8

Current stream functional condition rating (# with each rating)	Number of Meadows expected to have each trend					
	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No change	8	9	9	9	8	7
Away from potential	1	0	0	0	0	0
Functional at-risk non apparent trend (29)						
Toward potential	6	9	9	9	10	16
No change	22	19	20	19	19	13
Away from potential	1	1	0	1	0	0
Functional at-risk downward (16)						
Toward potential	4	10	7	10	11	11
No change	7	6	8	6	5	5
Away from potential	5	0	1	0	0	0
Total Wilderness (151)						
Toward potential	18	26	24	26	30	42
No change	118	116	121	116	115	108
Away from potential	15	9	6	9	6	1

The 19 meadows that could have some improvement in stream functional condition are mostly the same meadows that are likely to have improved hydrologic function, with a few additions. None of the 19 meadows are expected to receive more than 40 stock nights, and 14 of them should not receive any commercial pack stock grazing. One, Second Crossing, is closed to commercial pack stock grazing, and the others are expected to receive little or no grazing because they have not been used in the past. These streams are all functional at-risk or have a small segment that is functional at-risk. The streams are mostly functional at-risk currently due to historical cattle grazing, historical pack stock grazing, trails, or some unknown reason. Continued rest from grazing should allow the streams to have at least minor increases in stream bank vegetation and reduction in stream bank disturbance, and therefore at least a minor improvement in functional condition.

Of the 116 meadow streams to have no change in functional condition, about half are expected not to be grazed. Some of those that could be grazed currently have good condition streams, and either have stream banks armored with boulders or vegetation and are able to withstand grazing, or have low levels of grazing that should not affect more than a small portion of the stream. Others are currently functional at-risk, either due to recent pack stock grazing or other factors. Continued grazing is likely to sustain the functional at-risk condition created by commercial pack stock use, or prevent recovery of a functional at-risk condition created by another use.

Seventeen stream meadows are predicted to have worse condition under Alternative 1; more than predicted under any other alternative. All of these meadows are expected to receive substantial grazing or commercial pack stock travel, and are the same meadows that are expected to have a downward trend in hydrologic function plus two more. These meadows have streams where current impacts have made them vulnerable to further impacts due to lack of armoring by strong-

rooted vegetation or boulders. Therefore, continued use at the recent levels could allow amplified degradation.

Grazing Water Quality Effects: Water quality should remain good overall, with sediment and manure entering streams in a few heavily grazed meadows. There are some meadows where bank sloughing, stream incision, and soil erosion increases fine sediment in streams within and directly downstream of the meadows. These are generally the meadows with a stream functional condition rating of “functional at-risk,” or those with high levels of sod fragmentation. Under Alternative 1, fine sedimentation into surface water from meadows will likely remain the same overall. Those few meadows where stream functional condition is expected to improve from its current state will likely have a decrease in streambank erosion and therefore a decrease in fine sedimentation into surface water. These meadows were grazed in the past, usually by cattle, but are not currently grazed by commercial pack stock. The continuation of rest from grazing should allow for streambank vegetative growth that prevents erosion and helps trap excessive sediment, rebuilding stream banks and floodplains.

Pack stock would continue to deposit manure in meadows, adjacent to and in surface water. While most manure is deposited out of surface water, pack stock walk through streams to graze, drink, or cross the stream. Further, manure deposited near streams can wash into the stream during rainfall or snowmelt runoff. This would occur under all alternatives other than Alternative 5. Although there must be some local increase in nutrients, bacteria, and other pollutants directly at the site of manure entry into water, it is unknown whether there is enough manure to cause water quality degradation downstream under Alternatives 1 through 4. This information gap should not affect the decision being made under this EIS. Water quality has not been found to be harmful to beneficial uses within or downstream of the wilderness, although studies have been limited. Therefore, the effects to water quality are not considered major enough to warrant altering pack stock management for that purpose only.

Under Alternative 1, pack stock grazing would likely remain the same as today. While commercial pack stock manure would continue to enter water under this alternative, the volume should remain the same. There should be no degradation of what is assumed to be overall good water quality.

Meadow Soil Effects: Under Alternative 1, soil productivity within the AA/JM Wildernesses should remain about the same, with general overall good soil productivity and a few locations with moderate to severe negative soil productivity effects. Of the roughly 1,500 meadows in the wilderness, 45 (3 percent) are known to have moderate to severe soil compaction (defined as having platy structure, mashed roots, and evidence of plant vigor reduction), and 60 (4 percent) are known to have moderate to severe sod fragmentation. However, only about 200 meadows were analyzed for soil effects, and the soil condition in the other meadows is unknown. However, the other meadows are generally not those being used regularly by commercial pack stock, and therefore this action should have no effects in those areas.

It is assumed that soil conditions should remain about the same in most meadows, because it is expected that use should remain about the same. Some of the meadows that currently have severe sod fragmentation could have increased sod fragmentation with continued or increased pack stock use. This includes many wet meadows such as Third Recess in the Fourth Recess Analysis Unit, or Third Crossing in the Cascade Valley Analysis Unit. In many cases, wet meadows have sod fragmentation after grazing, but they are so productive that the sod fragmentation fills in

with vegetation the next spring. In very wet meadows that are too wet to be compacted, sod fragmentation may not reduce long-term soil productivity. However, in steep meadows or in areas with severe sod fragmentation (see photos), it may lead to soil erosion and reduced productivity.



Photos (a) and (b). Jackson Meadow, tributary to Minnow Creek. Photos taken in August 2001 (top) and 2005. The arrow shows the same point in space; there is a different perspective because the photos were taken from a slightly different location. In 2001, the headcut was raw at the right side of the photo, and due to hoof punching and trailing, along with dry conditions, there was extensive fragmented sod directly above the headcut. By 2005, the headcut had advanced up into the bare sod area, forming a new stream with raw banks that will likely continue to incise upstream. One headcut advanced toward the right of the photo, and another headcut advanced along a perpendicular trail, shown at the top of both photos. The 2005 photos show that while the vegetation has grown back in the sod fragmented area, the headcut continues to advance. Just downstream of the location of this photograph, some of the incised channel had filled in with sediment and vegetation from 2001 to 2005, showing that degradation and recovery can occur in the same time in different locations in one meadow.

Trails: Although trails cause local water diversions, soil loss, sedimentation into surface water, and groundwater table lowering, their effects are not substantial wilderness-wide. In the project area, 350 trails were evaluated for trail condition and effects on water and soil resources and 236 were analyzed for overall resource rating. Generally, resource impacts are site specific and do not include the entire trail. Of those 236 trails analyzed, 43 percent are causing little or no alteration to soil or hydrologic processes. Another 31 percent are causing minor alteration, 17 percent are causing moderate alteration, and 8 percent are causing severe alteration of soil or hydrologic processes.

Under Alternative 1, there are likely to be few overall changes to trails effects on soil and hydrologic processes compared to the current condition. Trail use by pack stock as well as backpackers would likely remain about the same. Although the commercial pack station operators could begin to use new trails and abandon old trails, it is unlikely that they would change their use dramatically unless client demand changed.

Trails that currently have moderate to severe impacts would likely not recovery without active repair, no matter what use types occur. Most of the trails causing noticeable sedimentation into surface water or diverting surface water will be gradually repaired over the next 20 years under all alternatives. Therefore, there should be little difference in trail contribution to soil and water resource degradation between alternatives. There is, however, more potential for unknown future change under Alternative 1. Trails that are not currently causing soil or water resource impacts could have increased pack stock use and become less stable over time with increased erosion. These effects could occur whether or not a trail is used by pack stock. However, pack stock are heavier than hikers are and more able to displace soil on the trail. Therefore, trails used by pack stock are more likely to have soil removal, erosion, and subsequent sedimentation into surface water. There are trails, such as the system trail between Ediza and Iceberg Lakes, where commercial pack stock has not used the trail in about a decade, but it continues to erode because it is incised and captures surface runoff. The surface runoff will likely continue to run down the trail and incise it until check dams or water bars are placed into the trail.

Campsites: Other than at a few sites, campsites do not appear to have major contributions to water quality degradation. The negative impacts of campsites on water quality should improve slightly under Alternative 1, although less than all other alternatives. The effect of campsites should improve because under all alternatives, campsites within 50 feet of water would no longer be used by anybody; whether they are commercial pack stock parties or backpackers. Sites close to water are more likely to contribute sediment and manure to surface water as snowmelt and rainfall runoff wash sediment and manure into streams and lakes, as was found by evaluating 163 sites under the BMPEP protocol (see Hydrology Section, Chapter 3). Obliteration of these sites may take many years, and it would be difficult to enforce for backpackers. However, commercial packer permits would require that all stock holding and drop off sites be located over 100 feet from water where possible, and at least over 50 feet from water if topography permits.

Under all other alternatives, stock holding sites will be designated, or in the case of Alternative 5, there will be no stock in the wilderness and therefore no need for designated stock holding camps. All stock holding camps will be pre-approved by the Forest Service only in locations where they are not likely to contribute to surface water-quality degradation. A foreseeable future action is that sites causing water quality degradation or excessive soil compaction or soil loss would eventually be contained or closed under Alternative 1. The stock holding sites would more quickly come into compliance with BMPs and other standards under all other alternatives.

Therefore, while the soil and water quality impacts might be the same within 20 years, negative impacts could persist the longest under Alternative 1.

Cumulative Impacts: This alternative has been analyzed in terms of the effects of past, present and reasonably foreseeable future actions to soil and hydrologic processes. Although past actions have caused some alteration to watershed processes over much of the project area, and most of the project area is not pristine, watershed conditions here are likely some of the least altered in California or the contiguous United States. Less than 1 percent of the entire area is estimated to have any ground disturbance. Under Alternative 1, that condition should not change because uses within the wilderness would not change substantially.

Past actions negatively affecting soil and water resources include historical cattle, sheep and pack stock grazing, historical recreational activity, construction of small and large dams, and a minor amount of mining. Sheep and cattle grazing have been prohibited over most of the AA/JM Wildernesses since the 1950s, likely allowing soil and hydrologic function to improve in those areas.

Historical cattle, sheep, and pack stock grazing all likely had similar negative effects to watershed processes. The effects were probably similar to current pack stock grazing, although in the past, were likely more severe and widespread due to the larger extent and intensity of grazing. Documentation suggests that extensive cattle and sheep grazing and pack stock use between the mid 1800s and the early 1900s denuded vegetation, compacted soils, and altered stream morphology within Sierra Nevada Wilderness areas (Muir, 1894; van Wagtendonk and Parsons, 1996). These changes likely contributed to headcuts, stream downcutting and lowering of the water table existing today in some of the meadows within the project area. These conditions are attributable to grazing because grazing animals chisel and compact soil, and remove the protective sod and productive topsoil. Stream incision and gully erosion can result. If gullies are deep enough, they can intercept and divert surface and groundwater. This can lower the water table and alter the meadow's hydrologic function as the meadow is effectively drained by the gully (Hagberg, 1995). Trails through meadows can become incised and have a similar dewatering effect on a meadow. While vegetation can recover relatively quickly on an overgrazed meadow, with its water source unaltered, hydrologic function and geomorphic recovery can take decades longer (Kondolf, 1993).

Past recreational activity includes historical pack stock and hiker use. The effects of recreational use were the same in the past as today, although the greater party size associated with organized trips (such as Sierra Club trips) likely had more widespread effects with each trip. Effects at campsites included denuding vegetation, compacting soil, and increasing erosion into surface water. Effects on trails included likely creation of new user trails and the associated bare, compacted soil, expansion of trails to wider or multi-trailed paths, and possible associated soil loss on trails. The soil lost on trails probably entered water at stream crossings and where a trail was near a stream, slightly increasing sediment supply into surface water. Because trails are near streams in only discrete locations, the effects were local in extent. The effects were likely severe in a few cases, where a trail became severely incised or led to stream morphology changes, but in most cases likely caused minor input of sediment into surface water or minor soil loss along trail tread. These effects on trails could last indefinitely without trail repair. For example, when a trail incises, it captures more surface water, and that surface water continues to incise the trail. While the water quality effects are likely short-term, only occurring during heavy use or during rainstorms, there could be long-term effects to stream morphology and soil loss.

The effects of small dams include slight alteration in flow, blockage of large sediment such as gravel or boulders, and in some cases, alteration of lake levels that could affect riparian vegetation. The effects are local, only near the dams, and are not widespread throughout the wilderness, because there are not many known small dams. The effects of dams are only severe when the dam is large enough and waterproof enough to reduce the volume of water entering the stream over or through the dam. In these cases, flow would be less during the first part of runoff (such as early in the summer when snowmelt is high), but would increase to normal levels as soon as the lake filled to the dam level. The effects are unlikely to be compounded by commercial pack stock use, because most commercial pack stock operations do not affect water flow. However, when the dams reduce the extent of riparian vegetation growth, and commercial pack stock grazing or trailing reduces the extent of riparian vegetation, the effects could be cumulative loss of riparian vegetation.

The effects of mining that could affect surface water are the dumping of tailings into meadows or surface water, the diversion of water for mine use, and water pollution from mining practices such as use of toxic materials or deposition of mining equipment into surface water. These effects exist in discrete locations of the wilderness, and are not widespread. In some cases, dredger tailings can alter surface water flow when a stream must divert to get around the tailings. In this case, the effects would only be cumulative with commercial pack stock use if the pack stock use led to changes in stream morphology. This may have occurred in a few meadows, such as Minaret Mine Meadow. In this meadow, a small, mining related dam cut off coarse sediment supply to a downstream meadow, a tailings pile forced the stream to divert around the pile, and it is assumed that the associated pack stock grazed in the nearby meadow. The current stream incision and drier meadow vegetation in some locations may be a result of the cumulative effects of pack stock use and mining. However, in this case, there would likely be little commercial pack stock grazing under Alternative 1, and therefore the effect could continue to recover.

Present actions include implementation of the Ansel Adams, John Muir, and Dinkey Lakes Wilderness Management Plan, which was adopted in 2001. Cattle grazing continues mainly in the western portion of the Ansel Adams West Geographic Unit and the very western portion of the Mono Creek/Rock Creek Geographic Unit. Recreational use, including hiking, backpacking, and private pack stock use continues throughout the area.

One reasonably foreseeable future action is trail maintenance and repair. The frequency of repair is likely to decrease due to reduced trail maintenance/repair funds. Trails with severe water and soil resource impacts may be repaired within 10 to 30 years. Closure of meadows that are found to be unsuitable for grazing is also a reasonably foreseeable future action. Meadow closure or other specific meadow management would likely occur in a piecemeal fashion as meadows are identified as unsuitable or suitable for limited use. Meadow closure would improve soil conditions and provide for improved hydrologic function. Long-term soil productivity would be enhanced.

In localized areas, the combination of past, present and future grazing and recreational use would allow continuation of stream morphology alteration, meadow hydrologic function alteration and slight water quality degradation. The largest contributor to cumulative soil and water effects appears to be historical and current grazing of meadows and trailing to access grazing of meadows. Trails (system and user) and campsites also contribute to possible cumulative soil and water quality effect.

The areas with the greatest possible commercial pack stock contribution to cumulative effects are the Mono Creek Watershed and the Fish Creek Watershed. These areas receive some of the highest recurring levels of commercial pack stock use, and have some of the greatest impacts to meadows from grazing, and to streams from grazing and campsites. Under Alternative 1, the uses from today would continue in a similar pattern, and therefore there could be continued additive effects. For example, Grassy Meadow has extensive stream bank trampling, incised and widened channels, vegetation composition change, and compacted soil over much of the meadow. The meadow has been used for decades by commercial pack stock, and because it is a moderately large meadow, was likely used for cattle and/or sheep grazing in the 1800s and early 1900s. Although the effects from past grazing are unknown specifically in Grassy Meadow, it can be assumed that Grassy Meadow had widened, incised channels, compacted soil, and vegetation composition change from historical grazing that was likely heavier than recent commercial pack stock grazing. It is assumed that the past grazing made the meadow more vulnerable to some current impacts, although the meadow could have recovered during decades with low levels of grazing. Therefore, the additive effect of current commercial pack stock grazing with past livestock grazing is likely responsible for the current condition of Grassy Meadow. Continuation of the current uses would allow the negative hydrologic and soil effects to continue in meadows such as Grassy, which receive high levels of current commercial pack stock grazing.

In cattle allotments active within the past 15 years, pack stock use has been very low and appears to have contributed less to cumulative water and soil effects than recent and historical cattle grazing. In those areas, Alternative 1 would allow continued slow recovery of soil and water resource conditions.

The effect of Alternative 1 on cumulative wilderness water quality outside of grazed areas is unknown. Effectors to water quality within the wilderness include human waste, pack stock waste, human products such as soap and shampoo, domestic animal waste, wild animal waste, atmospheric deposition, cattle waste, and in some locations, possibly mine tailings. While there is evidence of increased coliform and bacteria below heavily used pack stock areas, there is also increased coliform in areas with little to no pack stock use, and no coliform found in areas with high levels of pack stock use. No studies have directly correlated heavy pack stock use with water contamination, although IDT observations of pack stock defecating directly in water suggests that pack stock manure does enter water, and could have negative effects to water quality. What is known is that one or a combination of the above listed effectors has increased nutrient levels across the Sierra Nevada, and that there are levels of human pathogens and other bacteria in some lakes capable of affecting human health. Pack stock and the clients supported by commercial pack stock likely add some fraction of the contaminants to surface water throughout the AA/JM Wildernesses, but the degree of their contribution is unknown. Under Alternative 1, the contribution should remain at the same unknown levels as today.

In some areas, such as near Sadler Lake in the Ansel Adams West Geographic Unit, continued pack stock use, especially grazing and grazing related activities could prevent recovery of stream condition, meadow hydrologic function, and soil productivity. With the reasonably foreseeable future actions related to grazing including reducing use, implementing site-specific management, or prohibiting grazing in meadows that are found to be unsuitable for grazing, there could be long-term beneficial effects to soil compaction, meadow hydrologic function, and stream function condition. This would lead to enhancement of long-term soil productivity.

Cumulative Watershed Effects (CWEs)

For a full discussion of cumulative watershed effects, see the document *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis* in the project record.

In summary, many individual areas appear to have local watershed effects that have been cumulative over time, but only three watersheds have what could be CWEs transported from upstream land uses. The greatest contributor to CWEs appears to be grazing, although trails also have noticeable effects. Effects from grazing are especially evident in meadows that have been grazed both historically and recently. The watershed effects are commonly stream incision, streambank collapse, stream widening, increased fine sedimentation in meadow streams, vegetation composition change, gully erosion, meadow compaction, and lowered water tables. In many cases, these effects cannot be associated with recent pack stock grazing, but pack stock grazing could exacerbate the impacts or slow the rate of recovery.

Under Alternative 1, there could likely remain potential for CWEs in the East Fish Creek Watershed (Upper Fish Creek, Purple Bench, Silver Divide, and Cascade Valley Analysis Units in the Fish/Convict McGee Geographic Unit), with little to no change in potential. The potential CWEs existing currently in the East Fish Creek Watershed can be attributed at least partially to past and present commercial pack stock use, including grazing and trail use. Other uses that could have contributed to possible CWEs are past cattle and sheep grazing, and past and present non-pack stock use of trails and campsites. Other watersheds with possible current CWEs include the Edison Reservoir Watershed (Ansel Adams West Geographic Unit, Graveyard Analysis Unit), and Granite Creek Watershed (Ansel Adams West Geographic Unit; Sadler, Triple Divide, Lillian, Staniford, and a portion of Cora Analysis Units). Both of those watersheds have possible CWEs that are likely attributable to historic and recent cattle grazing, with little contribution from commercial pack stock.

Alternative 2 – Modified

Summary of Alternative 2 – Modified Impacts

Water quality is thought to be good and will remain so except at a few local areas where there may be slight degradation. There will remain areas of local soil erosion, bare soil, and sedimentation into surface water from pack stock grazing, campsites, and trails. There would be a minor reduction of bare, compacted soil and sedimentation into surface water from designating stock holding camps, reducing the number of meadows where grazing is allowed, and limiting grazing stock nights in all meadows. Of 60 streams found to be functional at-risk (151 evaluated), it is estimated that 42 percent could have improved condition, about 1 percent could have a more degraded condition; and about 57 percent should remain functional at-risk. Meadow hydrologic function has some potential for improvement. Of the 41 meadows found to currently have hydrologic function alteration (230 evaluated), about 22 percent could have improved condition, 65 percent should remain in the same condition, and about 13 percent could have a downward trend.

Past and present grazing from production livestock and pack stock is thought to be the largest contributor to meadow hydrologic function alteration. Unlike Alternative 1, Alternatives 2 through 4 limit grazing to meadows that have been analyzed and designated as suitable for grazing. Under Alternative 2 – Modified, meadows where streams are rated non-functional or

functional at-risk, with a downward trend, are rested for grazing until conditions improve enough to support use. The two exceptions are Jackson Meadow and Purple Meadow. Jackson Meadow has portions where streams were rated functional at-risk, but those sections would be closed to grazing and the segments with streams at PFC would be grazed. Purple Meadow, where the stream was rated functional at-risk with a downward trend in 2001, showed an upward trend in 2004 and 2005. Therefore, it is determined to be resilient and able to support about one-third of the grazing that it experienced in the past. This alternative also limits grazing in those suitable meadows to a given number of stock nights. The restriction of grazing to meadows found to be suitable for grazing and not highly vulnerable to impacts should limit future adverse grazing impacts.

Analysis

Under Alternative 2 – Modified, there likely would be some slight overall improvement in stream and meadow hydrologic function, soil productivity, and water quality. Locally, there could be larger changes. The greatest improvement to soil and hydrologic resource condition would be from elimination of grazing on meadows that currently have soil or hydrologic function alteration or are unsuitable for grazing. Designation of stock holding campsites away from water, implementation of destination quotas, disapproval of user trails with resource impacts, and designation of system trails with resource impacts as not suitable for commercial stock until repaired, might also help reduce soil and hydrologic resource impacts. In a few locations, there could be minor increases in negative effects to soil and water resources because use may be moved to new locations that are more suitable for that use.

The main benefit to soil and hydrologic resources would be from the concentration of use. While use could be high in some destinations, retaining the current extent of bare, compacted soil, use will be contained to only specific destinations. No spot/dunnage trips could occur outside of destinations and no overnight stock holding trips could occur outside of about 170 designated campsites. Use could not expand into currently lightly used areas or areas unsuitable for pack stock use. Therefore, the extent of disturbed areas related to commercial pack stock use should remain the same or lessen.

Meadows/Wetlands: Under Alternative 2 – Modified, effects in meadows should be slightly improved relative to current conditions and Alternative 1. Only 94 meadows were actually grazed between 2001 and 2003, and this alternative would allow 135 key area meadows to be grazed by commercial pack stock. More meadows (about 155) within zones would also be open to grazing, but due to their lack of past reported grazing, it is unknown if these meadows would actually be grazed. Meadows found to be unsuitable for grazing, outside of designated grazing zones, or that have currently unacceptable impacts would be closed to use and only meadows found to be suitable for grazing would be open for grazing.

Although 135 field-analyzed meadows (and about 155 more non-field analyzed meadows) would be open to grazing, it is unlikely for commercial pack stock operators to have grazing in each of those meadows every year. Over the long term, it is likely that they would graze all or most of those meadows, some annually and some only every few years. The commercial pack stock operators requested to use 385 meadows, and are allowed to use about 1,500 under Alternative 1. However, they only used 94 between 2001 and 2003, and it is assumed that they will continue to use about the same total number of stock nights used in the past, or fewer, under Alternative 2. The range of stock nights reported was between 3,000 and 5,000, and it is expected the number

will continue in the lower end of that range. Grazing might decrease because the number of overnight traveling trips would be reduced and therefore there would be less need for grazing.

Elimination of grazing on meadows found to be unsuitable would allow for some local soil and hydrologic condition recovery. Of the roughly 95 meadows that were grazed from 2001 through 2003, about 25 will be closed or rested and about 10 will have substantially reduced grazing (at least 20 stock nights less) under Alternative 2. About 1/3 of the meadows/wetlands that were grazed from 2001 through 2003, therefore, could have reduced impacts from rest or reduced stock nights. About 70 meadows with no reported grazing from 2001 through 2003 will be opened to grazing. It is assumed that because those meadows were found to be suitable for grazing, and because they were given a grazing allocation designed to meet utilization standards, any negative effects, although they may occur, will be minimal and within standards.

Meadow/Wetland Hydrologic Function: The degree of hydrologic function alteration is unlikely to show any major changes in the majority of meadows. Effects are likely to be similar to Alternative 1, although slightly fewer meadows will have a downward hydrologic function trend (Figure 4.6). Meadow hydrologic function recovery may take decades in meadows even without any grazing or other disturbance because it depends on slow-acting geomorphic processes such as soil decompaction, stream aggradation and lateral migration. Because the proposed action was designed to attempt meeting desired conditions, no meadow should show more than slight negative alteration of hydrologic function under this alternative and the rest will likely have a static or minor to moderate upward trend.

Of the 230 meadows analyzed for hydrologic function alteration, 137 meadows were found to have no hydrologic function alteration. Of these 137 meadows, three to five are expected to have some minor reduction in hydrologic function under Alternative 2 – Modified (Table 4.65). A list of all meadows and the projected effects to hydrologic function under all alternatives is available in *Projected Changes to Meadow Stream Functional Condition and Meadow Hydrologic Function under All Alternatives* table in the project record. If the maximum recommended high grazing nights were used in all meadows, up to five might have minor reduction in hydrologic function. However, it is unlikely that the proposed stock nights would all be used in all meadows because although they are suitable for grazing, some are not in areas that have high enough past levels of traveling commercial pack stock trips or allowed overnight spot/dunnage trips to use all the grazing.

The Box Canyon above Grassy (sil2), Olive Lake West (sil15) and Second Recess meadows (sec14), are considered likely to receive near their recommended high stock nights of grazing regularly. While there could be some compaction, increase in bare soil, hoof punching, and stream bank trampling with grazing, the effects on hydrologic function should be minor and should not be permanent because the proposed stock nights were designed to protect meadow critical areas and meet vegetation utilization and stream bank trampling standards.

The two meadows considered unlikely to be grazing to near their recommended high are Meadowbrook (bim5) and Middle Deer Creek (ccd17). Meadowbrook's recommended high stock nights are 145 and 70 was the recent high. There will likely be no reduction in hydrologic function if near 70 stock nights is used. If it is grazed for 145 stock nights due to some change in use patterns, there could be increased bare soil, increased stream bank trampling, and increased sod fragmentation that could cause the hydrologic function to have a slight downward trend. Under Alternative 2 – Modified, the critical fen area in this meadow would be closed to stock

entry, and therefore should remain in good condition. Deer Creek had 95 stock nights reported in the past, but the proportion that grazed in Middle Deer Creek Meadow (ccd17) is unknown. The recommended high for ccd17 is 230 stock nights. Because the numbers of traveling trips should not have any major increase to this area, and because the location is close enough to the pack stations that grazing will not be necessary on spot/dunnage trips, it is unlikely that grazing would double.

Of the 93 meadows with at least slight hydrologic function alteration, about 65 percent would be expected remain in their current condition, about 22 percent would be expected to show minor to moderate improvement, and about 13 percent could show a minor downward trend in hydrologic function.

A few different processes could occur in meadows that are expected to have continued hydrologic function alteration. Many of them have current commercial pack stock grazing contributing to hydrologic function alteration, and could continue to have similar grazing intensity and impacts under this alternative. Others have hydrologic function alteration due to conditions unrelated to recent commercial pack stock use, such as cattle grazing, drought or incised trails, and will not likely recovery their hydrologic function even without grazing. A few of the meadows have hydrologic function alteration due at least partially to recent pack stock grazing, and even if that grazing is removed, the hydrologic function alteration will take decades or centuries to recover. Lastly, a few meadows have hydrologic function alteration due to something other than recent pack stock use, and would show some recovery except that they would be allowed to be grazed substantially by commercial pack stock.

It is assumed that meadows with more severe hydrologic function alteration will be less likely to begin an upward trend, even in the long term. Of the 17 meadows with current severe hydrologic function alteration, we expect only two, Grassy Meadow (sil22) and the Box Canyon above Jackson Meadow (sil3), to have potential for some minor recovery in hydrologic function. These meadows both have their water source intact. Though streams are incised, springs contribute a major portion of water to the meadows, thereby watering the meadow and allowing for vegetative recovery over time.

It is assumed that severe hydrologic function alteration takes many years to occur, but in some meadows, such as at Rodgers Lake in the URU analysis unit, recent pack stock grazing has caused slight hydrologic function alteration in just a few years. Therefore, it is assumed that the 6 percent of meadows that could have a downward trend in hydrologic function would likely only have a slight downward trend in the next few years. However, even small, incremental reduction in the ability of a meadow to absorb water, and the ability of stream banks to withstand high flows could allow for sudden severe stream incision or gully formation if a large flood occurs before recovery.

Jackass Meadow is the one meadow that could have even greater hydrologic function alteration. Most of Jackass Meadow is outside of the wilderness, but it is discussed here because there are portions within the wilderness. The meadow currently has severe hydrologic function alteration because it is downstream from Edison Dam, and flow is regulated, preventing flooding to overflow the meadow banks as should occur in a natural meadow setting. The pack stock use does not appear to be causing hydrologic function alteration with the current annual stock nights around 400 for the entire 135-acre meadow complex. Alternative 2 – Modified recommends increasing the annual grazing up to 2,025 stock nights in the entire 135-acre meadow. This could

increase the extent of hydrologic function alteration to beyond that being caused by dam operations. If the meadow begins to show a major increase in hydrologic function alteration, the grazing numbers would be reduced.

For a list of predictions for each meadow's hydrologic function and stream functional condition under all Alternatives, see the project record.

Stream Functional Condition (PFC): Functional condition of streams might improve in some areas that are currently Functional at-risk, and might remain static in others. The overall difference from Alternative 1 should be minor, but there should be slightly more streams with a trend toward potential and slightly fewer streams with a trend away from potential.

For streams in the project area that are functional at-risk, the Proposed Action designates the stream banks as critical areas, where negligible stock entry is allowed. In some of these cases, especially in wet meadows, removal of pack stock from the stream banks would allow vegetation to grow quickly on banks and in-stream bars, improving stream functional condition quickly. In areas with lower fine sediment loads or lower productivity, vegetation would not quickly grow on stream banks or on point bars, even if there was little trampling near the stream banks.

Not all meadows would have worsened stream functional condition with increased grazing. Those streams that have well-armored stream banks, such as Davis Lakes Meadows (uru1), are not likely to have negative impacts from increased grazing. Also, in those meadows where streams are functional at-risk with a downward trend due to cumulative impacts over many years, such as Johnston Meadow (min11) and Detachment Meadow (cor6), pack stock grazing at the levels proposed should not have noticeable further impacts to the stream condition. However, when a stream is not well armored by sod or boulders, and when the stream is not already in poor condition, greatly increased grazing has a chance of affecting stream functional condition.

Of the 151 streams in meadows where stream functional condition was analyzed, 91 (60 percent) are at PFC. These streams will likely remain at PFC as long as any grazing in the meadows does not exceed streambank disturbance standards of 20 percent, they do not receive increased private pack stock grazing, and no new trails are created that parallel the stream closely or have a major stream crossing. In these meadows, if the streambank trampling standard is exceeded, there is a chance that stream segments could have a slight decrease in function. Monitoring will ensure that the stream meets the 20 percent streambank trampling standards and does not reach a functional at-risk condition. If standards are not met, it is a foreseeable future action that meadows would have reduced stock nights or be closed to grazing. However, eight currently PFC meadows are projected to have some potential for a minor trend away from potential stream functional condition, although not enough to lead to a functional at-risk condition.

Of the 60 stream segments that are currently functional at-risk, about 40 percent are expected to have some improvement in stream functional condition. About 60 percent are expected to remain in their current functional at-risk state, while only one is expected to have a minor reduction in stream functional condition.

Of the 16 stream segments where condition was rated functional at-risk with a downward trend, 10 are expected to have improved condition under Alternative 2 – Modified. Six of the stream segments have the potential to remain with a downward trend and none should have an accelerated downward trend. Four of the eight expected to continue in their current condition are experiencing effects that will not be altered by removal of commercial pack stock. One will

probably continue to be grazed by cattle (Graveyard Meadow), one is functional at-risk due mainly to trails that will continue to be used (Ram Meadow), and two are functional at-risk due to an unknown reason (Crater Meadow and Dorothy Outlet Meadow). The other two meadows that could remain with a downward trend, McClure to Sadler and Jackson, have similar or reduced grazing nights than they have had in the past. In these cases, if the pack stock are successfully managed to avoid the disturbed stream segments, and to prevent streambank disturbance over 20 percent in the areas not yet disturbed, the banks could begin to grow vegetation that could improve the stream functional condition. However, the extensive stream networks and sensitivity of stream banks suggests that it may be difficult to manage stock if they graze at large.

Of the 29 stream segments where stream condition was rated functional at-risk with a non-apparent trend, 9 are expected to have some improvement, while 19 should remain in their current condition. One is expected to have a trend away from potential. Either the 19 that are expected to remain in their current condition appear either to be experiencing effects that will not be altered by removal of commercial pack stock, or they will be grazed to a level that could prevent recovery. Many of these meadows have been grazed by cattle within the past 10 years, and those cattle grazing effects are in their beginning stages of recovery or have not yet recovered. Vegetation has begun to fill in bare areas, but soil compaction remains, streams have some banks continuing to collapse, and water tables remain lowered. These streams may stabilize with further vegetation growth, but most such streams will not even in the long-term, and therefore incision will remain even with removal of all grazing. Jackass Meadow is the one meadow expected to have a downward trend under Alternative 2 – Modified. Grazing would increase from 400 to 2,025 stock nights. Currently, the stream is functional at-risk primarily due to flow regulation, but concentrated increased use could increase stream bank trampling and vegetation loss near the stream.

Fifteen stream segments were found to be functional at-risk with an upward trend. We expect six to improve at least slightly from their current condition, and nine to remain in their current functional at-risk state. The same streams that are currently functional at-risk with an upward trend should have the same effects as under Alternative 1 because the proposed management is similar to what is occurring currently.

Grazing water quality effects: Under Alternative 2 – Modified, fine sedimentation into surface water from meadows will likely decrease overall relative to Alternative 1, and remain in a small fraction of locations wilderness-wide. At some local areas, it could substantially decrease. There could be minor increases in fine sedimentation into surface water in locations with increased grazing.

Although water quality is thought to be good on a wilderness scale, there are some meadows where bank sloughing, stream incision, and soil erosion increases fine sediment in streams within and directly downstream of the meadows (see photo).



Stream through Grassy Meadow. The IDT members in the photo are walking on a sandy bar in the widened stream, though to be a result of increased sedimentation from meadow and bank erosion over time.

These are generally the meadows with a stream functional condition rating of “functional at-risk,” or those with high levels of sod fragmentation. Those meadows where stream functional condition is expected to improve from its current state will likely have a decrease in streambank erosion and therefore a decrease in fine sedimentation into surface water. About 30 percent of meadows analyzed have moderate to severe sod fragmentation, which could be leading to soil erosion and subsequent fine sedimentation into surface water. However, much sod fragmentation is not adjacent to water, and the reduction in fine sedimentation due to reduced sod fragmentation should be small.

Under Alternative 2 – Modified, pack stock use would be reduced or eliminated in over 1,000 meadows where it is allowed today. The actual days of pack stock use and grazing are expected to remain about the same wilderness-wide, although some watersheds, such as Fish Creek, will have reduced grazing. Therefore, pack stock manure is not expected to degrade water quality from its assumed current overall good condition. Sediment from pack stock grazing should be reduced relative to Alternative 1, due to grazing being limited to meadows suitable for grazing and less likely to have major erosion.

Meadow Soil Effects: As under Alternative 1, changes in commercial pack stock management, which is only part of total recreational use, will likely have little affect on overall soil productivity wilderness wide or on the Geographic Unit scale. There should be a slight overall improvement in soil productivity over current conditions and Alternative 1. Meadows with grazing reduced or eliminated could have increased soil productivity, reduced soil compaction, reduced bare soil, and reduced sod fragmentation. Fewer could have slightly decreased soil productivity, increased soil compaction, increased bare soil, and increased sod fragmentation because they could receive more grazing than currently. The negative effects should be within standards. However, even if standards are met, there could be some increased erosion, increased stream bank disturbance, and decreased stream stability. If this occurs, grazing management would likely be altered to arrest the degradation.

Under Alternative 2 – Modified, soil compaction effects could vary. It is uncertain how long it will take compaction to recover in meadows where Alternative 2 recommends grazing management changes to help reduce compaction. Soil compaction recovers with frost action, shrink and swell due to drying and wetting, and biotic activity such as vegetation growth and

rodent burrowing (Alexander and Poff, 1985). Studies have shown various rates of recovery for compaction, depending on climate, soil type, and depth of compaction. Soil Orr (1960) found that recovery times for compacted surface soils in South Dakota to return to their pre-compacted bulk densities on grazing lands was 9 years. However, in the 15 to 23 cm layer there was no compaction recovery detected after 9 years. In Colorado, Wheeler et al. (2002) found that compaction from a one-time heavy cattle grazing event in a montane meadow compacted soils at the 5 to 15 cm soil depth. That compaction recovered to pre-disturbed values one year later. The authors assumed the high rate of recovery was due to frequent freeze-thaw events and high organic matter in soils. The observations of the IDT between 2001 and 2004 in the project area suggested that severe compaction (in this case, from cattle grazing) shows little recovery over a 10 to 15 year period at a depth below the top few centimeters.

Of the 179 meadows analyzed for compaction, 45 were found to have moderate to severe compaction (25 percent). Of these 45 meadows, 34 were found to be suitable for grazing and have stock nights allocated under Alternative 2 – Modified. In 21 meadows, the compaction is assumed unrelated to recent pack stock use and mainly due to cattle grazing. In these meadows, the recommended high number of commercial pack stock grazing nights is probably much less than cattle grazing densities. Therefore, compaction from past uses should decrease over time, but the improvements will be slower than if the meadows were not grazed. In the other 13 meadows, recent pack stock grazing is thought to have at least partially contributed to the compaction. In three of those meadows, the recommended stock nights are considerably less than from 2001 to 2003. The reduced trampling should allow for slow reduction of compaction. In the remaining seven meadows, grazing will continue near or above recent levels. This may allow compaction to continue, as the meadows should continue to receive the same impacts that led to the compaction.

Most of the 133 meadows that are known to have slight or no compaction should not have major increases in compaction severity or extent under Alternative 2. About 80 of them are considered suitable for grazing. Only about 12 of those meadows could likely have high enough grazing density and soil moisture and type to be able to have increased compaction. In these meadows, if compaction or other impacts begin to occur, the stock nights of grazing allowed would be reduced, preventing any major increase in compaction.

Meadow sod fragmentation would likely decrease overall, but there may be some meadows where sod fragmentation remains or increases. Of the 223 meadows analyzed for sod fragmentation, about 60 currently have moderate or severe sod fragmentation. Of those, 38 were determined to be suitable for grazing. Only about five of those that could be grazed have a high potential for increased sod fragmentation extent, due to the stocking density recommended and the soil moisture and type.

Most meadows with slight to no sod fragmentation would not have major increases in sod fragmentation under Alternative 2. Of the meadows analyzed, 140 were found to have slight to no sod fragmentation. Eighty-four of those were determined to be suitable. Of those, about 17 have the potential for increased sod fragmentation if all of the recommended stock nights are used regularly. These meadows have much higher grazing recommended than has been used in the past. If they begin to show a major increase in sod fragmentation, the grazing numbers would be reduced, reducing the chance that the meadow would have substantial increases in long-term sod fragmentation.

Trails: Trail effects are not substantial to water and soil processes wilderness-wide, because trails cover such a small portion of land. Local effects, however, do occur and are sometimes severe. Under Alternative 2 – Modified, negative trail effects on soil and hydrologic condition will likely be slightly less than Alternative 1. Trails would likely have greater hydrologic impacts than under Alternatives 4 and 5. However, the differences between alternatives would likely be minor, as much of the trail condition depends on levels of funding for trail repair and maintenance, and less depends on pack stock management.

Under this alternative, stock use and impacts to trails will remain similar to current conditions and Alternative 1. However, 20 of 59 system trails that currently have severe soil or hydrologic impacts, and are used by commercial pack stock, would be closed to commercial pack stock. While hiker use would remain on these trails, it should allow for slower erosion rates. These trails would likely stop widening but could continue to deepen and therefore divert more overland flow and stream flow even with removal of pack stock use. Removal of pack stock use is not likely to allow severely incised or widened trails to aggrade or narrow. The deepening and widening would likely cease only with trail repair, which could occur in a few years or decades. However, removal of pack stock could slow future incision and widening, because pack stock are thought to loosen soil and allow it to be transported down the trail more than hikers. Cole (1991) found that trampling is the primary agent of trail widening, while the primary agent of deepening is running water. Consequently, the critical factors that influence depth are more likely to be related to environment (soil characteristics or slope steepness) rather than use.

Erosion levels from trails closed to commercial pack stock should also decrease. Studies comparing the effects of pack stock use and hiker use on trail erosion in the Rocky Mountain Region have presented evidence that horse traffic tends to cause greater trail erosion than hiker traffic (Deluca et al., 1998; Wilson and Seney, 1994; Whittaker, 1978; Dale and Weaver, 1974). Deluca et al. (1998) found that soil loss directly at the time of horse traffic was more pronounced on dry trails, but that soil was compacted more on pre-wetted trails, possibly leading to increased runoff velocity and later trail erosion.

The above literature suggests that trails do not become less incised or narrower through short time frames, but either stabilize or become more incised and widened.

On the 878 miles of system trail that would be open to commercial pack stock use, their future condition would likely depend on trail maintenance and repair. These trails could become more incised, widened, and have more multi-trailing than without pack stock use. As with trails not used by commercial pack stock, they are not likely to have reduced incision, widening or multi-trailing without repair.

Campsites: The differences in effects from campsites should be small enough to be undetectable on a wilderness scale. Negative hydrologic and soils effects from campsites should be slightly less than under Alternatives 1 and 3, but slightly more than under Alternatives 4 and 5. Under all alternatives, sites closer than 100 feet from water will gradually be closed and rehabilitated, slightly reducing the area of compaction near surface water. This could reduce erosion and sedimentation.

Under Alternative 2 – Modified, all stock holding campsites would be designated. Because designated sites would have to meet BMPs, all stock holding sites within 100 feet of water or affecting water quality would be closed and obliterated. This could slightly reduce local sedimentation into surface water as at least 28 stock holding sites would be obliterated or

contained away from water. The IDT did not visit all stock holding sites, and therefore more could be obliterated when the designation process occurs. The designation of stock holding sites would have little effect on the total number of stock holding sites. However, it would prevent any expansion of sites that could occur under Alternative 1, preventing increased soil compaction, bare soil extent, loss of soil productivity, and erosion from campsites. It is possible that individual stock holding camps would become large and have more soil erosion because stock holding would be concentrated in 170 locations. Many of those sites would be used rarely, as they are not in popular destinations. While there could be more soil loss at individual sites, the overall potential extent of soil loss from stock holding sites should decrease because there will be very few new sites created over time.

Under Alternative 2 – Modified, there would be about 170 designated stock holding camps. Under Alternative 3, there would be 101 designated stock holding camps. Under Alternative 4, there would be 59 designated stock holding camps.

Cumulative Impacts

This alternative has been analyzed in terms of the effects of past, present and reasonably foreseeable future actions to soil and hydrologic processes. This analysis separates cumulative effects into general cumulative effects to soil and water resources that are a result of past, present and reasonably foreseeable future actions, and cumulative watershed effects, which are the effects of upstream land uses transported downstream. The differences between Alternative 1 and Alternative 2 – Modified should be small on a wilderness-wide scale. In local areas, particularly within the Fish Creek/Convict/McGee Geographic Unit, Alternative 2 – Modified is likely to result in improved soil and water resource condition and provide a reduced risk for an adverse cumulative watershed effect.

The past, present and reasonably foreseeable future actions are the same under Alternative 2 – Modified as under Alternative 1, other than the differences in management prescribed in the alternative.

Alternative 2 – Modified would reduce the levels and extent of pack stock use on trails and at campsites, by prescribing destination quotas and grazing levels. Grazing would be prohibited in areas that were determined to be unsuitable for grazing, preventing future soil loss, stream bank trampling, sod fragmentation, and other soil and water impacts in those areas. This alternative also allows only negligible stock entry or utilization in critical areas that are usually very wet.

The implementation of more stringent guidelines for commercial pack stock management should reduce the risk of adverse cumulative effects resulting from campsites and commercial pack stock grazing. It would provide protection of unsuitable grazing areas, preventing fragmented sod, vegetation removal, stream bank trampling, and meadow surface and stream bank erosion. Limitations on stock nights of grazing were designed to prevent vegetation utilization, stream bank trampling, and soil disturbance from exceeding standards (USDA Forest Service, 2001; USDA Forest Service, 2004; Forest Service Handbooks 2509).

Overall, the risk of adverse cumulative effects would be minor, except in the Upper Fish Creek, Silver Divide, Cascade Valley and Purple Bench Analysis Units in the Fish Creek/Convict/McGee Geographic Unit. In these areas, it appears that recent commercial pack stock use combined with historical grazing or recreational use has contributed to moderate intensity adverse cumulative effects from campsite use, commercial pack stock use of trails, and moderate

to heavy grazing in meadows. These effects are also likely connected to historical cattle sheep and pack stock grazing, non-commercial pack stock users, and hikers, but the commercial pack stock also appear to have contributed. The more stringent management proposed under Alternative 2 – Modified in this area has the potential to reduce adverse cumulative effects to soil and water resources, although some would likely remain over the short term. In the long term, the commercial pack stock related impacts would likely be reduced due to a reduction in grazing in meadows with current moderate to severe hydrologic function alteration and functional at-risk streams.

Cumulative Watershed Effects – Alternative 2 – Modified

On a wilderness-wide scale, this action would not contribute to cumulative watershed effects (CWEs), and should reduce the potential for CWEs in one watershed.

Cumulative watershed effects are different from general cumulative effects because CWEs refer to effects from land uses upstream that have been transported downstream through the fluvial system. General cumulative effects can refer to any combination of effects from past, present and reasonably foreseeable future actions that could cause greater effect to soil and hydrologic processes than each action by itself. General cumulative effects can occur in one location, and do not have to be transported downstream to qualify as cumulative effects.

Under Alternative 2 – Modified, East Fish Creek is the only watershed that will likely have a change in CWE potential. There should be a slight reduction in CWE potential. The watershed condition should improve under all action alternatives, to varying degrees. The greatest contributor to CWEs in the East Fish Creek watershed appears to be grazing, although trails' erosion, surface water diversion and stream crossing incision may have contributed. Under Alternative 2 – Modified, grazing would be eliminated in meadows where it is unsuitable, and limited in all other meadows. A one-night stay limit for traveling trips would also likely reduce the number of successive days where each meadow was grazed, possibly allowing some vegetative recovery before the next grazing episode.

Along with the foreseeable future action that the trails causing the most severe soil and water resource impacts would be repaired within 20 years, it is likely that the restrictions on commercial pack stock use under Alternative 2 – Modified would gradually reduce soil erosion, stream bank disturbance, vegetation removal, stream incision lowering of water tables in meadows. Thus, there would likely be a reduction of cumulative watershed effects in this area. The potential for cumulative watershed effects in the other two watersheds that currently may have cumulative watershed effects (Edison Reservoir and Granite Creek) would be the same as under Alternative 1. Most of those impacts appear to be related to recent and historical cattle grazing, and the effects of commercial pack stock management would have little to no effect on their condition.

Alternative 2

Summary of Alternative 2 Impacts

Water quality is thought to be good and will remain so, except at few local areas where there may be slight degradation. There will remain areas of local soil erosion, bare soil, and sedimentation into surface water from pack stock grazing, campsites, and trails. There would be a minor reduction of bare, compacted soil and sedimentation into surface water from designating

stock holding camps, reducing the number of meadows where grazing is allowed, and limiting grazing stock nights in all meadows. Of 60 streams found to be functional at-risk (151 evaluated), it is estimated that 36 percent could have improved condition, 2 percent could have a more degraded conditions; and 62 percent will remain functional at-risk. Meadow hydrologic function has some potential for improvement. Out of the 230 meadows evaluated, 93 were found to have hydrologic function alteration; approximately 21 percent could have improved condition, 66 percent should remain in the same condition, and 13 percent could have a downward trend.

Past and present grazing from production livestock and pack stock is the largest contributor to meadow hydrologic function alteration. Unlike Alternative 1, Alternatives 2 through 4 limit grazing to those meadows that have been analyzed and designated as suitable for grazing. They also limit grazing in those suitable meadows to a given number of stock nights. The restriction of grazing, to meadows found to be suitable for grazing and not highly vulnerable, should limit future adverse grazing impacts.

Analysis

Under Alternative 2, there likely would be some slight overall improvement in stream and meadow hydrologic function, soil productivity, and water quality relative to Alternative 1. Locally, there could be larger changes. The effects should be the same as under Alternative 2 – Modified in most locations. The overall management strategy is the same, with destination quotas, designated stock camps, grazing stock night allocations for meadows deemed suitable for grazing, and de facto operating areas for all spot/dunnage trips. The only differences are a greater number of stock camps (about 175 versus about 100), a greater number of destinations, and a difference in stock night allocations for 15 meadows.

As with Alternative 2 – Modified, the greatest improvement to soil and hydrologic resource condition would be from elimination of grazing on meadows that currently have soil or hydrologic function alteration or are unsuitable for grazing. Designation of stock holding campsites away from water, implementation of destination quotas, disapproval of user trails with resource impacts, and reduction in pack station overlap might also help reduce soil and hydrologic resource impacts. In a few locations, there could be slight increases in negative effects to soil and water resources because use may be moved to the new locations that were found to be more suitable for the use. The areas where the use moved from, however, should have improved condition with removal of commercial pack stock uses such as grazing or camping.

Meadows/Wetlands: Under Alternative 2, effects in meadows should be almost the same as under Alternative 2. Grazing is different in only 17 meadows, listed below.

Nine meadows would be open to grazing or have substantially greater stock nights (over 20) under Alternative 2 than under Alternative 2 – Modified (see Table 2.30 for more detailed management by meadow).

Table 4.67. Nine meadows open to grazing or allowing substantially greater stock nights in Alternative 2 compared to Alternative 2 – Modified.

Meadow Name	Geographic Unit	Alternative 2 – Modified management	Alternative 2 management
Ashley Lake Meadows	Ansel Adams East	Closed to grazing	44 stock nights
Johnston Meadow	Ansel Adams East	Rest for resource recovery	193 stock nights
Northwest Delta Thousand Island Lake	Ansel Adams East	Rest for resource recovery	106 stock nights
Rainbow to Margaret Meadow	Fish Creek/Convict/McGee	Rest until trail repair/recovery	127 stock nights
Baldwin (Scheelore) Meadow	Fish Creek/Convict/McGee	Closed to grazing	12 stock nights
Martin's Meadow	Fish Creek/Convict/McGee	Rest for resource recovery	25 stock nights
Box Canyon Above Grassy	Fish Creek/Convict/McGee	Rest until trail repair	67 stock nights
Upper Graveyard Meadow	Mono Creek/Rock Creek	Rest for resource recovery	127 stock nights
Middle Graveyard Meadow	Mono Creek/Rock Creek	Rest for resource recovery	41 stock nights

Eight meadows would be closed to grazing or have substantially fewer stock nights (over 20) under Alternative 2 than under Alternative 2 – Modified (see Table 2.30 for more detailed management by meadow).

Table 4.68. Eight meadows closed to grazing or allowing substantially fewer stock nights in Alternative 2 compared to Alternative 2 – Modified.

Meadow Name	Geographic Unit	Alternative 2 – modified management	Alternative 2 management
Pond Meadow	Ansel Adams West	58 stock nights	No action
Olive Lake West	Fish Creek/Convict/McGee	114 stock nights	25 stock nights
Horse Heaven	Fish Creek/Convict/McGee	65 stock nights in wet years, 150 in normal or dry	65 stock nights
Cascade Valley	Fish Creek/Convict/McGee	20 stock nights	Closed to grazing
Double Meadow (pasture)	Florence/Bear	1251 stock nights	No stock nights allocated
Lower Blayney Meadow (pasture)	Florence/Bear	544 stock nights	60 stock nights
Hell Hole Meadow (pasture)	Florence/Bear	442 stock nights	200 stock nights
Jackass Meadow (pasture) (mostly outside Wilderness)	Florence/Bear	2025 stock nights	400 stock nights

Elimination of grazing on some meadows found to be unsuitable for grazing would allow for some local soil and hydrologic condition recovery. Of the 94 meadows that were grazed from 2001 through 2003, 20 would be closed or rested and 15 would have substantially reduced grazing (at least 20 stock nights less) under Alternative 2. Therefore about 1/3 of the meadows/wetlands that were grazed from 2001 through 2003 would have reduced impacts from rest or reduced stock nights. About 70 meadows with no reported grazing from 2001 through 2003 would be opened to grazing. It is assumed that because those meadows were found to be suitable for grazing, and because they were given a grazing allocation to meet utilization standards, the negative effects, although they may occur, will be minimal and within standards.

Meadow/Wetland Hydrologic Function: The degree of hydrologic function alteration is unlikely to show any major changes in the majority of meadows. Effects would likely be similar to Alternative 1, although slightly fewer meadows would have a downward hydrologic function trend (Figure 4.6, Table 4.65). Effects would be very similar as Alternative 2 – Modified, because management is the same in all but 17 meadows, except for the following differences.

Six meadows are anticipated to have different hydrologic function trend under Alternative 2 than under Alternative 2 – Modified. Three of those meadows are expected to have a trend away from potential rather than no change or an upward trend. Those meadows are the Box Canyon above Grassy (sil2), Rainbow to Margaret (mar4), and Middle Graveyard Meadow (gra2).

One meadow, the Northwest Delta of Thousand Island Lake (thi12), should have no change instead of an upward trend under Alternative 2 relative to Alternative 2 – Modified.

Two meadows are projected to have no change in meadow hydrologic function rather than a downward trend as was predicted under Alternative 2 – Modified. Those meadows are both pastures, Lower Blayne Meadow (sak17), and Jackass Meadow (eaf1).

Overall, because nine meadows would be open and eight would be closed under Alternative 2, and most of those meadows should not have differences in hydrologic function effects, the net effects to hydrologic function across the Wilderness should be about the same.

For a list of predictions for each meadow's hydrologic function and stream functional condition under all Alternatives, see Project Record, *Projected Changes to Meadow Stream Functional Condition and Meadow Hydrologic Function under all Alternatives*.

Stream Functional Condition (PFC): Functional condition of streams might improve in some areas that are currently Functional at-risk, and might remain static in others. The overall difference from Alternative 1 should be minor, but there should be slightly more streams with a trend toward potential and slightly fewer streams with a trend away from potential. The difference between Alternative 2 and Alternative 2 – Modified would be minor because management is the same in all but 17 meadows and most of those management changes should not affect stream functional condition. Only six meadows are expected to have different trend in stream functional condition under Alternative 2 than under Alternative 2 – Modified.

Overall, 25 meadows are expected to have an upward trend, 121 meadows are expected to remain in their current condition, and 6 meadows are predicted to have a downward stream functional condition under Alternative 2 – Modified.

The three meadows that should have a downward or static trend instead of an upward trend in stream functional condition are Johnston Meadow (min11), the Northwest Delta of Thousand

Island Lake (thi12), and Upper Graveyard Meadow (gra11). All of these meadows would have grazing under Alternative 2, but would be rested under Alternative 2 – Modified.

Four meadows should have stream functional condition that is improved relative to Alternative 2 – Modified. Those meadows are Silver Pass Lake Meadow (sip7), Stevenson Meadow (lac1), Jackass Meadow/pasture (eaf1), and Lower Blayne Meadow/Pasture (sak17). All of these meadows would be grazed under Alternative 2 – Modified, but would be closed under Alternative 2.

Not all meadows would have worsened stream functional condition with increased grazing, or improved functional condition with reduced grazing. However, the streams listed above are either not well armored by sod or boulders, the stream is already functional at-risk, or the meadow has very low productivity, and so greatly increased grazing has a chance of affecting stream functional condition.

Grazing Water Quality Effects: Under Alternative 2, fine sedimentation into surface water from meadows will likely decrease overall relative to Alternative 1, and remain in a small fraction of locations wilderness-wide. At some local areas, it could substantially decrease. There could be minor increases in fine sedimentation into surface water in locations with increased grazing. The difference between Alternative 2 and Alternative 2 – Modified should be negligible, because management activities and project use is the same in most locations.

Although water quality is thought to be good on a wilderness scale, there are some meadows where bank sloughing, stream incision, and soil erosion increases fine sediment in streams within and directly downstream of the meadows.

Under Alternative 2, pack stock use would be reduced or eliminated in over 1,000 meadows where it is allowed today (although only 94 have had reported use). The actual days of pack stock grazing is expected to remain about the same wilderness-wide, although some watersheds, such as Fish Creek, will have reduced grazing. Therefore, pack stock manure is not expected to degrade water quality from its assumed current overall good condition. Sediment from pack stock grazing should be reduced relative to Alternative 1, due to grazing being limited to meadows suitable for grazing and unlikely to have major erosion.

Meadow Soil Effects: As under Alternative 1, changes in commercial pack stock management, which is only part of total recreational use, will likely have little affect on overall soil productivity wilderness wide or on the Geographic Unit scale. There should be a slight overall improvement in soil productivity over current conditions and Alternative 1, but the improvement would likely be greater under Alternatives 4 and 5. Meadows with grazing reduced or eliminated could have increased soil productivity, reduced soil compaction, reduced bare soil, and reduced sod fragmentation. Fewer could have slightly decreased soil productivity, increased soil compaction, increased bare soil, and increased sod fragmentation because they could receive more grazing than currently. The negative effects should be within standards. However, even if standards are met, there could be some increased erosion, increased stream bank disturbance, and decreased stream stability. If this occurs, grazing management would be altered to arrest the degradation.

Under Alternative 2, soil compaction effects could vary. It is uncertain how long it will take compaction to recover in meadows where Alternative 2 recommends grazing management changes to help reduce compaction. The observations of the IDT between 2001 and 2004 in the

project area, along with existing research, suggests that severe compaction (in this case, from cattle grazing) shows little recovery over a 10 to 15 year time period at a depth below the top few centimeters.

Meadow sod fragmentation would likely decrease overall, but there may be some meadows where sod fragmentation remains or increases. Of the 223 meadows analyzed for sod fragmentation, about 60 currently have moderate or severe sod fragmentation. Of those, 36 were determined to be suitable for grazing. Only about five of those that could be grazed have a high potential for increased sod fragmentation extent, due to the stocking density recommended and the soil moisture and type.

Most meadows with slight to no sod fragmentation would not have major increases in sod fragmentation under Alternative 2. Of the meadows analyzed, 140 were found to have slight to no sod fragmentation. Eighty-three of those were determined to be suitable. Of those, about 15 have the potential for increased sod fragmentation if all of the recommended stock nights are used regularly. These meadows have much higher grazing recommended than has been used in the past. If they begin to show a major increase in sod fragmentation, the grazing numbers would be reduced, reducing the chance that the meadow would have substantial increases in long-term sod fragmentation.

Trails: Trail effects are not substantial to water and soil processes wilderness-wide, because trails cover such a small portion of land. Local effects, however, do occur and are sometimes severe. Under Alternative 2, negative trail effects on soil and hydrologic condition will likely be slightly less than Alternative 1, and almost the same as under Alternative 2 – Modified. Under Alternative 2 – Modified, 878 miles of system trail would be open to commercial pack stock use. Under this alternative, 894 miles of trail would be open to commercial pack stock use. Therefore, about 16 additional miles would be open to commercial pack stock relative to Alternative 2 – Modified, but 61 fewer than under Alternative 1.

Eleven of 59 system trails that currently have severe soil or hydrologic impacts and are used by commercial pack stock would be closed to commercial pack stock. While hiker use would remain on these trails, it should allow for slower erosion rates. These trails would likely stop widening but could continue to deepen and therefore divert more overland flow and stream flow even with removal of pack stock use. Removal of pack stock use is not likely to allow severely incised or widened trails to aggrade or narrow. The deepening and widening would likely cease only with trail repair, which could occur in a few years or decades. However, removal of pack stock could slow future incision and widening, because pack stock are thought to loosen soil and allow it to be transported down the trail more than hikers.

Erosion levels from the 61 miles of system trails closed to commercial pack stock should also decrease. The literature suggests that trails do not become less incised or narrower through short time frames, but either stabilize or become more incised and widened.

On the 894 system trail miles that would continue to see commercial pack stock use, their future condition would likely depend on trail maintenance and repair. These trails could become more incised, widened, and have more multi-trailing than without pack stock use. As with trails not used by commercial pack stock, they are not likely to have reduced incision, widening or multi-trailing without repair.

Campsites: The differences in effects from campsites should be small enough to be undetectable on a wilderness scale. Negative hydrologic and soils effects from campsites should be slightly less than under Alternatives 1 and 3, but slightly more than under Alternatives 4 and 5. Under all alternatives, sites closer than 100 feet from water will gradually be closed and rehabilitated, slightly reducing the area of compaction near surface water. This could reduce erosion and sedimentation.

Under Alternative 2, all stock holding campsites would be designated. Because designated sites would have to meet BMPs, all stock holding sites within 100 feet of water or affecting water quality would be closed and obliterated. This could slightly reduce local sedimentation into surface water as at least 28 stock holding sites would be obliterated or contained away from water. The IDT did not visit all stock holding sites, and therefore more could be obliterated when the designation process occurs. The designation of stock holding sites would have little effect on the total number of stock holding sites. However, it would prevent any expansion of sites that could occur under Alternative 1, preventing increased soil compaction, bare soil extent, loss of soil productivity, and erosion from campsites. It is possible that individual stock holding camps would become large and have more soil erosion because stock holding would be concentrated in 94 locations. While there could be more soil loss at individual sites, the overall potential extent of soil loss from stock camps should decrease because there will be very few new sites created over time.

Under Alternative 2, there would be 94 designated stock camps. Under Alternative 2 – Modified, there would be over 200 designated stock camps. Under Alternative 3, there would be 101 designated stock holding camps. Under Alternative 4, there would be 59 designated stock holding camps.

Cumulative Impacts

This alternative has been analyzed in terms of the effects of past, present and reasonably foreseeable future actions to soil and hydrologic processes. This analysis separates cumulative effects into general cumulative effects to soil and water resources that are a result of past, present and reasonably foreseeable future actions, and cumulative watershed effects, which are the effects of upstream land uses transported downstream. The differences between Alternative 1 and Alternative 2 should be small on a wilderness-wide scale. In local areas, particularly within the Fish Creek/Convict/McGee Geographic Unit, Alternative 2 is likely to result in improved soil and water resource condition and provide a reduced risk for an adverse cumulative watershed effect.

The past, present and reasonably foreseeable future actions are the same under Alternative 2 as under Alternative 1, other than the differences in management prescribed in the alternative.

Alternative 2 would reduce the levels and extent of pack stock use on trails and at campsites, by prescribing destination quotas and grazing levels. Grazing would be prohibited in areas that were determined to be unsuitable for grazing, preventing future soil loss, stream bank trampling, sod fragmentation, and other soil and water impacts in those areas. This alternative also allows only 5 percent trampling or 5 percent vegetation utilization in critical areas that are usually very wet.

The implementation of more stringent guidelines for commercial pack stock management should reduce the risk of adverse cumulative effects resulting from campsites and commercial pack stock grazing. It would provide protection of unsuitable grazing areas, preventing fragmented

sod, vegetation removal, stream bank trampling, and meadow surface and stream bank erosion. Limitations on stock nights of grazing were designed to prevent vegetation utilization, stream bank trampling, and soil disturbance from exceeding standards (USDA Forest Service 2001, USDA Forest Service 2004, and Forest Service Handbooks 2509).

Overall, the risk of adverse cumulative effects would be minor, except in the Upper Fish Creek, Silver Divide, Cascade Valley, and Purple Bench Analysis Units in the Fish Creek/Convict/McGee Geographic Unit. In these areas, it appears that recent commercial pack stock use has contributed to moderate intensity adverse cumulative effects from campsite use, commercial pack stock use of trails, and moderate to heavy grazing in meadows. These effects are also likely connected to historical cattle sheep and pack stock grazing, non-commercial pack stock users, and hikers, the commercial pack stock appear to have contributed. The more stringent management proposed under Alternative 2 in this area has the potential to reduce adverse cumulative effects to soil and water resources, although some would likely remain over the short term. In the long term, the commercial pack stock related impacts would likely be reduced due to a reduction in grazing in meadows with current moderate to severe hydrologic function alteration and functional at-risk streams.

Cumulative Watershed Effects

On a wilderness-wide scale, this action would not contribute to cumulative watershed effects (CWEs), and should reduce the potential for CWEs in one watershed.

Cumulative watershed effects are different from general cumulative effects because CWEs refer to effects from land uses upstream that have been transported downstream through the fluvial system. General cumulative effects can refer to any combination of effects from past, present and reasonably foreseeable future actions that could cause greater effect to soil and hydrologic processes than each action by itself. General cumulative effects can occur in one location, and do not have to be transported downstream to qualify as cumulative effects.

Under Alternative 2, East Fish Creek is the only watershed that will likely have a change in potential for CWEs. There should be a slight reduction in CWE potential. The watershed condition should improve under all action alternatives, to varying degrees. The greatest contributor to CWEs in the East Fish Creek watershed appears to be grazing, although trails' erosion, surface water diversion and stream crossing incision may have contributed. Under Alternative 2, grazing would be eliminated in meadows where it is unsuitable, and limited in all other meadows. A one-night stay limit for traveling trips would also likely reduce the number of successive days where each meadow was grazed, possibly allowing some vegetative recovery before the next grazing episode.

Along with the foreseeable future action that the trails causing the most severe soil and water resource impacts would be repaired within 20 years, it is likely that the restrictions on commercial pack stock use under Alternative 2 would gradually reduce soil erosion, stream bank disturbance, vegetation removal, and stream incision lowering of water tables in meadows. Thus, there would likely be a reduction of cumulative watershed effects in this area. The potential for cumulative watershed effects in the other two watersheds that currently may have cumulative watershed effects (Edison Reservoir and Granite Creek) would be the same as under Alternative 1. Most of those impacts appear to be related to recent and historical cattle grazing, and the effects of commercial pack stock management would have little to no effect on their condition.

Alternative 3

Summary of Alternative 3 Impacts

Water quality is generally good and will remain so except at few local areas where there may be slight degradation. There will remain areas of local soil erosion, bare soil, and sedimentation into surface water from pack stock grazing, campsites and trails. Meadow/wetland condition should improve overall relative to Alternative 1. Grazing would be prohibited in meadows that currently contain streams that are functional at-risk with a downward trend. Of 60 streams found to be functional at-risk (with any trend), (an estimated 40 percent could have improved condition, 3 percent could have a more degraded conditions; roughly 57 percent will remain functional at-risk. There would be a minor reduction of bare, compacted soil and sedimentation into surface water from designating stock holding camps. Meadow hydrologic function has some potential for improvement relative to Alternative 1. Out of 237 meadows evaluated, 41 meadows were found to have hydrologic function alteration; about 29 percent could have improved condition, 59 percent should remain in the same condition, and 12 percent could have a downward trend.

Past and present grazing from production livestock and pack stock is the largest contributor to meadow hydrologic function alteration. Unlike Alternative 1, Alternatives 2 through 4 limit grazing to those meadows that have been analyzed and designated as suitable for grazing. They also limit grazing in those suitable meadows to a given number of stock-nights. Alternative 3 limits the future adverse impacts that could occur to hydrologic and soil resources to a lower intensity and smaller extent relative to Alternative 1. Alternative 3 would have similar impacts as Alternative 2, although there could be more widespread adverse effects from trails and campsites and less widespread adverse effects from grazing in meadows.

Analysis

As under all alternatives, the wilderness soil and water resources should remain in good condition overall, but local effects could continue to alter soil and water resources. Due to the lack of control over destination use levels, there is a greater risk of negative effects to soil and water resources from campsites and some grazing areas under Alternative 3 than there would be under Alternative 2 and 2 – Modified. There is more uncertainty about commercial pack stock use patterns and the effect on soil and hydrologic resources. This uncertainty in effects is due to having only a trailhead quota, grazing limitations and designated stock holding sites as controlling factors for commercial pack stock use within the wilderness. The lack of certainty means that packers could change their use patterns. Overall, it is expected that the effects to soil and hydrologic resources should be similar to Alternative 2 and 2 – Modified in most places. A few locations, however, could have greater negative impacts to soil and hydrologic processes, and a few areas could have reduced impacts.

Meadows: The proposed grazing management and therefore the effects are the same as Alternative 2 – Modified in all but six meadows. Meadows are closed to grazing unless they are within a grazing zone and grazing is expressly allowed. The main difference expected is that there could be more overnight trips with pack stock and the highest allowed annual grazing will be more likely to be used in more meadows than under Alternative 2 – Modified. Further, instead of meadow closure in meadows with resource impacts, the meadows would be rested until they could support grazing. The effects of rest versus closure should not be different within the 20-year period of this analysis.

Three meadows have higher stock night recommendations than in Alternative 2 – Modified. (see *Projected Changes to Meadow Stream Functional Condition and Meadow Hydrologic Function under All Alternatives* in the project record). The meadows are:

- Horse Heaven in the Fish Creek/Convict/McGee Geographic Unit
- Cascade Valley in the Fish Creek/Convict/McGee Geographic Unit
- Chute Meadow in the Fish Creek/Convict/McGee Geographic Unit

Three meadows would be closed or rested under Alternative 3 that were open under Alternative 2 – Modified. Those meadows are:

- Box Canyon Above Grassy (Fish Creek/Convict/McGee Geographic Unit)
- Between Rainbow and Margaret (Fish Creek/Convict/McGee Geographic Unit)
- Middle Graveyard Meadow (Mono Creek/Rock Creek Geographic Unit)

In addition, 13 meadows that were rested until resource recovery under Alternative 2 – Modified would be closed indefinitely under Alternative 3.

Meadow/Wetland Hydrologic Function: The effects to meadow hydrologic function should be almost the same Alternative 2 – Modified overall, but there could be slightly greater negative effects in some areas and slightly reduced negative effects in a few others (Figure 4.6). Of the six meadows that have different stock nights allocated to them, three should have different effects to meadow hydrologic function (see project record, *Projected Changes to Meadow Stream Functional Condition and Meadow Hydrologic Function under all Alternatives*). All three of these meadows would be those listed above that closed or rested under Alternative 3. Because of the rest, they could have soil and water resource conditions improved over Alternative 1 and Alternative 2 – Modified. Other than the three meadows listed above, the other meadows have the same predicted effects to meadow hydrologic function.

There is a possibility that more meadows would be used to their full allocation under Alternative 3 than under Alternative 2 – Modified, because there would be less control over where overnight trips go. However, there is little difference in effects predicted, because under the analysis for Alternative 2 – Modified, it was assumed that most meadows would be used to their full-allocated stock nights.

Stream Functional Condition (PFC): The effects on stream functional condition should be almost the same as Alternative 2 – Modified, although there is the potential for slightly more widespread negative effects (Figure 4.6). There is only different grazing management in six meadows, and none of the meadows analyzed for PFC should have different effects from that management.

There is a possibility that more meadows would be used to their full allocation under Alternative 3 than under Alternative 2 – Modified, because there would be less control over where overnight trips go. However, there is no difference in effects predicted, because under the analysis for Alternative 2 – Modified, it was assumed that most meadows would be used to their full-allocated stock nights, and that full use of those meadows would not affect stream PFC.

One meadow, the Box Canyon above Grassy Lake, could have worse stream functional condition under Alternative 2 than under Alternative 3. The current stream functional condition was not

evaluated using the PFC protocol and therefore this meadow is not included in Table 4.66. The currently rarely uses access trail to the meadow is in a stream bed, and with grazing use to this meadow, there could be vegetation loss along the stream banks, altered stream morphology, and stream headcutting. Use of the trail for grazing use of this meadow at 67 stock nights could lead to a stream condition trend away from potential, due to access to that grazing.

Of the 60 stream segments that were rated functional at-risk, about 40 percent are expected to have some improvement in stream functional condition (Table 4.66). About 57 percent are expected to remain in their current functional at-risk state, while about 3 percent are expected to have a minor reduction in stream functional condition. Two functional at-risk meadow streams could be grazed more heavily in Alternative 3: Jackass Meadow and Lower Blayney Meadow. These two meadows could have minor negative effects to hydrologic function. Three meadows where streams are currently functional at-risk with a downward trend would be closed to grazing and those meadows could move closer to PFC under Alternative 3 because they would not be grazed. The meadows are Johnston, Purple, and Northwest Delta Thousand Island. Although Martin's Meadow would be closed to grazing under Alternative 3, the stream is non-functional (since 2003) and without repair, headcuts would continue to advance and threaten the meadow's hydrologic function.

Grazing Water Quality Effects: Under Alternative 3, fine sedimentation into surface water from meadows will likely decrease overall relative to Alternative 1, and at some local areas, it could substantially decrease. The changes would likely be almost the same as under Alternative 2 – Modified. In a few local areas, namely the meadows that could receive more grazing, there could be minor increases in fine sedimentation into surface water.

The 24 meadows out of 60 where stream functional condition is expected to improve from its current state will likely have a decrease in streambank erosion and therefore a decrease in fine sedimentation into surface water. About 30 percent of meadows analyzed have moderate to severe sod fragmentation, which could be leading to soil erosion and subsequent fine sedimentation into surface water. Under Alternative 3, the number of meadows grazed, and therefore the number of meadows with sod fragmentation, should be reduced.

Water quality effects from pack stock manure in meadows should not change from their current negative effects of unknown magnitude, because the overall number of stock grazing should not be different from under Alternative 1, and there should be no degradation of the current apparently good water quality. While water quality is likely to be affected within and just downstream of grazed meadows, it is assumed there will not be enough manure entering surface water to affect beneficial uses.

Meadow Soil Effects: Changes in commercial pack stock management, which is only part of that recreational use, will likely have little affect on overall soil productivity wilderness wide or on the geographic-unit scale. There should be a slight improvement in soil productivity over Alternative 1, and it should be about the same as under Alternative 2 – Modified. Some analysis units and local areas, such as Grassy Meadow (sil22) and the meadow adjacent to Waterfall Camp, could have increased soil productivity, reduced soil compaction, reduced bare soil, and reduced sod fragmentation. This is because grazing is being reduced, eliminated, or relocated in these meadows. Others, such as Goodale Pass Meadow (gra18) and Lower Laurel Creek Meadow (lau1) could have slightly decreased soil productivity, increased soil compaction, increased bare soil, and increased sod fragmentation. The increased soil disturbance would be

due to increased grazing numbers more likely to cause hoof punching and remove vegetation. Although these same meadows could be grazed the same amount under Alternative 2 – Modified, the lack of specific limits on traveling trips and lack of destination quotas would make it more likely that these meadows will be grazed to their full allocations. The negative effects should be within soil quality standards because only suitable meadows would be grazed and all were given a grazing allocation commensurate with meadow soil and vegetation capability.

Of the 179 meadows analyzed for compaction, 45 were found to have moderate to severe compaction (25 percent). Of these 45 meadows, 28 were found to be suitable for grazing and have stock nights allocated under Alternative 3. The difference between Alternatives 2 – Modified and Alternative 3 is that there could be three more meadows with increased grazing, and these three meadows could have slightly increased compaction. However, there would also be three meadows rested from grazing where it could occur under Alternative 2. There could be slight reduction in compaction risk in those meadows.

It is uncertain how long it will take compaction to recover in meadows where Alternative 3 recommends grazing management changes to help reduce compaction.

Trails: Under Alternative 3, trail effects to soil and water resources are likely to very similar as under Alternative 2 – Modified and slightly reduced relative to Alternative 1. Because Alternative 3 will not have destination quotas, it is possible that the packers will take more or fewer trips on a particular trail than they do currently or than they would under Alternative 2 – Modified. Trails with substantially increased use could have more soil loss and incision through direct removal by hooves and subsequent water erosion. Conversely, trails with substantially less use would be less likely to have increased incision and soil loss. Most likely, use patterns would remain about the same as today except on those roughly 20 trails where destination quotas would reduce use under Alternative 3. Alternative 3 would have less predictability for the effects to trails than Alternatives 2 and 2 – Modified due to the lack of destination quotas and designated destinations.

The effects to soil and water resources from the 33 miles of system trails closed to commercial pack stock use should remain about the same or have slight improvement over Alternative 1. Because the length of trail closed is about 3 percent of the entire trail system, the overall effects to soil and water resources should be minimal.

Passes would be allowed to be sanded under Alternative 3. The passes expected to be sanded would be Piute and Pine Creek. The effect to the trail themselves and to water and soil impacts related to the trail would be none to minimal. However, sanding of passes would allow access to more areas while they still had more snow and saturated soils than if the passes were not sanded. This could increase the amount of erosion from trails beyond the pass, as wet trails are more likely to be eroded with use. Further, pack stock tend to walk outside of muddy trails, and therefore are more likely to create multiple trails during wet periods. Hikers are not likely as restricted by snowy passes and therefore their impacts to wet trails should be about the same whether the passes are sanded or not.

Campsites: There should be little difference between the impact from stock camps to soil and water resources between Alternatives 3 and 2. There is no substantial difference in stock campsite management in most areas, although 101 stock camps would be designated under Alternative 3, and 94 would be designated under Alternative 2. Therefore, the extent of bare, compacted soil from stock holding camps could be slightly higher under Alternative 3. The

designated sites would be located at locations over 100 feet from water and so they would meet BMPs and not affect water quality or stream functional condition.

The effects from spot/dunnage sites should be more like Alternative 1 effects than Alternative 2. Commercial pack stations could drop clients at any site that meets BMPs, because there would be no specific designated destinations. Use could occur as often as the pack stations needed to fulfill client wishes at any spot/dunnage site. There could be new spot/dunnage sites created in almost any location with a trail open to the site, and therefore it would be possible for more spot/dunnage sites to be created that would increase the extent of bare, compacted soil. It is, however, unlikely that spot/dunnage use patterns would substantially change, and therefore the extent of bare soil from spot/dunnage campsites should remain about the same as under Alternative 1.

Cumulative Impacts

All past and reasonable foreseeable future actions are the same as under Alternatives 1 and 2. Because the direct and indirect effects between Alternative 2 – Modified and Alternative 3 should be about the same, cumulative effects should be about the same. The main difference should be that meadows should have slower recovery and in fewer meadows than under Alternative 2. More meadows are likely to be grazed to their full allocated stock nights under Alternative 3 because there will not be a specific limit on the number of traveling trips as was proposed under Alternative 2. Further, the pastures Poison, Jackass, Blayney and Double Meadows could have greater negative hydrologic function alteration and soil productivity effects. Combined with past grazing, and in the case of Jackass Meadow, flow alterations from Edison Reservoir operations, this could allow for further degradation in these pastures. The effects should not be substantial enough to cause loss of meadow habitat or meadow vegetation, because all pastures were given grazing quotas based on the meadow capability to withstand that level of grazing.

Cumulative Watershed Effects

On a wilderness-wide scale, this action would not contribute to cumulative watershed effects in any watershed. For a more thorough discussion of Cumulative Watershed Effects, see the document *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis*, in the project record.

The effects should be the same as under Alternative 2, because the area of bare ground and disturbed soil would be about the same. There could be a very slightly greater area of bare ground under Alternative 3, because about 10 more stock holding sites would be designated, and about the same number of destinations would be open to pack stock that would not be open under Alternative 2. However, these differences of a few acres would have no effect to CWEs on a watershed-wide scale.

Alternative 4

Summary of Alternative 4 Impacts

Water quality is assumed good, and will remain so, except at a few local areas where there may be slight degradation. In Alternative 4, there is a greater potential for local improved water quality relative to Alternative 1. Areas of local soil erosion, bare soil, and sedimentation into

surface water from pack stock grazing, campsites, and trails will remain. Of 60 streams found to be functional at-risk (151 evaluated), an estimated 48 percent could have improved condition, 0 percent should have a more degraded condition, and 52 percent should remain functional at-risk. Meadow hydrologic function has the second highest potential for improvement of the five alternatives. Out of 237 meadows evaluated, 41 meadows were found to have hydrologic function alteration; about 37 percent could have improved condition, 61 percent should remain in the same condition, and 2 percent could have a downward trend. There would be a minor reduction of bare, compacted soil, and sedimentation into surface water from designating stock holding and spot/dunnage camps.

Past and present grazing and activities associated with grazing (trailing, stock movement) from production livestock and pack stock is the largest contributor to meadow hydrologic function alteration. Unlike Alternative 1, Alternatives 2 through 4 limit grazing to those meadows that have been analyzed and designated as suitable for grazing. They also limit grazing in those suitable meadows to a given number of stock nights. Alternative 4 limits the future adverse impacts that could occur to hydrologic and soil resources to a lower intensity and smaller extent relative to Alternative 1. Alternative 4 would have similar impacts as Alternatives 2 – Modified and Alternatives 2 and 3, although there should be slightly less widespread adverse effects from trails, campsites, and meadow-grazing.

Analysis

Under Alternative 4, there would likely be some slight overall improvement in stream and meadow hydrologic function, soil productivity and water quality. Locally there could be larger changes, and the improvement would likely be greater than under Alternatives 1, 2, 2 – Modified and 3. The greatest improvements would likely be in meadows where grazing is eliminated, of which there would be more under Alternative 4 than Alternatives 1 through 3. Elimination of grazing would allow for some local soil and hydrologic condition recovery, although in a few cases the grazing would likely move somewhere else and cause new alteration of soil and hydrologic condition.

A greater number of trails would be closed to commercial pack stock, eliminating some destinations. This could slightly reduce the number of large stock holding camps and therefore eventually slightly reduce the area of bare, compacted soil. The difference would probably be too small to make a difference on a wilderness-wide scale. However, at the local scale it could cause slight to moderate reductions in soil erosion, soil compaction, and possibly reduced surface water sedimentation.

Meadows: Fewer meadows would be open for grazing under Alternative 4. In Alternatives 2 through 3, the number of specific key area meadows or meadow complexes open for grazing is almost the same, ranging from 138 in Alternative 2 to 133 in Alternative 3. Under Alternative 4, the meadows open to grazing is reduced substantially to 113. Under Alternatives 2 through 4, meadows are closed to grazing until they are deemed suitable for grazing. Therefore, only 113 specific meadows would be open to grazing (along with a few others within grazing zones). Under current management, four meadows or meadow areas are closed to grazing, and most of the roughly 1,500 others are open to use as desired until standards are surpassed. While reduction of grazing might allow for a greater improvement in the meadows where grazing is eliminated, it could push grazing to other areas within established grazing zones, where hydrologic and soil conditions could worsen.

Meadow hydrologic and soil conditions are expected to improve overall because the meadows that are unsuitable for grazing and therefore most susceptible to soil and hydrologic alteration would not be grazed. Further, under Alternative 4, the meadows with severe hydrologic functional condition or streams rated functional at-risk with a downward trend would not be grazed. Therefore, the worst condition meadows would be less likely to have a greater downward trend.

Actual grazing use changes are not likely to be as dramatic as the proposal would allow. Of the 248 meadows where some action was proposed under any alternative, only 94 had grazing reported from 2001 to 2003. So, if all the meadows where grazing was proposed in Alternatives 2, 3 and 4 were grazed, all alternatives would actually increase the number of meadows grazed from recent reported. It is assumed, however, that not all grazing was reported by meadow, and that different meadows may have been grazed before 2001. Alternatives 2 through 4 all greatly reduce the possible areas where commercial pack stock are allowed to graze, but merely change the areas where they are likely to graze to only those suitable. Further, some meadows deemed suitable that have not been used in the past are in areas not desirable for grazing. These areas, such as Volcanic Knob Meadow, are in unpopular destinations. It is not likely that commercial packers would begin taking trips to new areas where clients do not want to go simply because grazing is allowed.

Meadow Hydrologic Function Alteration: Alternative 4 should have more meadows with improved hydrologic function alteration than Alternatives 2, 2 – Modified and 3, and a substantial improvement over Alternative 1 (Figure 4.6).

Sixty percent of the meadows visited in the field (137 meadows) were found to have no hydrologic function alteration. Of these, none should have the potential for increased hydrologic function alteration. In one meadow, Second Recess Meadow, there could be areas where stock might congregate, such as stream banks and dusting areas, there could be increased compaction, increased bare ground, and increased stream bank trampling. Over time, these effects could lead to a minor reduction in meadow hydrologic function locally, but the effects should not have a large extent, because the grazing allocation was designed to avoid substantial impacts.

Of the 90 meadows with at least slight hydrologic function alteration, about 60 percent would be expected to remain in their current condition. This is roughly the same prediction as under Alternatives 2 and 3. However, only 6 percent of the currently altered meadows are expected to have a trend away from their potential hydrologic function, less than Alternatives 2 and 3.

Of the six meadows that could have worsened hydrologic function under Alternative 4, only three are expected to receive as much grazing as is allocated. Therefore, only those three meadows (Second Recess Meadow [sec14], Upper Deer Creek [ccd18a] and Long Canyon [sil4]) are actually likely to experience increased hydrologic function alteration. The others; between Upper Crater Meadow (ccd2), and above Lower Indian Lake (fle12) are not in areas that do not currently receive very much use, nor are they near areas where use will be eliminated. Therefore, although it is possible they are not expected to receive increased use or have increased hydrologic function alteration.

Under Alternative 4, more meadows with severe hydrologic function alteration would be likely to have improved condition than under Alternatives 1, 2 and 3. This is because fewer meadows with severe hydrologic function alteration would be grazed. Two meadows should have a trend toward potential under Alternative 4 that might under Alternatives 2 and 3. These meadows are

Jackson Meadow (sil8) and Upper Graveyard Meadow (gra11). They would not be grazed under Alternative 4, and therefore should have some potential for hydrologic function recovery.

Meadow Stream Functional Condition (PFC): Alternative 4 is likely to have the greatest increase in number of streams moving toward PFC of all alternatives other than Alternative 5 (Figure 4.1.8). The difference is not large, however, and the percent of stream segments that are functional at-risk will not have major changes. Locally, however, changes could occur to improve or degrade stream functional condition.

Under Alternative 4, it is predicted that out of the 91 streams found to be at proper functioning condition, most will remain so. About 93 percent should remain in their current condition, or improve, and the remaining 7 percent (6 streams) could have a trend away from PFC. The meadows could trend away from potential because they may have grazing increased from current levels. As in Alternatives 2 and 3, grazing practices will determine whether streams' function really trend away from their potential. Five meadows would probably receive all the grazing allocated to them, and therefore could have a stream condition trend away from potential. The other one (Volcanic Meadow) is unlikely to be grazed at its proposed level of 250 stock nights, and therefore the streams are less likely to have increased stream bank trampling and vegetation removal. In addition, if meadows are grazed to avoid more than 20 percent stream bank trampling, over 40 percent vegetation utilization, and soil compaction increases, stream conditions may not worsen. In meadows with lower productivity, the existing standards may not be enough to prevent some reduction in stream functionality with increased grazing.

There are 60 stream segments in meadows that were found to be functional at-risk using the PFC protocol. Of these 60 streams, about 50 percent could have improved stream function, about 50 percent are expected to remain in their current condition, and none are expected to have stream function move away from PFC.

Grazing Water Quality Effects: Under Alternative 4, fine sedimentation into surface water from meadows will likely decrease slightly relative to Alternative 1, and at some local areas, it could substantially decrease. The improvement would likely be greater than Alternatives 2, 2 – Modified and 3. In fewer local areas, there could be minor increases in fine sedimentation into surface water.

Although water quality is generally thought to be good on a wilderness scale, there are some meadows where bank sloughing, stream incision, and soil erosion increases fine sediment in streams within and directly downstream of the meadows. These are generally the meadows with a stream functional condition rating of “functional at-risk,” or those with high levels of sod fragmentation. Those 29 meadows out of 60 where stream functional condition is expected to improve from its current state will likely have a decrease in streambank erosion and therefore a decrease in fine sedimentation into surface water. Under Alternative 4, the number of meadows grazed, and therefore the number of meadows with sod fragmentation, should be reduced.

Water quality impacts from pack stock manure should be slightly less than under Alternatives 1 through 3, because there would be fewer trips into the wilderness areas and fewer stock nights of grazing over all. Because the current effects to water quality are not well understood, the degree of improvement cannot be determined.

Meadow Soil Effects: There should be a slight improvement in soil productivity wilderness-wide, with a probable greater improvement than under Alternatives 1 through 3. Changes in

commercial pack stock management, which is only part of the total recreational use, will have little effect on overall soil productivity wilderness wide or at the geographic-unit scale. Some analysis units and destinations would continue have minor negative effects to soil productivity, soil compaction, bare soil and sod fragmentation. The negative effects should be within soil quality standards.

Forty-five meadows were found to have moderate to severe compaction currently. Of those 45 meadows, 25 would be open to grazing under Alternative 4 (versus 32 in Alternatives 2 and 3). Thirteen of the meadows that will be open to grazing have compaction assumed not related to recent pack stock use. In these meadows, it is assumed that the compaction is due to either historical cattle or pack stock grazing. The proposed grazing attempted to be less intense than what created the compaction in the first place. In some cases, this may not be true, but we will monitor compaction and if it approaches standards, stock nights will be reduced or the meadows will be closed. Twelve currently compacted meadows that will be open to grazing do have compaction that appears to be related to recent pack stock grazing. Three of these meadows have proposed stock nights that are considerably less than recent high levels. The remaining nine meadows could have greater use than what caused the compaction, likely preventing compaction recovery. All but one of these has a high likelihood of being grazed near their proposed high.

Most of the 133 meadows that are known to currently have slight or no compaction should not have substantial increases in compaction severity or extent. About 80 of them would be suitable for grazing. Only about 12 of those meadows could likely have high enough grazing density to have increased compaction. In these meadows, if compaction begins to approach standards, grazing would be reduced or eliminated.

Meadow sod fragmentation will likely decrease overall, but there may be some meadows where sod fragmentation remains or increases. Of the 60 meadows found to have moderate to severe sod fragmentation, 32 would be suitable for grazing under Alternative 4. Only about five of those have a high potential for increased sod fragmentation extent, due to the stocking density recommended and their wet condition making them susceptible to sod fragmentation.

Most meadows with slight to no sod fragmentation will likely not have major increases in sod fragmentation under Alternative 4, and more meadows should have reduced sod fragmentation. Of the 140 meadows with slight to no sod fragmentation, 80 are considered suitable for grazing under Alternative 4. Of those, about 14 have a large increase in grazing and could have increased sod fragmentation if the entire allocated grazing is used.

Trails: Alternative 4 is different than the other alternatives in the number of trails and, therefore, destinations that would be closed to commercial pack stock use. Under Alternative 4, more trails will be made unsuitable for stock than in Alternatives 2, 2 – Modified, and 3. The effect of trails on soil and hydrologic resources should not improve quickly with removal of stock. However, removal of stock could prevent further widening or incision.

Under Alternative 4, almost 50 system trails would be closed to commercial pack stock use that would not be closed under either Alternatives 2 – Modified, 2, or 3. About 35 user trails would have commercial pack stock use prohibited where it would be allowed under Alternatives 1 through 3. Some of those trails provide a short cut or duplicate access to a destination, but about 50 destinations would be made inaccessible to commercial pack stock.

Closing trails to commercial pack stock use may have a greater impact on the destinations serviced by the trails. If commercial pack stock does not access a destination, it means that there could be fewer campsites needed, and fewer stock tie-up areas needed. Therefore, there could be a slight reduction in bare, compacted soil area under Alternative 4. More importantly, closing a trail to commercial pack stock could help prevent commercial pack stock parties from accessing the area and creating new camps or stock tie-up areas. Stock use is only about 15 percent of all wilderness use, however, and because hikers would be free to access the destinations, the difference with a trail closed to commercial pack stock could be small.

Under Alternative 4, sanding trails for earlier access over passes would be prohibited. While the sanding itself does not likely cause direct impacts to water quality or soil quality, it does allow earlier access into some areas of the wilderness. When pack stock can access areas earlier, it means that there are more likely to be wet meadows, trails, and campsites. The stock can cause greater sod fragmentation in meadows and soil loss from trails when the soil is wet, because they are more likely to sink into the soil and displace topsoil. If there is still snowmelt occurring, the snowmelt can carry displaced soil into surface water, reducing local water quality. Under Alternative 4, access to areas beyond a snowy pass might occur later and might not cause as much soil displacement on trails, campsites and meadows.

Campsites: Under Alternative 4, the number of campsites and the total area of bare, compacted soil due to campsites would likely decrease from its current level. The decreases would probably be the largest under all alternatives except Alternative 5. The reduction in campsite numbers would probably only be slight, because backpackers would still be free to camp wherever they wished, and most major stock holding campsites would likely remain although a few would be closed and may naturalize over time.

As stated in the previous “trails” section, use to 50 destinations that would be open under Alternatives 1 through 3 would be prohibited under Alternative 4. This could prevent creation of some new campsites at those destinations and could eventually result in a reduction of bare and compacted soil area at those destinations. Unless sites were actively rehabilitated, they would likely remain for many years,

Cumulative Impacts

This alternative has been analyzed in terms of the effects of past, present and reasonably foreseeable future actions to soil and hydrologic processes. Although past actions have caused some alteration to watershed processes over much of the project area, and most of the non-rocky project area is not pristine, watershed conditions here are likely among the least altered in California or the contiguous United States. Less than 1 percent of the entire area is estimated to have any ground disturbance from campsites, trails, or grazing. Under Alternative 4, the condition should slightly improve in local areas, with less ground disturbed and fewer water quality impacts. However, overall, the condition is unlikely to show much change under Alternative 4 because the proposed actions apply only to pack stock use and commercial pack stock use is only a portion of entire wilderness recreational use.

Alternative 4 would likely allow the most extensive recovery of watershed impacts of any alternative other than Alternative 5. Past impacts from cattle, sheep, and recreational pack stock grazing would remain in many areas, but slow recovery would be allowed in more meadows than under Alternatives 1 through 3 because more meadows with hydrologic function and stream

function alteration would be closed to grazing. The recovery of meadows degraded by cumulative impacts would be quicker in this alternative than under Alternatives 1 through 3; however, it would be slower than under Alternative 5.

Cumulative watershed impacts from trails would not likely be noticeably different under Alternative 4 than they would under Alternatives 1 through 3. Hikers and recreational pack stock users would continue to use almost the entire trail system, even where commercial pack stock would not be allowed to go. Although some trails could have a slightly improved condition with removal of pack stock, the continuation of hiker use on those trails would not allow for recovery of vegetation growth or decompaction of soils. Soil decompaction on a trail would likely take decades even with removal of all use, and therefore trails are not likely to show much reduction in erosion and incision unless they are actively rehabilitated.

There would be fewer campsites used by commercial pack stock users under Alternative 4, but the difference should be small enough that it would not affect cumulative impacts on a wilderness-scale. There would also be some reduction in proliferation of new sites, as all spot/dunnage and stock holding sites would be designated. However, sites for non-commercial pack stock users and backpackers would not be designated. Sites used for stock holding have usually been in their current location for decades, and if they are closed to commercial pack stock, they may continue to be used by recreational pack stock and backpackers. Over time, the area of individual campsites that are closed to commercial pack stock might be reduced as duff covers up stock holding areas and soils slowly naturalize over time. However, this process is slow and the uncertainty of whether sites will continue to be used by recreational pack stock or backpackers makes it difficult to determine whether campsite area and impacts to soil and water resources would be reduced. 59 stock holding sites and 96 spot/dunnage sites will still be designated under Alternative 4, and those sites, along with backpacker and private pack stock camps, would perpetuate bare compacted soil and some soil loss.

Cumulative Watershed Effects

Cumulative Watershed Effects (CWEs) are different than general cumulative effects because CWEs refer to effects from land uses upstream that have been transported downstream through the fluvial system. General cumulative effects can refer to any combination of effects from past, present and reasonably foreseeable future actions that could cause greater effects to soil and hydrologic processes than each action by itself. General cumulative effects can occur in one location, and do not need to be transported downstream to qualify as cumulative effects.

For a full discussion of cumulative watershed effects, see the document *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis*, in the project record.

In summary, many individual areas appear to have local watershed effects that have been cumulative over time, but only three watersheds (Edison Reservoir in the Ansel Adams West and Mono Creek/Rock Creek Geographic Unit, Granite Creek in the Ansel Adams West Geographic Unit, and East Fish Creek in the Fish Creek/Convict/McGee Geographic Unit) have what appear to be CWEs transported from upstream land uses. Only the East Fish Creek watershed appears to have possible CWEs that are related to past and present commercial pack stock use.

The greatest contributor to potential CWEs in the East Fish Creek Geographic Unit appears to be grazing. Because Alternative 4 has more meadows closed to commercial pack stock grazing and

fewer stock nights proposed than Alternatives 1 through 3, it should cause a greater reduction in CWE potential.

Alternative 5

Summary of Alternative 5 Impacts

Water quality is generally good and will remain so except at few local areas where there may be slight degradation. This alternative has the greatest potential for local improved water quality of the five alternatives. There will remain areas of local soil erosion, bare soil, and sedimentation into surface water from campsites and trails. Of 60 streams found to be functional at-risk (151 evaluated), an estimated 58 percent could have improved condition, 0 percent could have a more degraded condition, and 42 percent should remain functional at-risk. Meadow hydrologic function has the highest potential for improvement, but still only 41 percent of the degraded meadows are expected to have improved conditions and 2 percent could still have a downward hydrologic function trend. There would be a minor reduction of bare, compacted soil and sedimentation into surface water from removal of commercial stock holding sites.

With removal of all commercial pack stock grazing, there would be the greatest certainty that meadows would experience beneficial effects to soil and hydrologic resources. Overall, there should be slightly less widespread adverse effects from trails, campsites, and meadow grazing.

Analysis

Alternative 5 would have the greatest reduction in soil and water resource impacts out of all alternatives. The removal of commercial pack stock grazing would likely cause the greatest difference between this alternative and the others. It would likely reduce the number of meadows with hydrologic function alteration, streams that are not properly functioning, and compacted soil and fragmented sod. Some meadows that are currently being or have recently been grazed by cattle would likely have no or minor improved condition under this alternative. Many currently grazed meadows are expected to have improved condition with removal of pack stock grazing.

Trails and campsites would likely show a less pronounced improvement in condition, because backpacker use would likely remain about the same as today. Because only 15 percent of all wilderness users access the wilderness by pack stock, the reduction in the number of campsites and the number of people on trails would be small. However, pack stock holding sites are generally much larger than backpacker campsites, and eventually, pack stock holding camps would likely be covered with duff and have reduced compaction. This would slightly decrease the area of compacted soil and likely reduce soil erosion and sedimentation into surface water near stock holding campsites. Wilderness-wide, the reduction in erosion and improvement in water quality would likely be too small to be measured, but the difference at local areas where there are many stock holding campsites could be measurable.

Meadows: In meadows where recent packs tock use appears to be having major contributions to meadow hydrologic function alteration, alteration of stream functional condition, or alteration of vegetation composition change, it is likely that removal of that use would allow recovery to begin. If a meadow is altered severely enough, removal of pack stock may not allow recovery. Meadow hydrologic function and stream geomorphic recovery may take decades because they depend on slow-acting geomorphic processes such as soil decompaction and stream aggradation.

Stream functional condition and vegetation vigor recovery will likely occur more quickly with removal of grazing because they depend mainly on the more short-term vegetative processes.

Under Alternative 5, commercial pack stock grazing or trailing through meadows would no longer occur. Private pack stock parties and production livestock will be allowed to graze as they have in the past. The total reduction in stock nights of grazing would be about 8,500 relative to the average grazing reported from 2001 through 2003. Non-commercial pack stock use is and will likely remain very low throughout the project area. There is current cattle grazing in the Ansel Adams West and the Western end of the Mono Creek/Rock Creek Geographic Unit, and will likely continue at current levels. Currently, 1,549 animal months (46,470 stock nights) are permitted within the project area. About 25 percent of all the 1,620 known meadows are within active cattle allotments, although not all of those have experienced recent cattle grazing. The meadows that would remain in active cattle allotments and would have continued grazing impacts are in the Ansel Adams West, Mono Creek/Rock Creek, Fish Creek/Convict/McGee, Florence/Bear, and John Muir Southwest Geographic Units. The Ansel Adams West Geographic Unit is the only one with greater than 25 percent of its area in an active cattle allotment.

In meadows where meadow hydrologic function alteration, alteration of stream functional condition, or alteration of vegetation composition appear to be predominantly caused by something other than recent commercial pack stock use, the effects of pack stock removal might not be as straightforward. If pack stock graze a meadow that has existing alteration of hydrologic and soil function, they can perpetuate the condition or even cause a downward trend in something that might otherwise begin to recover. Continued pack stock grazing likely prevents or retards recovery and in some cases continues the degradation, as was observed at Grassy and Jackson Meadows in the Silver Divide (SIL) Analysis Unit. Subsequent removal of pack stock could either allow recovery to begin, increase the rate of recovery, or slow the rate of degradation.

Meadow Hydrologic Function: There would likely be fewer meadows with hydrologic function alteration under Alternative 5 than under any other alternative (Figure 4.6, Table 4.65), and many meadows with current hydrologic function alteration would likely have at least minor improvement

Meadow hydrologic function alteration may begin to recover or completely recover within 20 years if the meadow's water source remains or if the water source has a potential to recover. In meadows with moderate or slight hydrologic function rather than severe, there is a greater chance that hydrologic function could show an upward trend with removal of grazing. The potential for some recovery without grazing is due to different productivity, water source, soil type, and existing impacts in the meadow.

Of the 230 meadows analyzed for hydrologic function alteration, 137 meadows were found to have no hydrologic function alteration. All of these meadows are all expected to remain in good hydrologic condition under Alternative 5. This expectation is based on the assumption that no new trails or campsites will be created through meadows.

Of the 93 meadows with at least slight hydrologic function alteration, about half would be expected to improve and about half would be expected to stay in their current condition with removal of commercial pack stock.

Of the 17 meadows with current severe hydrologic function alteration, we expect 13 to remain in their current condition with little or no recovery (Table 4.65). The other four may have potential for some minor recovery in hydrologic function. If these four meadows are grazed by non-commercial pack stock, they could show a static or downward trend in hydrologic function condition.

Of the 24 meadows found to have moderate hydrologic function alteration, about half (10) are expected to have at least minor recovery under Alternative 5, while the other half (13) are expected to have no change or a downward trend.

Of the 52 meadows with slight hydrologic function, about half are expected to have at least minor recovery and the other half are expected to remain in their current condition. One meadow is expected to have a downward trend depending on climate, because it appears to be responding to dry conditions, not recreational use.

None of the meadows with severe hydrologic function alteration within the Ansel Adams West Geographic Unit are expected to show hydrologic function recovery within the next 20 years. These meadows are all part of an active but vacant cattle grazing allotment, where grazing has not occurred for about 10 years. In these meadows, there appears to have been some vegetative vigor and composition improvement, but lack of hydrologic recovery to date. We assume that recovery will continue to occur at the same slow rate as it is today, and therefore expect little recovery for decades.

Stream Function Condition (PFC): With removal of commercial pack stock, Functioning Condition of streams should improve in more meadows than any other alternative (Figure 4.6, Table 4.66). Stream condition might improve in some areas that are currently Functional at-risk, and might remain static in others. In very few cases, stream functional condition could worsen, but only when the condition is due to drought, other natural causes, hiking trails, or cattle grazing. Stream functional condition has the potential to improve more rapidly than meadow hydrologic function condition because under the PFC protocol, stream functional condition depends partly on stream bank vegetation vigor and composition. Vegetation generally has the potential to regrow more quickly than stream morphology can return to its pre-disturbed state. Eventually, as vegetation grows on stream banks or on instream point bars, fine sediment can be trapped in the vegetation, slowly building new streambanks and narrowing channels (Beard 2004).

In many streams in the project area, rest from grazing would allow vegetation to grow quickly on stream banks and in-stream bars, improving stream functional condition quickly. This appears to be the case in Purple Meadow, where grazing was reduced from 438 stock nights in 2002 to 47 in 2003 and none in 2004. In 2001, two stream reaches in the meadow were rated Functional at-risk with a downward trend. In 2004, those same reaches had major vegetative recovery and were estimated to be functional at-risk with an upward trend. The soil near these stream reaches is wet and the meadow has high productivity. Further, the affected stream reaches are small, intermittent first order streams that receive little flow. In other areas, (likely those with lower fine sediment loads or lower productivity), vegetation does not quickly grow on stream banks or on point bars. For example, Fish Creek through Cascade Meadows is incised and has streambanks and raw point bars that have not vegetated substantially since they were exposed about 20 years ago. The affected reach of Fish Creek is a sixth order stream that receives much larger flows than the streams in Purple Meadow. Although we cannot predict exactly how stream

functional condition would react to removal of grazing, we attempted to use our observations of meadow productivity, stream size, vegetation type and vigor, and sediment loads to predict general trends.

Of the 151 streams in meadows where stream functional condition was analyzed, 91 (60 percent) are at PFC. These streams will likely remain at PFC as long as they do not receive increased private pack stock grazing use and no new trails with a major stream crossing are created. Of the remaining 60 stream segments, about 60 percent are expected to improve condition, while the remaining 40 percent are expected to remain in their current state.

Of the 16 stream segments where condition was rated functional at-risk with a downward trend, 11 are expected to have improvement in condition under Alternative 5, while 5 are expected to remain in their current condition. The five expected to continue in their current condition are experiencing effects that will not be altered by removal of commercial pack stock. While pack stock use could perpetuate altered stream functional condition, One will probably continue to be grazed by cattle (Graveyard Meadow), two are functional at-risk due mainly to trails that may continue to be used (Ram Meadow and Hilton 4 Camp Meadow), and two are functional at-risk due mainly to drought (Crater Meadow and Dorothy Outlet Meadow).

Martin's Meadow is an exception. In 2001, the lower reach in the meadow was rated functional at-risk with an upward trend. In 2004, the same reach was rated non-functional, due to rapidly advancing headcuts in and lateral to the stream. The erosive nature of the sandy soils and the severity of headcutting suggest that the nonfunctional rating will continue until active headcut repair work occurs.

Of the 29 stream segments where stream condition was rated functional at-risk with a non-apparent trend, 16 are expected to have some improvement, while 13 are expected to remain in their current condition. The 13 that are expected to remain in their current condition appear to be experiencing effects that will not be altered by removal of commercial pack stock, particularly cattle grazing and trails, or other unknown causes.

Of the meadow stream segments analyzed for stream functional condition, 15 were found to be functional at-risk with an upward trend. We expect about half to improve at least slightly from their current condition, and half to remain in their current functional at-risk state.

Grazing Water Quality Effects: Under Alternative 5, fine sedimentation into surface water from meadows would likely slowly decrease. Although water quality is thought to be good on a wilderness scale, there are some meadows where bank sloughing, stream incision, and soil erosion increases fine sediment in streams within and directly downstream of the meadows. These are generally the meadows with a stream functional condition rating of “functional at-risk”, or those with high levels of sod fragmentation. Those meadows where stream functional condition is expected to improve from its current state would likely have a decrease in streambank erosion and therefore a decrease in fine sedimentation into surface water. Sod fragmentation is expected to decrease in all meadows where there is currently sod fragmentation. About 30 percent of meadows analyzed have moderate to severe sod fragmentation, where sod fragmentation could be leading to soil erosion and subsequent fine sedimentation into surface water. However, much sod fragmentation is far from water, and any eroded soil from the fragmentation would not enter water. Therefore, the reduction in fine sedimentation due to reduced sod fragmentation should be small.

Because only a small fraction of the current pack stock use in the wilderness would occur under Alternative 5, the volume of manure entering surface water would greatly decrease. Because current water quality effects from manure are unknown, the degree of improvement to water quality from less manure is unknown. However, it is known that there would be a reduction of manure in the water, and likely a reduction of negative local water quality effects under Alternative 5.

Meadow Soil Effects: In the overall wilderness area, a small portion of soil was found to be impacted by current recreational use, estimated at less than 1 percent. Therefore, removal of commercial pack stock, which is only part of that recreational use, will likely have little effect on overall soil productivity wilderness wide or on the geographic-unit scale. Some analysis units and more local areas, such as individual meadows, could have increased soil productivity, reduced soil compaction, reduced bare soil, and reduced sod fragmentation.

Under Alternative 5, soil compaction in meadows will probably slowly be reduced, improving infiltration and water storage capacity of soils, and reducing peak flows in streams through increased infiltration. It is uncertain how long it will take compaction to fully recover in each meadow.

Out of the 13 meadows known to have severe soil compaction, 9 of them are in the Ansel Adams West Geographic Unit and are known to have been grazed by cattle until 10 to 15 years ago. None of these meadows have had more than light pack stock grazing reported in the past 3 years, so we assume that they have not received more than light grazing since cessation of cattle grazing. These meadows remain severely compacted, suggesting that severe compaction below the surface of the soil within the project area does not recover within 10 to 15 years. This finding is similar to others' findings, which suggest that surface soil recovery is fairly rapid, but compaction recovery may take decades at depths greater than 15 or 20 cm (Alexander and Poff 1985). We therefore assume that compaction would slowly recover in most compacted meadow areas under Alternative 5, but the extent and degree of recovery in any one meadow is uncertain.

Meadow sod fragmentation will likely decrease in all meadows where it is related to commercial pack stock use. Hoof trampling studies on the Inyo National Forest suggest that deep hoof punches persist for more than two years, but the longevity of hoof punches is unknown. However, shallow hoof punches and sod fragmentation will likely fill in with vegetation in most meadows because vegetation usually grows back soon after cessation of grazing. Generally, as elevation increases, meadow recovery rate decreases (Ratliff, 1985). The only exceptions might be meadows that have severely compacted, dry areas where it is difficult for vegetation to establish. Few areas such as these were observed, but they would include dusting areas and areas where stock congregate, such as holding areas. While some meadows have these features, they are relatively small compared to the meadow size overall, and sod fragmentation should have a much smaller extent under the No Action alternative.

Trails: Under Alternative 5, trail effects on soil and hydrologic condition will likely improve relative to Alternative 1. Without active repair, trails that are currently diverting surface water and eroding due to water running down the trail will continue to do so whether they are used by commercial pack stock or not. However, our assumption is that most of the trails causing noticeable sedimentation into surface water or diverting surface water will be gradually repaired over the next 20 years. Therefore, there would likely be a reduction in sediment into surface water and diversion of surface water.

Under this alternative, stock use would be greatly reduced on trails with termination of commercial pack stock use. Trails would likely stop widening but could continue to deepen and therefore divert more overland flow and stream flow even with removal of pack stock use. Without active rehabilitation of incised and widened trails, they are likely to remain in their current state or possibly experience slight upward or downward trend. The trails that are the most severely incised or widened, and those with the most erosion occurring are likely to be rehabilitated or have some maintenance over the next 20 years. Therefore, trail condition should improve overall, though hiker use could perpetuate incision, widening and multi-trailing on heavily used hiker trails.

Campsites: Hydrologic and soils effects from campsites should decrease over time as the Wilderness Plan is implemented and sites closer than 100 feet from water are closed and rehabilitated. This would continue to occur under all alternatives. Hikers will continue to use most campsites that remain open, and therefore the reduction in compacted area will likely be very small.

Beyond the reduction in campsites close to water prescribed in the 2001 Wilderness Plan, under Alternative 5, exclusively stock campsites will gradually decompact and revegetate. Campsites where pack stock are regularly held generally disturb a larger area than backpacker sites because additional area is used to tether animals (Cole 1990). With removal of commercial pack stock, sites would likely become smaller. Complete recovery may occur within decades on all but the most heavily used sites. Spildie and others (2000) found that within 5 years of closure, stock holding sites in the Selway-Bitterroot Wilderness in Idaho had a 46 percent decrease in bare soil area. If they continued to be used by campers, the former stock holding sites had a slightly smaller, but similar, decrease in bare soil area. Assuming that recovery rates would be similar in the project area, stock holding sites may reduce in size substantially over 20 years.

It is unknown what percent of the project area is covered by campsites. However, on the Inyo National Forest, inventories suggest that less than 0.5 percent of the area is campsites. Overall, this is already an area small enough to be inconsequential, although some areas with a high concentration of campsites likely have a cumulative effect that increases flow in nearby streams. The percent of area covered by campsites will likely slightly decrease. This will likely decrease local direct and indirect impacts to water quality and improve watershed function at these areas directly adjacent to campsites.

Cumulative Impacts

This alternative has been analyzed in terms of the effects of past, present and reasonably foreseeable future actions to soil and hydrologic processes.

Alternative 5 is likely to allow the quickest recovery of meadow hydrologic function alteration, stream functional condition, and soil productivity in more locations than any other alternative. However, on a wilderness-wide scale, removal of all commercial pack stock use might only allow minor improvements.

The greatest improvement to soil and hydrologic condition should come due to the cessation of commercial pack stock grazing in all meadows. This is because other than in a few Analysis Units in the Mono Creek/Rock Creek and Ansel Adams West Analysis Unit, the only other grazing is very little private pack stock use. It is possible that there would be a slightly increased incidence of private pack stock use when the wilderness areas are not accessible to commercial

pack stock operators. That could increase private pack stock grazing but it would still likely remain a small percentage of current commercial pack stock grazing levels.

In the Ansel Adams West and West Mono Creek/Rock Creek GUs, cattle grazing would likely continue, allowing continuation of soil compaction, stream functional condition alteration and sediment into water from stream bank erosion.

The soil and water impacts from trails and campsites should be slightly reduced with the removal of commercial pack stock. However, continuation of backpacker use and low levels of private pack stock use could maintain most trails in their degraded state and most campsites at their current size although there would be less potential for increased trail incision and widening with drastic reductions in pack stock travel.

Cumulative Watershed Effects

The overall potential for cumulative watershed effects (CWEs) should decrease under Alternative 5. None of the alternatives is likely to have any effect on the potential for CWEs in more than one watershed, the East Fish Creek Watershed. The existing area of disturbed soil, compacted soil, incised channels, streambank disturbance, and other watershed impacts is unknown. However, rough estimates suggest that less than 1 percent of the Wilderness area is disturbed by grazing, trails and campsites. The stream length with streambank disturbance is unknown.

We predict that every action alternative would slightly reduce the risk of CWEs within a few watersheds, but that none of the alternatives would be measurably difference from the current effect overall in most watersheds (Table 4.65). The East Fish Creek, Edison Reservoir, and North Fork San Joaquin River watersheds are the only three watersheds where there is currently disturbance estimated on over 1 percent of the watershed. Those are therefore the only watersheds where there might be a risk of overall CWEs. The Granite Creek and Hilton Creek watersheds are both near the 1 percent threshold, with at least 0.75 percent of their watershed area estimated to be disturbed. In the field, we observed that East Fish Creek, Edison Reservoir, North Fork San Joaquin River, and Granite Creek watersheds appear to actually have potential cumulative watershed effects. All of these watersheds were visited at least in part, and the watershed effects of portion of the watershed not visited was estimated to be the same as the areas visited. Although Hilton Creek watershed has a large amount of disturbed ground due to high levels of hiker and commercial pack stock use, Hilton Creek itself does not appear to be suffering CWEs.

Because potential CWEs are thought to be related to commercial pack stock use only in the East Fish Creek Watershed, it is the only watershed where a decreased CWE potential could occur. Alternative 5 could provide the most rapid improvement in watershed function in East Fish Creek, although recovery of the incised portions of Fish Creek may occur over decades or centuries.

Geographic Scale

Ansel Adams East – Alternative 1

Analysis

In the Ansel Adams East Geographic Unit, as wilderness-wide, soil and water resource conditions are unlikely to change from their current condition in most locations. The Ansel Adams East currently has relative high levels of pack stock use. Meadows are generally in fair to moderate hydrologic and soil condition, and would likely remain so. A high number of streams analyzed for stream functional condition are functional at-risk, and their condition is unlikely to change through most of the geographic units. Overall, trails and campsites should continue to have little effect on soil and water resources, but individual areas may have water quality degradation and hydrologic function alteration due to trails.

Meadows: Meadow condition is unlikely to change under Alternative 1, although condition could change if use changes. Alternative 1 is the only alternative where grazing could occur in any area except those four areas that are currently closed. There is no way to determine where future grazing might occur, but it is assumed that it should not change substantially from current locations.

Meadow Hydrologic Function: Almost 90 percent of meadows are expected to remain in their current hydrologic function condition, as shown in Figure 4.7. Four meadows could have minor degradation of hydrologic function, while two are expected to have improved hydrologic function. Of the 48 meadows visited in the field, almost 70 percent were found to have no hydrologic function alteration currently. The rest were found to have slight to moderate hydrologic function alteration. Most meadows should therefore remain without hydrologic function alteration. The difference between the projected hydrologic function effects under Alternative 1, 2, 3 and 4 are minor (Table 4.69).

Figure 4.7 A comparison of the effects of alternatives on meadow hydrologic function condition in the Ansel Adams East Geographic Unit

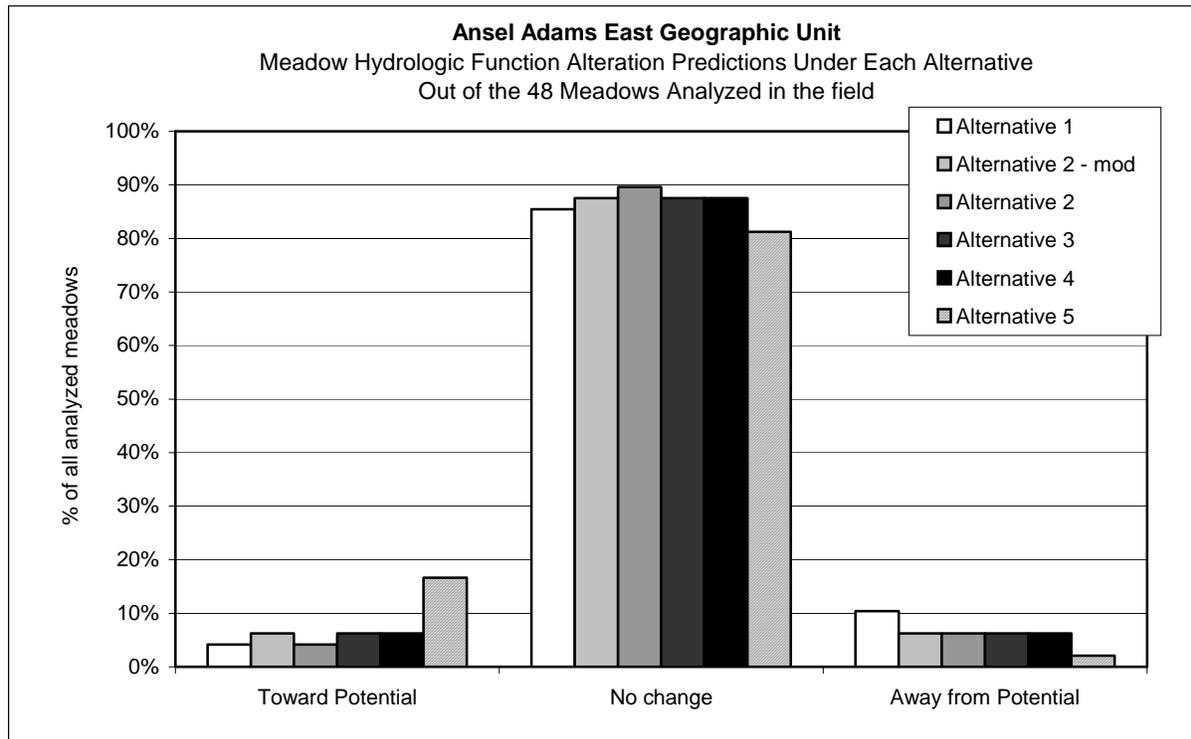


Table 4.69. Hydrologic Function Alteration Predictions for all meadows visited in the Ansel Adams East Geographic Unit. The number of meadows predicted to have each trend was estimated by the IDT, using the meadow’s characteristics such as soil moisture, stream bank stability, and meadow productivity. The predictions in this table assume that the some meadows would not receive their allocated stock nights, if they are in an area unlikely to received increased use. The prediction underestimates the worst possible effects, but is a more realistic estimation. The potential effects if all stock nights were used is included in the text.

Trends By Number of Meadows						
Current Meadow Hydrologic Function Condition (# of meadows with that condition)	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No hydro alteration (32)						
Toward Potential	0	0	0	0	0	0
No change	31	31	31	31	31	32
Away from Potential	1	1	1	1	1	0
Slight hydro alteration (12)						
Toward Potential	0	2	1	2	2	6
No change	8	8	9	8	8	5
Away from Potential	4	2	2	2	2	1
Mod hydro alteration (4)						
Toward Potential	2	1	1	1	1	2

Trends By Number of Meadows						
Current Meadow Hydrologic Function Condition (# of meadows with that condition)	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No change	2	3	3	3	3	2
Away from Potential	0	0	0	0	0	0
Severe hydro alteration (0)						
Toward Potential	0	0	0	0	0	0
No change	0	0	0	0	0	0
Away from Potential	0	0	0	0	0	0
All Meadows Analyzed (48)						
Toward Potential	2	3	2	3	3	8
No change	41	42	43	42	42	39
Away from Potential	5	3	3	3	3	1

The five meadows that are expected have minor degradation of hydrologic function are Upper Deer Creek Meadow (ccd18a), Middle Deer Creek Meadow (ccd17), Lower Spooky Meadow (rus3), Garnet Lake Meadow (thi15) and the meadow on the Northwest Delta of Thousand Island Lake (thi12). Upper Deer Creek Meadow (ccd18a) would likely not be grazed, but the active headcut in the lower portion of the meadow appears that even without any grazing, it will keep progressing into the meadow, possibly expanding the area with a lowered water table. The other four meadows should only have worsened hydrologic function if they are grazed at or above current levels.

The two meadows expected to have minor improvements in hydrologic function alteration are the meadows between Garnet and Emerald Lakes (thi14) and Summit Meadow (ccd11). Improvement in hydrologic function at the meadow between Garnet and Emerald Lakes should occur when the trail through the meadow receives maintenance to reduce trail incision. If the trail and the headcuts propagating from the trail are repaired, the headcuts should revegetate and eventually aggrade. Although it is uncertain when this repair would occur, it is likely to occur within the next 20 years. Trail repair is a separate but related action that would be approved under a future decision, and is not guaranteed to occur under this action. Summit Meadow has some trampled and headcut areas that appear to have recent vegetation growth, and if the meadow continues to have no commercial grazing, that vegetation growth should continue to allow improved hydrologic function. The trail incision is currently causing headcuts to move into the meadow.

Meadow Stream Functional Condition (PFC): Similar to the entire wilderness, the Ansel Adams East Geographic Unit is unlikely to have much change in stream functional condition relative to current conditions under Alternative 1 (Figure 4.8). Of the 41 meadows analyzed for stream functional condition, almost 80 percent are expected to remain in their current condition. About 10 percent might have improved stream functional condition while the remaining 10 percent could develop poorer stream functional condition. Table 4.70 compares stream functional condition predictions among alternatives.

Figure 4.8 A comparison of predicted changes to stream functional condition (PFC) among alternatives for the streams where PFC was analyzed. A total of 41 meadows were analyzed for PFC, all within meadows or other grazed areas. This chart includes all streams analyzed, whether they are at proper functioning condition or whether they are currently functional at-risk.

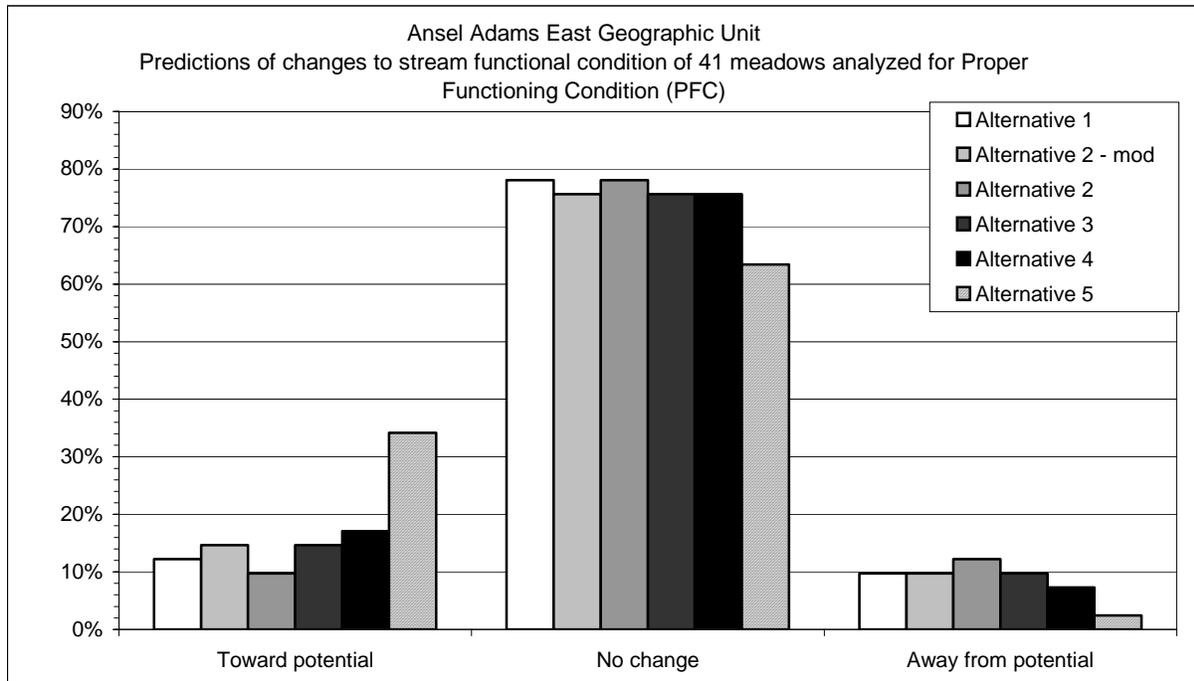


Table 4.70 Summary of all meadow stream functional condition predictions under all alternatives in the Ansel Adams East Geographic Unit. Stream functional condition was determined using the Proper Functioning Condition (PFC) protocol. The streams are separated by those that are currently properly functioning, those that are functional at-risk with an upward trend, those that are functional at-risk with a non apparent trend, and those that are functional at-risk with a downward trend. The predictions are based on assumptions that grazing will continue about as it has in the past in most areas, except in meadows that are closed to grazing and those nearby meadows where grazing might move to.

Current stream functional condition rating (# with each rating)	Number of Meadows expected to have each trend					
	Alternative 1	Alternative 2 - Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Proper Functioning Condition (26)						
Toward potential	1	0	0	0	0	2
No change	23	22	22	22	23	23
Away from potential	2	4	4	4	3	1
Functional at-risk upward trend (2)						
Toward potential	1	1	1	1	1	1
No change	1	1	1	1	1	1
Away from potential	0	0	0	0	0	0

Current stream functional condition rating (# with each rating)	Number of Meadows expected to have each trend					
	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Functional at-risk non apparent trend (8)						
Toward potential	1	1	1	1	2	7
No change	7	7	7	7	6	1
Away from potential	0	0	0	0	0	0
Functional at-risk downward (5)						
Toward potential	2	4	2	4	4	4
No change	1	1	2	1	1	1
Away from potential	2	0	1	0	0	0
Total Ansel Adams East (41)						
Toward potential	6	6	4	6	7	14
No change	30	31	32	31	31	26
Away from potential	5	4	5	4	3	1

The six meadows expected to have improved stream functional condition are the John Muir Trail/Shadow Creek Junction Meadow, Upper Ediza Meadow, Northwest Thousand Island Lake Meadow behind the Moraine, the Garnet/Emerald Meadow Complex, Johnston Meadow, and an unnamed meadow in Deer Creek (ccd16). In all but Johnston Meadow and ccd16, the improvements are expected to occur only with trail repair. These meadows have streams that are functional at-risk mainly due to trail crossings, and the effects are over a small reach.

It is a foreseeable future action that the trail crossings would be repaired, although the repair may take up to 10 years due to budget constraints. Johnston Meadow is expected to have a minor improvement its current stream rating of functional at-risk with a downward trend. The meadow was grazed heavily as a pasture until the early 1990s, but is not expected to be grazed at those levels in the future. In the 10 years that the meadow has been closed, the stream has begun to grow vegetation on a few stream banks and point bars, while other remain unvegetated, and it is expected that there would be a minor increase in vegetative growth and therefore stream functional condition with continued light grazing in this large meadow.

The five meadows expected to have worse stream functional condition under Alternative 1 are Lower Spooky Meadow, Superior Lake Meadow, Garnet Lake Meadow, Northwest Delta Thousand Island Lake, and Upper Deer Creek Meadow (ccd18a). The first four would continue to have substantial grazing. Their stream banks are vulnerable due to past impacts or lack of armoring. Therefore, grazing pack stock could continue to trample stream banks, eat vegetation on the stream banks, and reduce stream functional condition. Upper Deer Creek Meadow (ccd18a) would likely not be grazed under Alternative 1 because it has not been grazed recently. It currently has active headcuts that are in the lower portion of the meadow and moving into the meadow. It is unknown why the headcuts occurred, but they do not appear to be related to recent

pack stock grazing. The meadow has low productivity and vegetation is unlikely to stabilize the headcuts under any alternative.

Soil Effects: There should be continued degradation of soil productivity in local meadows. Of the 39 meadows analyzed for compaction, four were found to have moderate or severe compaction. Under Alternative 1, all of these are open to grazing, and therefore have the potential for continued compaction. All have been grazed within the past three years, and therefore are predicted to have continued grazing and continued moderate compaction.

Trails: Under Alternative 1, there would be one system trail closed to commercial pack stock in the Ansel Adams East Geographic Unit, the Holcomb Meadow Trail. It is assumed that a reasonably foreseeable future action is that the 13 system trails with moderate to severe effects on soil and hydrologic resources would be repaired under all alternatives to reduce soil erosion, incision, and diversion of surface water. However, it is likely that repair will occur slowly and be less effective on some trails than under other alternatives.

Under all alternatives, trails with moderate to severe resource impacts would likely not recover without repair. There would be little difference in the recovery rate of these trails whether they were used by pack stock or not, because once trails incise or widen, water begins to flow down the trail and continues erosion, even with no use of any kind. However, heavy pack stock create more soil loss and trail erosion than hikers, and trails used by pack stock under Alternative 1 would likely need to be maintained more often to prevent soil loss.

Trail sanding would continue to be allowed on a case-by-case basis with Forest Service approval. No trails in this geographic unit are regularly sanded or expected to be requested in the future. Therefore, there are no predicted effects of sanding in this Geographic Unit under any alternative, and it will not be discussed under the other alternatives.

The Thousand Island and Shadow-Ediza Analysis Units both receive high levels of commercial pack stock and backpacker use, and would likely continue to receive high use. Both of these units have an unusually large number of trails leading to soil loss, surface water diversion, and local reduction in water quality. This alternative is the one most likely to have continued negative soil and water resource impacts because all trails would be open to commercial pack stock use. Under all other alternatives, more user and system trails would be closed to pack stock use and would therefore likely have slightly fewer impacts.

The Parker, Glacier Canyon, Gibbs, Bloody Canyon, River High and River Corridor AUs are likely to have very little change to soil and hydrologic resources from trails. The main pack stock use in these units is pass through use, with the main destination area at Badger Lake and some camping along the High Trail, the River trail and at Agnew Pass. There are no known negative effects of the use at the High Trail, River Trail and Agnew Pass use areas. The trails cause normal of bare soil and compacted soil, and the same effects should continue under all alternatives.

Campsites: The effects to campsites would be the same as predicted under the wilderness scale. However, the reduction in compacted, bare soil and sediment entry into water could be noticeable at Ediza Lake. The lake currently has a few campsites too close to water and contributing sediment into the lake. Associated trails appear to be causing more sediment input into the lake. This may be one area where a foreseeable future action is that sites are designated

for stock holding and client drop off due to the high use at the lake and likely water quality reduction due to campsites and trails.

The Rush Creek and Upper Rush Creek Analysis Units would be managed as they have been in recent years, with more site-specific intensive management than other analysis units. There should continue to be fewer resource impacts from stock holding sites than in other AUs, because they are designated. They should continue to meet BMPs.

Cumulative Impacts

This alternative has been analyzed in terms of the effects of past, present and reasonably foreseeable future actions to soil and hydrologic processes within the Ansel Adams East Geographic Unit. The effects under Alternative 1 should be the same as current cumulative impacts. Past actions, including commercial pack stock and private recreational use, have caused some local increases in soil erosion, sedimentation and stream function condition alteration. Past, present and future actions are the same as on the wilderness-wide scale except where described below.

Past actions particular to this Geographic Unit include the construction of two major dams at Waugh and Gem Lakes, fundamentally altering stream flow and many beneficial uses below the dams. These dams are near the edge of the wilderness, and do not affect upstream beneficial uses. The dams will remain into the future and will continue to alter stream flow downstream of the dams.

Alternative 1 would allow commercial pack stock use to continue in all areas currently open. In some local areas, the combination of past, present and future commercial pack stock grazing and other recreational use would allow continuation of slight water quality degradation, stream morphology alteration and soil productivity reduction. The largest contributor to cumulative soil and water effects appears to be trails, both used by commercial pack stock and by private pack stock and hikers.

In some areas, such as near Ediza and Thousand Island Lake, hiker use unrelated to commercial pack stock, has led to increased areas of soil compaction from campsites and user trails. These effects will not change under Alternative 1 because commercial pack stock and hiker use would likely remain about the same. Reasonably foreseeable future actions include trail repair on trails with moderate to severe soil and water resource impacts. This repair would reduce the extent of soil erosion, stream bank trampling, and sedimentation into surface water.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis*, in the project record.

In summary, the watersheds with at least some portion in the Ansel Adams East Geographic Unit were not found to currently have cumulative watershed effects, nor are they expected to have any increased potential for CWEs under Alternative 1. Some trails and meadow grazing practices have caused increased fine sediment input into surface water in the Upper Middle Fork San Joaquin River watershed (Shadow Ediza, Thousand Island, Minaret, River High and River Analysis Units). In this watershed, there is a relatively high percentage of stream segments that were found to be functional at-risk. However, the local effects of trails and grazing do not appear

to have transported downstream to cause potential CWEs within the watershed and are not likely to do so under Alternative 1 because all uses should remain about the same.

Ansel Adams East – Alternative 2 – Modified

Analysis

The Ansel Adams East is likely to have very little overall change in soil or hydrologic condition under Alternative 2 – Modified. Local changes might be substantial in a few locations where commercial pack stock management would have the largest changes, such as at Thousand Island Lake and the Shadow-Ediza area. The greatest changes to soil and hydrologic resource condition would likely be from closure or rest of meadows that currently have soil and hydrologic function alteration. There should be little overall change in campsite extent or condition, and therefore campsite management should have little effect on soil or hydrologic condition.

For site-specific areas not discussed below, but discussed under Alternative 1, the effects should be the same.

Meadows/Wetlands: Meadow condition should improve overall in this area, although the effects should be slight. There will be some meadows closed to grazing, which should reduce soil and hydrologic effects, but some would remain open that could have continued negative effects. The effects should be minor because all meadows would have stock nights allocated, and they were developed to meet the meadows' capacity.

It is possible that the Crater Creek Analysis Unit could see increased pack stock grazing under this alternative, as well as under Alternatives 2, 3, and 4. While destination quotas will allow for greatly increased use, it is unlikely that the entire allocations will be used because the area is not a desirable destination. Much of the area has soils vulnerable to erosion due to high ash content. If use does increase, especially grazing use, some meadows could have increased bare ground, stream trampling, vegetation removal and soil compaction that could lead to slightly decreased meadow hydrologic function and stream functional condition.

Meadow Hydrologic Function: Of the 48 meadows analyzed in the field for grazing suitability and condition, all were analyzed for hydrologic function alteration. Of these meadows, none were found to have severe hydrologic function alteration, and only four were found to have moderate hydrologic function alteration. Twelve have minor hydrologic function alteration and the remaining 32 were not found to have hydrologic function alteration.

Of the four meadows with moderate hydrologic function alteration, three are expected to remain in their current hydrologic condition under Alternative 2 – Modified, while one is expected to show minor improvement. (The *Projected Changes to Meadow Stream Functional Condition and Meadow Hydrologic Function under all Alternatives* table in the project record shows individual meadow predictions.) The three meadows expected to remain in their current condition are Summit Meadow (ccd11), an unnamed meadow in Deer Creek (ccd16) and Johnston Meadow (min11). Summit Meadow and the unnamed meadow both have stream incision and headcuts with an unknown cause and have not been recently grazed by commercial pack stock. Both meadows have low levels of grazing proposed. Because both meadows have stream incision and headcuts that appear to have little vegetation growth and therefore little potential for recovery, neither meadow would be expected to recover hydrologic function within 20 years, even with no grazing. All would have some grazing allowed. The grazing should not

cause hydrologic function to move away from its potential because the levels of pack stock grazing allowed were developed to prevent widespread streambank trampling and vegetation removal.

In Johnston Meadow, the cumulative effect of grazing over time has altered stream functional condition to a point that it is unlikely that the stream will aggrade within centuries. The meadow has not been heavily grazed since the mid 1990s, and banks continue to collapse, instream bars remain unvegetated, and few stream banks support vegetation. Grazing at the proposed 193 stock nights could cause some trampling and vegetation removal that would slow recovery of hydrologic function. Although past records of actual use were not available, we know that 19 AUMs (about 580 stock nights) were permitted. Therefore, the proposed use is less than was likely used in the past, but still substantial. It is possible that all 193 stock nights would be used in Johnston Meadow because it is a foreseeable future action that Agnew Meadow, closer to the pack station, will have grazing reduced from current levels.

Of the 12 meadows with slight hydrologic function alteration, eight are expected to remain in that condition, two are expected to have hydrologic function trend toward their potential, and two are expected to trend away from potential. The meadows expected to trend toward its potential hydrologic function are Garnet Lake Meadow (thi15) and the Northwest Delta Thousand Island Lake (thi12). The meadows would be closed to or rested from grazing and the fragmented sod and streams impacts could be reduced without pack stock use.

The eight meadows, with slight hydrologic function alteration, that are expected to remain so have different reasons for their lack of recovery. Four meadows would continue to be grazed. The levels of grazing proposed, and the vulnerability of soils and the stream, will likely continue with some stream bank trampling and vegetation removal preventing vegetation from growing back. Four meadows will not be grazed, but the low productivity could prevent vegetative recovery within the medium term.

The two meadows expected to have a trend away from their potential could have grazing, and are both in the Crate Creek Analysis Unit. However, it is unlikely that these stock nights will be used because it is close to the pack station that would use this operating area and stock may not be able to be easily held here.

Thirty-two of the 48 meadows analyzed in the field do not appear to have hydrologic function alteration currently. One is expected to have a downward trend in hydrologic function, Middle Deer Creek (ccd17), because grazing could be increased from none currently to 230 stock nights. The impacts would likely be minor, with some compaction or sod fragmentation where stock congregate. Twenty-one of these meadows would be grazed, but their productivity, stream bank stability, and lack of current impacts should prevent substantial stream bank alteration, compaction, vegetation removal, or trampling to lead to any change in hydrologic function alteration.

Stream Functional Condition (PFC): Alternatives 2 should have a similar number of meadow streams remain in their current condition as Alternative 1, although one more stream would be expected to have an improved condition instead of no change in condition (Figure 4.8).

Of the 41 meadow stream segments analyzed for PFC, 26 are currently in proper functioning condition. Four of those (Superior Lake, Upper Crater Creek, Middle Deer Creek and Upper Deer Creek) could trend away from potential stream condition under this alternative because

they might be grazed more heavily than they have been recently, and streambanks will likely see some trampling and vegetation removal. Moving away from potential stream condition does not necessarily mean that the streams are expected to move to functional at-risk. It only suggests that their condition may slightly worsen, away from the potential stream condition.

Because the streams are currently functioning properly, the stream banks are not critical areas, and can be grazed up to 40 percent utilization or 20 percent streambank trampling. Although this standard may be met, the stream could still trend away from proper functioning condition with annual local stream bank trampling and vegetation removal. All of the four meadows listed above have the potential to receive the full amount of grazing allocated.

Of the meadow stream segments analyzed for PFC, 15 were found to be functional at-risk. None of these should have a downward trend because all will either be closed to grazing or rested under Alternative 2 – Modified.

Six functional at-risk meadow stream segments (Upper Ediza, NW Thousand Island Lake, Thousand Island Lake behind the moraine, Johnston Meadow, Garnet Lake and Garnet/Emerald Complex Meadows) could have an upward trend toward proper functioning condition. Grazing would be prohibited or the meadow would be rested in all cases, and the stream banks retain enough water supply and the meadows are productive enough to allow for vegetative growth on stream banks to begin improving the stream functional condition.

Meadow Soil Effects: There should be a slight improvement in soil productivity over Alternative 1. Of the 39 meadows analyzed for compaction, four were found to have moderate or severe compaction. One of those could be grazed under Alternative 2 – Modified, and therefore has the potential for continued compaction. The Forest Service Soil Quality Standards (Forest Service Handbook 2509.18) require that soil porosity should be at least 90 percent of total porosity required under natural conditions. Soil porosity was not quantitatively measured, but meadows with moderate to severe compaction could have soil compaction exceeding standards.

The meadows will likely be grazed at their recommended capacity which is similar to the current grazing, and therefore compaction should continue at its current level and extent. The three meadows with moderate to severe compaction that would not be grazed could have reduced compaction over time, although it is uncertain how long it will take compaction to fully recover.

Trails: Under Alternative 2 – Modified, the reduction of trail effects on soil and hydrologic condition could be substantial relatively to Alternative 1. The Ansel Adams East Geographic Unit has one of the highest percentages of trails with a moderate to severe resource rating. Of the 12 trails with moderate or severe resource ratings, six would be prohibited for commercial pack stock use. One of these, the trail to Emily Lake, would be closed to commercial pack stock until it is fixed. All of the trails that have moderate to severe resource ratings would be high priorities for repair to reduce erosion. The repair would likely be long-lasting on the trails closed to commercial pack stock use because it would take the impact of heavy animals off the trail. Repairs would therefore take longer to dilapidate.

The other six trails with moderate or severe resource ratings would be left open for commercial pack stock use. These trails would also likely receive repairs to increase stability and reduce erosion, but would be more likely to have the repairs wear out quickly and therefore might be slightly more likely to cause erosion problems within a few decades.

Until trail repair occurs, all 12 trails will likely continue to erode and possibly increase sedimentation into surface bodies when the trails are near water. Soil loss and local slight decreases in water quality could result.

The Shadow/Ediza Analysis Unit should have one of the greatest reduction in soil loss, soil erosion, and sedimentation from trail repair out of all analysis units. Ediza Lake is one of the few lakes in the wilderness where a trail was seen directly depositing large amounts of sediment into surface water. While many stream crossings contribute some sediment into streams, Ediza has a delta built up without being washed away, and therefore it is very obvious how much sediment is carried into the lake by the trail. The use trail from Ediza to Iceberg Lakes is the cause of the sediment, and commercial pack stock will be prohibited on the trail. While removal of pack stock itself would not prevent the trail from continuing to deposit sediment into Ediza Lake, the removal will allow rehabilitation to occur and ensure that the repairs last longer than they would with commercial pack stock use.

Campsites: Hydrologic and soils effects from campsites should become slightly less than under Alternatives 1. There will likely be very little change in bare soil area, compacted soil, or erosion from campsites into surface water. As in every other alternative, campsites within 50 to 100 feet of water should eventually be obliterated and possibly rehabilitated. Stock holding campsites will be designated under this alternative within two years, and then all stock holding sites would meet BMPs. Non-stock holding sites could take longer to bring into compliance. Stock camp site designation would prevent large campsite proliferation and therefore prevent increases in bare soil and compacted ground.

The Rush Creek and Upper Rush Creek Analysis Units are two of the only analysis units in the wilderness that is used heavily by commercial pack stock now, but will show almost the same effects under Alternative 2 – Modified. The unit is already managed in much the same way as proposed. All commercial pack stock holding sites are already designated and meet BMPs.

Any new stock camp or expanded stock holding campsites would be designated over 100 feet from surface water and would increase the area of bare and compacted soil, but would not likely affect water quality or affect the watershed overall.

Cumulative Impacts

The past, present, and reasonably foreseeable future actions in the Ansel Adams East Geographic Unit are the same as wilderness-wide. Alternative 2 – Modified is not expected to contribute to adverse cumulative impacts on soil and water resources, and should slightly reduce the risk of cumulative impacts.

In Ansel Adams East, about 20 of the 50 meadows analyzed for grazing suitability were found to be unsuitable, protecting them from grazing impacts such as fragmented sod, trampled stream banks, and vegetation removal. The rest have stock nights allocated, likely at low enough levels to prevent vegetation utilization, stream bank trampling, and soil compaction from exceeding standards. In a few meadows, use of the entire allocated stock nights could cause a minor trend away from potential hydrologic function, and in a few, grazing management could allow meadow conditions to improve. In the unlikely case that there is a major increase in private pack stock use in the area, meadow hydrologic function could worsen in a greater number of meadows.

Designation of campsites and implementation of destination quotas should prevent future cumulative effects associated with commercial pack stock use. However, continuation of hiker use and private pack stock use on trails and at campsites will likely prevent most of those areas from experiencing reductions in soil and water resource impacts.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis*, in the project record.

The Ansel Adams East Geographic Unit currently does not contain watersheds that appear to have cumulative watershed effects. Because this alternative limits the extent of use, and limits the number of stock nights in meadows, commercial pack stock use should not increase the potential for cumulative watershed effects.

Ansel Adams East – Alternative 2

Analysis

The Ansel Adams East is likely to have very little overall change in soil or hydrologic condition under Alternative 2. The difference between this alternative and Alternative 2 – Modified should be negligible, because management is almost the same. Local changes relative to Alternative 1 might be substantial in a few locations where commercial pack stock management would have the largest changes, such as at Thousand Island Lake and the Shadow-Ediza area. The greatest changes to soil and hydrologic resource condition would likely be from elimination of grazing on meadows that currently have soil and hydrologic function alteration. There should be little overall change in campsite extent or condition, and therefore campsite management should have little effect on soil or hydrologic condition.

Meadows/Wetlands: Meadow condition should improve overall in this area relative to Alternative 1, although the effects should be slight. The effects should almost be the same as under Alternative 2 – Modified, because meadow management would be different in only two meadows, the Northwest Delta of Thousand Island Lake (thi12) and Johnston Meadow (min11). Both meadows would be rested from grazing under Alternative 2 – Modified, but would be open under this alternative.

Meadow Hydrologic Function: Of the 48 meadows analyzed in the field for grazing suitability and condition, all were analyzed for hydrologic function alteration. Of these meadows, only one, the Northwest Delta of Thousand Island Lake (thi12), should have different effects to meadow hydrologic function than Alternative 2 – Modified.

Two meadows the Northwest Delta of Thousand Island Lake and Johnston Meadow (min11) would be open to grazing under Alternative 2, and both could have over 100 stock nights annually. However, it is expected that the Northwest Delta of Thousand Island Lake could have a worsening hydrologic function condition with the proposed 106 stock nights of grazing. The stream in this meadow has little vegetative cover and areas that are vulnerable to increased stock trampling, compaction, and stream bank erosion. Johnston Meadow, on the other hand, has moderate hydrologic function alteration currently, and 193 stock nights in this 22 acre meadow is not expected to be enough to further degrade meadow hydrologic function. It is assumed that the

grazing use that helped lead the meadow to its current condition was much heavier use in the past, when the meadow was used as a pasture. However, it is likely that use of 193 stock nights could maintain the meadow in its current condition with moderate hydrologic function alteration.

Stream Functional Condition (PFC): Alternatives 2 should have a similar number of meadow streams remain in their current condition as Alternative 1, although one more stream would be expected to have worse condition (Figure 4.8). The difference between this alternative and Alternative 2 – Modified should be very slight, with a difference in future stream functional condition predicted only for two meadows.

Both Johnston Meadow and the Northwest Delta of Thousand Island Lake could have worse stream functional condition under Alternative 2 than they would as described under Alternative 2 – Modified. Both meadows contain streams that were rated functional at-risk with a downward trend, and both streams are vulnerable to further stream impacts from continued grazing. Johnston Meadow has extensive bare streambanks in the upper meadow, and it is predicted that there could be an increased trend away from potential with 193 stock nights under Alternative 2 (versus a prediction of a minor upward trend under Alternative 2 – Modified). The Northwest Delta Thousand Island Lake was predicted to have an improved stream functional condition change in its stream condition under Alternative 2 – Modified, but is expected to remain in its same condition with continued grazing under Alternative 2 – Modified.

Meadow Soil Effects: There should be a slight improvement in meadow soil productivity over Alternative 1, and the effects should be almost the same as under Alternative 2 – Modified. Of the 39 meadows analyzed for compaction, four were found to have moderate or severe compaction. Two of those could be grazed under Alternative 2, and therefore have the potential for continued compaction. The Forest Service Soil Quality Standards (Forest Service Handbook 2509.18) require that soil porosity should be at least 90 percent of total porosity required under natural conditions. Soil porosity was not quantitatively measured, but meadows with moderate to severe compaction could have soil compaction exceeding standards.

The meadows will likely be grazed at their recommended capacity which is similar to the current grazing, and therefore compaction should continue at its current level and extent. The two meadows that would not be grazed could have reduced compaction over time, although it is uncertain how long it will take compaction to fully recover.

Trails: Under Alternative 2, the reduction of trail effects on soil and hydrologic condition could be substantial relatively to Alternative 1, and almost the same as under Alternative 2 – Modified. However, the continued loss of soil from trails could be more widespread under Alternative 2 than 2 – Modified. The Ansel Adams East Geographic Unit has one of the highest percentages of trails with a moderate to severe resource rating. Of the 12 trails with moderate or severe resource ratings, three would be prohibited for commercial pack stock use. These trails would be a high priority for repair to reduce erosion and the repair would likely to be long-lasting because removal of pack stock use would take the impact of heavy animals off the trail. Repairs would therefore take longer to dilapidate.

The other nine trails with moderate or severe resource ratings would be left open for commercial pack stock use. These trails would also likely receive repairs to increase stability and reduce erosion, but would be more likely to have the repairs wear out quickly and therefore might be slightly more likely to cause erosion problems within a few decades. Until trail repair occurs, the

11 trails will likely continue to erode and possibly increase sedimentation into surface bodies when the trails are near water. Soil loss and local slight decreases in water quality could result.

Campsites: Hydrologic and soils effects from campsites should become slightly less than under Alternatives 1, and likely slightly less than Alternative 2 – Modified. There will likely be very little change in bare soil area, compacted soil, or erosion from campsites into surface water. As in every other alternative, campsites within 50 to 100 feet of water should eventually be obliterated and possibly rehabilitated. Stock holding campsites will be designated under this alternative within two years, and then all stock holding sites would meet BMPs. Non-stock holding sites could take longer to bring into compliance. Stock holding site designation would prevent large campsite proliferation and therefore prevent increases in bare soil and compacted ground.

Under Alternative 2, 17 stock camps would be designated. Under Alternative 2 – Modified, about 35 stock camps would be designated. These sites would be more likely to be large sites with bare soil and some soil loss off the site. Therefore, there could be slightly less extensive bare soil from stock camps under Alternative 2. However, there would likely be a similar number of spot/dunnage sites and backpacker sites, so the overall increase should be negligible.

The Rush Creek and Upper Rush Creek Analysis Units are two of the only analysis units in the wilderness that is used heavily by commercial pack stock now, but will show almost the same effects under Alternative 2. The unit is already managed in much the same way as proposed. All commercial pack stock holding sites are already designated and meet BMPs and only one more would be designated.

Any new stock holding campsites or expanded stock holding campsites would be designated over 100 feet from surface water and would increase the area of bare and compacted soil, but would not likely affect water quality or affect the watershed overall.

Cumulative Impacts

The past, present, and reasonably foreseeable future actions in the Ansel Adams East Geographic Unit are the same as wilderness-wide. Alternative 2 is not expected to contribute to adverse cumulative impacts on soil and water resources, and should slightly reduce the risk of cumulative impacts.

In Ansel Adams East, about 20 of the 50 meadows analyzed for grazing suitability were found to be unsuitable, protecting them from grazing impacts such as fragmented sod, trampled stream banks, and vegetation removal. The rest have stock nights allocated, likely at low enough levels to prevent vegetation utilization, stream bank trampling, and soil compaction from exceeding standards. In a few meadows, use of the entire allocated stock nights could cause a minor trend away from potential hydrologic function, and in a few, grazing management could allow meadow conditions to improve. In the unlikely case that there is a major increase in private pack stock use in the area, meadow hydrologic function could worsen in a greater number of meadows.

Designation of campsites and implementation of destination quotas should prevent future cumulative effects associated with commercial pack stock use. However, continuation of hiker use and private pack stock use on trails and at campsites will likely prevent most of those areas from experiencing reductions in soil and water resource impacts.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis*, in the project record.

The Ansel Adams East Geographic Unit currently does not contain watersheds that appear to have cumulative watershed effects. Because this alternative limits the extent of use, and limits the number of stock nights in meadows, commercial pack stock use should not increase the potential for cumulative watershed effects.

Ansel Adams East – Alternative 3

Analysis

Most of the Ansel Adams East Geographic Unit should have the same soil and hydrology effects as under Alternative 2. The exception could be the Deer Creek subwatershed (Crater Creek Analysis Unit), where use might migrate when Silver Divide is limited in grazing for commercial pack stock. The areas outside of Deer Creek should have similar use patterns as under Alternative 2, because the same campsites will be designated for stock holding, and the same destinations should be as popular and get the same amount of use. Grazing prohibitions would occur in almost the same locations, although one more meadow, Holcomb Meadow, would be open to grazing under Alternative 3. Therefore, grazing effects to soil and hydrologic resources should be similar as under Alternative 2.

Meadows/Wetlands: The effects on meadows should be the same as predicted under Alternative 2 – Modified, except possibly in the Crater Creek and Cargyle Analysis Units (Figure 4.6, Table 4.66). Over most of the area, grazing management is the same. The Crater Creek and Cargyle Analysis Units are adjacent to the Cascade Valley, Silver Divide and Upper Fish Creek Analysis Units. The grazing will be curtailed in those analysis units, as under Alternative 2 – Modified. There will be no limits to travel into the Deer Creek area as there were under Alternative 2 – Modified, and therefore it is possible that use will move there. If so, grazing could be used to near the maximum grazing allowed. In Alternative 2– Modified, predictions were made based on all the grazing capacity being used, with caveats that those predictions were likely overstated because it was likely that there would be little increase in grazing from recent use.

Meadow Hydrologic Function: Of the 48 meadows analyzed for hydrologic function alteration, three are expected to have improved hydrologic function and three are expected to have slightly more altered hydrologic function. The rest are expected to remain about the same, with most meadows having little to no hydrologic function alteration.

There is very little difference between predictions for Alternatives 1 through 4 in Ansel Adams East (Figure 4.7, Table 4.69). The predictions are the same for all meadows as described under Alternative 2 – Modified.

In Alternative 3, the same range of effects as under Alternative 2 could occur in almost all meadows. However, it is more likely that more meadows could have minor increases in hydrologic function alteration because they are more likely to be grazed at their full estimated capacities.

Meadow Stream Functional Condition (PFC): Alternative 3 should have the same effects to stream functional conditions as Alternative 2 – Modified in all meadows (Figure 4.7, Table 4.69). The effects should be the same because grazing allocations are the same in all meadows. It is possible that the Deer Creek area (Crater Creek Analysis Unit) would receive more grazing under Alternative 3 because there would be less control on traveling trips and packers might begin to take more trips into the Deer Creek Area. However, even if the grazing increases to the maximum allocated stock nights annually, the changes in effects to stream functional condition should be negligible.

Meadow Soil Effects: The effect to meadow soil compaction and productivity should be almost the same under Alternative 3 as predicted under Alternative 2, with the exceptions in the Crater Creek/Deer area described above. Three separate meadows in the Crater Creek/Deer Creek area could have enough grazing to increase compaction slightly. Those meadows are; Upper Deer Creek Meadow (ccd18b), Middle Deer Creek Meadows (ccd17) and Upper Crater Meadow (ccd2).

Trails: Under Alternative 3, the reduction of trail effects on soil and hydrologic condition could be substantial, and likely very similar to Alternative 2. Only two trails that will be prohibited for commercial pack stock use in Alternative 2 will be open under Alternative 3; the Marie Lakes Trail (#1-189) and a portion of the Spooky Meadow Trail (#1-142). These trails are not being closed for resource purposes under Alternative 2 and do not currently have more than slight soil erosion. They are not likely to have increased soil loss or incision under Alternative 3 that they have currently because they are not commonly used trails and use should not increase substantially. Other than those two trails, it is likely that trail use, trail maintenance, and therefore effects of trails on soil and hydrologic resources should be the same as under Alternative 2.

Campsites: The effect of campsites on soil and water resources should be the same as under Alternative 2. Most of the same stock holding campsites and access routes to campsites will be designated, and the same sites within 100 feet of water should be obliterated. It is possible that the number of non-stock holding campsites could increase as some destinations without destination quotas that would be in place under Alternative 2. However, the sites would not be stock holding sites and therefore would likely compact soil and remove vegetation over a small area. Any new sites would also be at least 50 to 100 feet from water, and therefore would likely have few impacts to water quality.

Cumulative Impacts

The cumulative impacts of commercial pack stock use under Alternative 3, when added to other past, present and reasonably foreseeable future actions, should be slightly beneficial relative to the current condition.

Designation of stock holding campsites and implementation of grazing suitability should prevent some future cumulative effects associated with commercial pack stock use. However, continued commercial pack stock use of trails, along with continued hiker use and private pack stock use, will allow for continued trail erosion, incision, and capture of surface water. Because some trails would be closed to commercial pack stock use under Alternative 3, the effects could be slightly reduced or at least would not be as negative as under Alternative 1.

There could be slightly more negative cumulative effects to soil and water resources under Alternative 3 than under Alternative 2, because destinations would not have quotas, there could be an unlimited number of traveling trips, and fewer trails would be closed to grazing. The continuation of hiker use and private pack stock use would likely continue a very similar area of bare soil area from campsite and trail use.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis*, in the project record.

The Ansel Adams East Geographic Unit currently does not contain watersheds that appear to have cumulative watershed effects. Because this alternative limits the extent of commercial pack stock, creates fewer stock holding sites near water, and prohibits grazing in meadows that are unsuitable, commercial pack stock use should not increase the potential for cumulative watershed effects and should slightly decrease the potential.

Ansel Adams East – Alternative 4

Analysis

The Ansel Adams East Geographic Unit could have substantial reductions in negative effects to soil and hydrologic resources in some areas, but is likely to have effects similar to Alternative 2, 2 – Modified and 3 in most of its area. The Analysis Units most likely to have reductions in negative soil and hydrologic effects are Shadow/Ediza and Thousand Island Analysis Units. At least five destinations in the Shadow/Ediza and Thousand Island Analysis Units would be closed to commercial pack stock access, and stock holding and stock supported camps will no longer occur in those areas. There could be minor reductions in area of soil compacted from a reduction in the number of campsites and stock tie-up areas. However, the reduction should only be minor in local areas, and is not likely to be measurably different than under Alternatives 2 and 3.

Meadows/Wetlands/Grazing: Ansel Adams East could have some differences in grazing practices between Alternatives 2 – Modified through 4. Four meadows; Holcomb Meadow (King Analysis Unit), the meadow at the Northwest Delta of Thousand Island Lake (Thousand Island Analysis Unit), Rodgers Lake Meadows (Upper Rush) and an unnamed meadow in Crater Creek (ccd16), would be closed in Alternative 4, but open in Alternative 2, 2 – Modified and/or 3. Another meadow, Summit Meadow, will only have 46 stock nights of grazing allowed under Alternative 4, with 61 under Alternatives 2 – Modified and 3. The different watershed effects from these actions should not be noticeable at a Geographic Unit scale, although there may be some local improvement in hydrologic and soil condition at the meadows that are being closed, with associated degradation of hydrologic and soil condition at any meadows where the grazing moves.

Meadow Hydrologic Function: Although grazing is curtailed in some meadows and may increase in others, there is unlikely to be more than a minor change in hydrologic function in any one meadow or grazing zone relative to Alternative 1.

The predictions of changes in hydrologic function in Table 4.69 are based on the likely number of stock nights used, not necessarily the full proposed stock nights in areas where use is expected

to be low. However, in the text, the possible ramifications of full utilization are discussed. In some meadows, more grazing might occur, depending on whether the packer chooses to graze in a meadow or not. In the text, it is described whether it is assumed that a meadow will be used to its full allocated grazing or not. In Table 4.69 and Figure 4.7, the predictions assume that the proposed allocation is used to its fullest only where it is likely to be used.

Of the 48 meadows analyzed for hydrologic function alteration, it is expected that three would have improved hydrologic function condition while three would have hydrologic function away from potential, the same as under Alternatives 2 – Modified and 3.

In the four meadows with current moderate hydrologic function alteration, the soil and water resources effects should be the same as under Alternative 3, with three meadows expected to show improved hydrologic function alteration. Of the 12 meadows with slight hydrologic function alteration, eight are expected to remain in their current condition, two are expected to trend toward their potential, and two are expected to trend away from potential, the same as under Alternative 2 – Modified.

Of the 32 meadows that do not appear to have current hydrologic function alteration, one could have a downward trend and the rest are expected to remain in their current condition. Middle Deer Creek Meadow (ccd17) could receive up to 230 stock nights of grazing, which could cause slight compaction, slight stream bank alteration, and slight sod fragmentation that could lead to slight short term increases in hydrologic function alteration. If the alteration appears that it is persisting year to year, or that it is becoming more than slight, grazing numbers would be reduced or the meadow would be closed to grazing. It is uncertain whether the meadow would be grazed to its full proposed stock nights, but it could be because Deer Creek is near the Fish Creek watershed, where grazing is being greatly reduced. Grazing therefore may move into the Deer Creek area.

Stream Functional Condition (PFC): There is likely to be little difference overall in stream functional condition in the Ansel Adams East Geographic Unit from Alternatives 1 through 3. There should be a slight improvement of some streams' condition, however, that were not likely to improve under Alternatives 2 and 3. The majority of streams analyzed, about 75 percent, should remain in their current condition under all alternatives other than Alternative 5.

Table 4.70 shows the predicted differences between effects to stream functional condition between all alternatives. As the table shows, there should be one stream that could have a downward trend under Alternatives 2, 2 – Modified and 3 that would likely continue without any change or have improved stream function condition under Alternative 4. This meadow, Marie Meadows, would have less grazing under Alternative 4. While the difference is between 93 and 70 stock nights, and the difference in stream effects might be minor, it could be few enough stock nights that vegetation could grow back annually and prevent any loss of stream functional condition.

Meadow Soil Effects: There should be a slight improvement in soil productivity over Alternatives 1 through 3. The difference, however, would be local and not substantial on a Geographic Unit scale. Of the 39 meadows analyzed for compaction, 22 would be open to grazing. Of the four meadows that currently have moderate or severe compaction, two could continue to be grazed while two would be closed to grazing, as under Alternatives 2 and 3. Of the 35 meadows that currently have little to no compaction, it is assumed that none will have measurably increased overall compaction under Alternative 4. Although 21 of those meadows

could be grazed, the meadows have low enough proposed grazing numbers that compaction should only occur in areas where stock congregates, such as dusting areas or trails through the meadow.

Sod fragmentation does not currently appear to play a large role in reducing soil productivity in this analysis unit, and the overall impact of sod fragmentation should not change substantially under Alternative 4. However, there could be a reduction in sod fragmentation in some meadows that could increase local soil productivity. Of the 15 meadows found to have a moderate to severe of sod fragmentation, six could be grazed. Only one of those meadows should have enough grazing to allow increased sod fragmentation. The others have grazing levels the same or less than recent levels, and therefore there is no reason that sod fragmentation should increase.

Thirty-one meadows were found to have little or no sod fragmentation. Of those meadows, 15 would be open to grazing. Only two or three of the 15 would have high enough stock numbers on soil vulnerable to sod fragmentation to increase sod fragmentation. The increased sod fragmentation would likely be minor in most cases, because grazing should not occur in wet “critical” areas where sod fragmentation is most likely to occur.

Trails: The effects to trails should be similar to Alternatives 2 – Modified through 3, because although a few more trails would be closed to commercial pack stock use, they would likely not have improved condition until repair occurs. However, the trails that are not used by pack stock would have a better chance of remaining stable once repair occurs.

Cumulative Impacts

The cumulative impacts from Alternative 4 would likely be the similar as under Alternatives 2, 2 – Modified and 3. While there would be slightly less pack stock use, the difference in the Ansel Adams East Geographic Unit would be small enough that cumulatively, the effects should be negligible.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis*, in the project record.

The Ansel Adams East Geographic Unit currently does not contain watersheds that appear to have cumulative watershed effects. This alternative further limits the extent of commercial pack stock use, creates fewer stock holding sites near water, and prohibits grazing in meadows that are unsuitable and those with current impacts. Commercial pack stock use should not increase the potential for cumulative watershed effects and could slightly decrease the potential by reducing the area of ground disturbance related to commercial pack stock use.

Ansel Adams East – Alternative 5

Analysis

The Ansel Adams East Geographic Unit would likely have local improvements to current soil and water condition, but little change overall. The northern portion of the unit in the Lee Vining Creek and Rush Creek watersheds does not have any commercial pack stock use currently, and therefore there will be no changes to soil or watershed condition in that area. The rest of the

geographic unit would likely have some reduction in stream bank trampling, bare soil, soil compaction, and meadow hydrologic function alteration.

Meadows: Only a few meadows in the Ansel Adams East Geographic Unit currently have hydrologic function alteration, and therefore removal of pack stock is unlikely to have Geographic Unit scale effects to meadow soil and hydrologic condition. However, a number of meadow streams are functional at-risk, and some of those should show recovery under Alternative 5.

Meadow Hydrologic Function: Alternative 5 would likely improve meadow hydrologic function more than any other alternative, but the difference would likely be minor (Figure 4.6, Table 4.66).

Only four meadows in this geographic unit currently have moderate to severe hydrologic function alteration. Therefore, removal of commercial pack stock would not likely have major effects on the overall meadow hydrologic function, although there could be some minor improvement in those 4 meadows.

There are 12 meadows with slight hydrologic function alteration, and six have reported commercial pack stock grazing from 2001 to 2003. Six of those would be expected to have improved hydrologic function under Alternative 5. Five others should remain in their current condition. The meadows not expected to have hydrologic function recovery have hydrologic function alteration due to something other than recent pack stock grazing, such as historical grazing, drought or a trail. The meadows with trail impacts might have improved hydrologic function alteration when the trail is repaired.

Four meadows currently have moderate hydrologic function alteration, and while all have the potential to recover their hydrologic function over decades or centuries, only two are expected to show considerable change over 20 years (Table 4.69). Twelve meadows currently have slight hydrologic function alteration, and about half are expected to remain in the same condition without commercial pack stock use.

Meadow Stream Functional Condition (PFC): There should be greater improvement in stream functional condition under Alternative 5 than any other alternative. About 1/3 of analyzed streams expected to have at least slightly improved hydrologic function condition (Figure 4.8, Table 4.70). In contrast, the alternative with the next highest number of streams expected to have improved functional condition in 20 percent of analyzed streams. The other 2/3 of streams are expected to remain in their current condition, while one could have a downward trend due to drying out of the meadow from an unknown cause.

Generally, the streams that are predicted to have improved functional condition are those where there are recent pack stock impacts. Removal of pack stock use is therefore expected to allow vegetation to grow on banks and allow some improvement in stream condition. However, two meadows, Summit Meadow (Cargyle Analysis Unit) and an unnamed meadow (ccd16) in Deer Creek (Crater Deer Creek Analysis Unit) have not had any recent pack stock use reported. These meadows appear to have functional at-risk streams due to drying out of the meadow from some unknown cause, possibly drought. Removal of all pack stock use should not affect their stream condition.

Meadow Soil Condition: Few meadows in this geographic unit were found to have more than slight soil compaction or sod fragmentation, and therefore removal of all commercial pack stock

would have little effect on overall soil productivity. Four meadows were found to have moderate to severe compaction, all at least partially due to recent commercial pack stock grazing. Removal of commercial pack stock should allow compaction to slowly recover, although the rate of recovery is unknown. Within 20 years, it is likely that there would be considerable reduction in compaction.

Trails: There are a high percentage of trails in Ansel Adams East that are causing moderate to severe soil and water resource impacts. Those trails with moderate to severe impacts would likely not show reduction in those impacts with removal of pack stock, although removal of pack stock might prevent future trail incision, trail widening and multi-trailing that causes soil erosion.

Campsites: Alternative 5 should have the greatest reduction in bare soil, soil compaction, and local water quality degradation of any alternative. The reduction from current campsite area, however, should be minor in most areas other than those most heavily used by commercial pack stock, such as Shadow Lake, Thousand Island Lake, and Ediza Lake.

Cumulative Impacts

Cumulative impacts to soil and water resources are expected to be reduced under Alternative 5. The major reduction in number of meadows grazed, trails used by any pack stock, and campsites used by stock holding parties suggests that impacts should be reduced from current levels. The reduction (or improvement) in cumulative impacts under Alternative 5 would be more than any other alternative. However, in Ansel Adams East, the reduction in negative cumulative impacts should not be as major as other Geographic Units. The area is heavily used by hikers, and therefore the impacts from campsites and trails should not have major beneficial effects. Grazing has caused some hydrologic and soil effects, but the effects are generally minor to moderate and over a small extent. The cessation of commercial pack stock grazing should reduce the extent of soil compaction, stream bank trampling, sod fragmentation, and meadow hydrologic function alteration.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis*, in the project record.

The Ansel Adams East Geographic Unit currently does not contain watersheds that appear to have cumulative watershed effects. This alternative would prohibit commercial pack stock use in the wilderness. Because the total area of ground disturbance should be slightly less under Alternative 5, especially in meadows, the potential for CWEs should decrease slightly.

Ansel Adams West – Alternative 1

Analysis

In the Ansel Adams West Geographic Unit, there are likely to be very few, if any, changes to soil and water resources relative to their current condition. Most of the adverse effects to soil and water resources can be related primarily to cattle grazing that continued until the 1990s. Commercial pack stock use currently has and should continue to have effects only in a few locations within the entire geographic unit.

Meadows/Wetlands: The overall impacts of grazing to meadow hydrologic function and stream functional condition is unlikely to change under Alternative 1 or under any other alternatives. Much of the area has soil and hydrologic impacts from recent cattle grazing and could continue its slow recovery under all alternatives. The area has low levels of commercial pack stock grazing in most areas, except around Sadler Lake and Joe Crane Lake and some at Anne Lake. Only near those three locations should there be any effect from commercial pack stock grazing under Alternative 1.

The Lake Catherine and Cargyle Analysis Units are different than most of the other analysis units in Ansel Adams West because they were not recently grazed by cattle. These areas appear to have fewer impacts to soil and hydrology, likely due to the less recent cattle grazing. Both areas receive low levels of commercial pack stock use, and are likely to continue to receive light use. Currently, there are no known substantial impacts to water or soil resources other than altered hydrologic function at Stairway Meadow in the Cargyle Analysis Unit. Stairway meadow is very dry and appears to have altered hydrologic function and vegetation composition, for unknown reasons. It is expected that the meadow should gradually have improved hydrologic function if there is a series of years with high precipitation. Use is concentrated in the Stevenson-Hemlock area, where some grazing occurs. If grazing increased moderately, soil and water resources would likely not have adverse impacts because there is ample grazing available and the meadows appear to be somewhat resistant to impacts.

Meadow Hydrologic Function: Alternative 1 is likely to have the greatest number of meadows with continued hydrologic function alteration, although the difference between alternatives should be very small (Figure 4.11). Of the 29 meadows analyzed, it is assumed that five might have minor improved condition while one is likely to have a slight trend away from potential hydrologic function (Table 4.71).

Figure 4.9 A comparison of the effects of alternatives on meadow hydrologic function condition in the Ansel Adams West Geographic Unit.

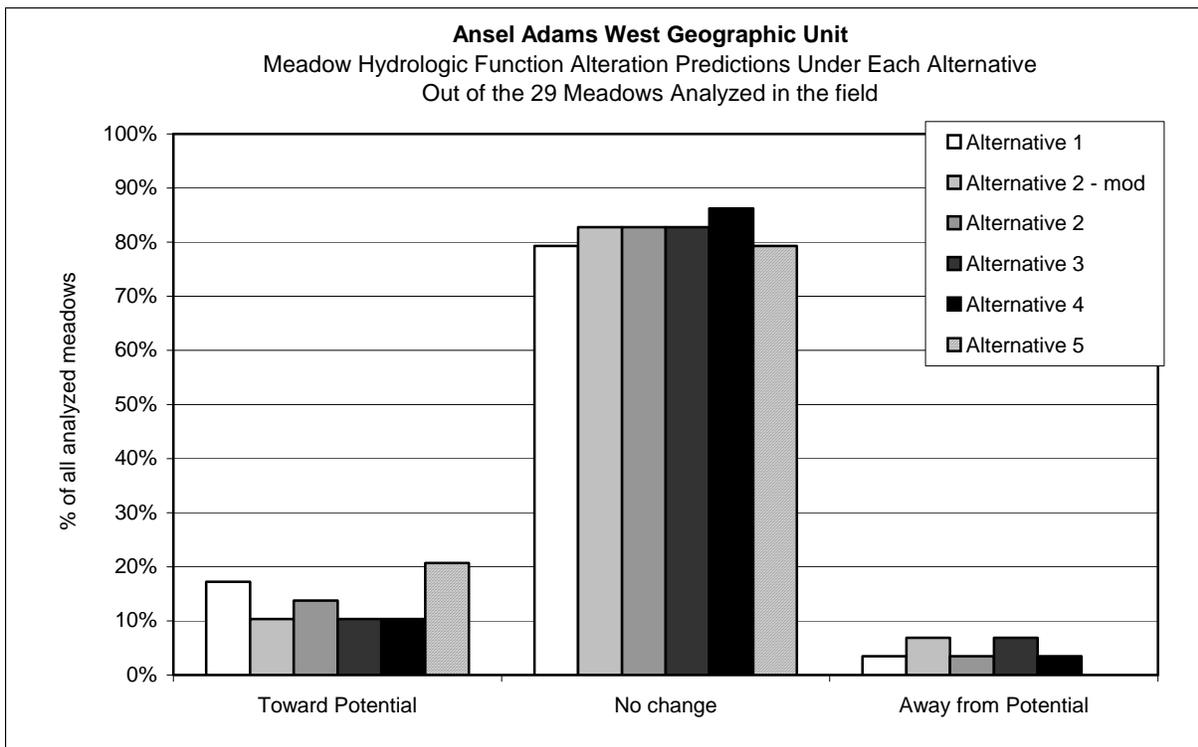


Table 4.71 Hydrologic Function Alteration Predictions for all meadows visited in the Ansel Adams West Geographic Unit. The number of meadows predicted to have each trend was estimated by the IDT, using the meadow’s characteristics such as soil moisture, stream bank stability, and meadow productivity. The predictions assume that the some meadows would not receive their allocated stock nights, if they are in an area not likely to received increased use. The prediction underestimates the worst possible effects, but is a more realistic estimation. The potential effects if all stock nights were used are included in the text.

Trends By Number of Meadows						
Current Meadow Hydrologic Function Condition (# of meadows with that condition)	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No hydro alteration (12)						
Toward Potential	0	0	0	0	0	0
No change	12	11	12	11	12	12
Away from Potential	0	1	0	1	0	0
Slight hydro alteration (3)						
Toward Potential	1	0	0	0	0	1
No change	2	3	3	3	3	2
Away from Potential	0	0	0	0	0	0
Mod hydro alteration (7)						
Toward Potential	4	3	4	3	3	5

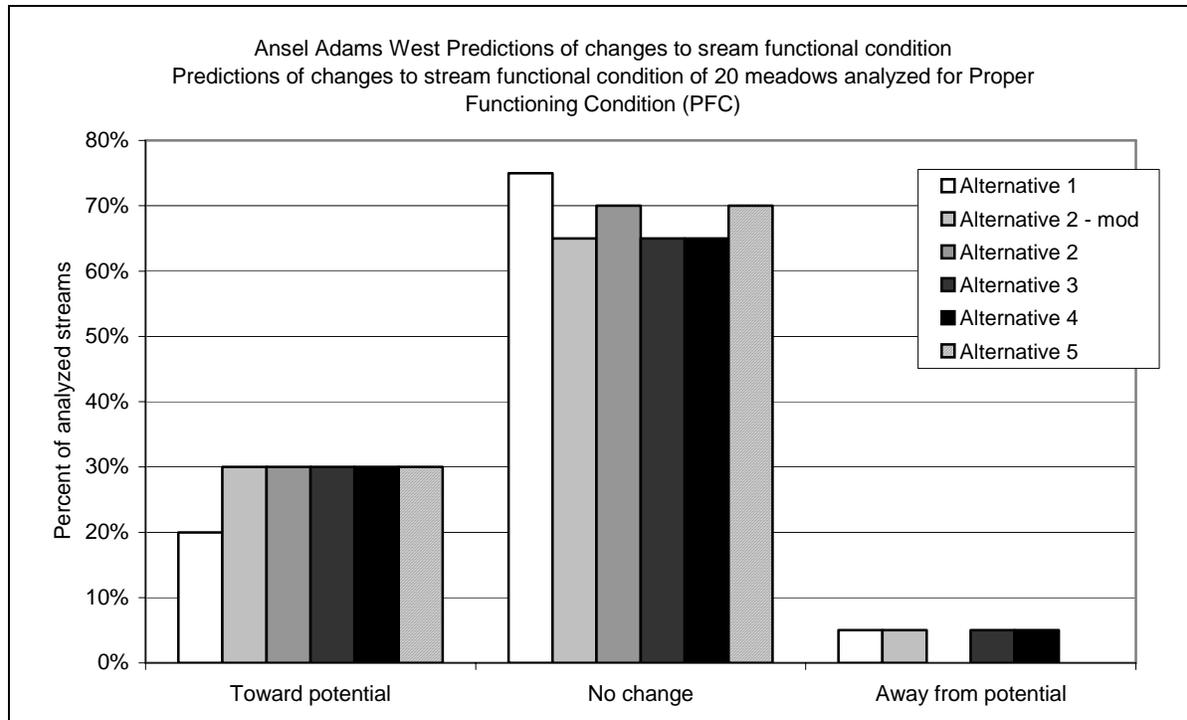
Trends By Number of Meadows						
Current Meadow Hydrologic Function Condition (# of meadows with that condition)	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No change	3	3	2	3	3	2
Away from Potential	0	1	1	1	1	0
Severe hydro alteration (7)						
Toward Potential	0	0	0	0	0	0
No change	6	7	7	7	7	7
Away from Potential	1	0	0	0	0	0
All Meadows Analyzed (29)						
Toward Potential	5	3	4	3	3	6
No change	23	24	24	24	25	23
Away from Potential	1	2	1	2	1	0

It is assumed that only 2 of the 14 meadows with moderate to severe hydrologic function alteration have had enough pack stock use to have contributed to the alteration. The two meadows at Sadler Lake and between Sadler and McClure Lakes, would likely continue to be grazed at their current levels. Both have current hydrologic function alteration likely at least partially associated with recent commercial pack stock grazing. Both meadows have trampled stream banks, excessive bare soil, soil compaction, vegetation composition change and possibly lowered water tables. Continued use could increase the extent and severity of stream bank trampling and bare soil in the meadow between Sadler and McClure Lakes. That meadow has wet areas near springs that are vulnerable to increased trampling and a stream bank with little armoring from rocks or strong rooted vegetation. The meadow has upland vegetation encroachment possibly associated with a lowered water table, and with or without grazing, this would likely continue. However, the remaining wet portions of the meadow could have worse hydrologic function with continued grazing.

Four of the five meadows expected to have improved hydrologic function either have impacts from recent cattle grazing or trails. Because the cattle grazing will likely not occur in the future, these meadows are expected to have a gradual decrease in soil compaction and bare soil could reduce meadow hydrologic function. The other meadow, Stairway to Cargyle Meadow, appears to have compaction and bare soil from some unknown past disturbance. The meadow has moderate productivity and appears to be recovering. Recovery should continue if the meadow continues to receive no grazing use.

Meadow PFC: The changes in meadow stream functional condition are likely to be minor under Alternative 1, although there could be widespread minor improvement in the Ansel Adams West area under all alternatives. This alternative should have slightly fewer streams that show some improvement than the other alternatives (Figure 4.10). About 75 percent of analyzed streams are expected to remain in their current condition, while 20 percent are expected to have at least minor improvement and one is expected to move away from PFC.

Figure 4.10 A comparison of predicted changes to stream functional condition (PFC) among alternatives for the streams where PFC was analyzed in the Ansel Adams West Geographic Unit. A total of 20 streams were analyzed for PFC, all within meadows or other grazed areas. This chart includes all streams analyzed, whether they are at proper functioning condition or whether they are currently functional at-risk.



Most streams that are currently at Proper Functioning Condition should remain at Proper Functioning Condition, and most that are functional at-risk should remain so (Table 4.72). Changes in functional condition should be minor because use should not drastically increase or decrease in any area. Over time, some recovery could occur in streams that are functional at-risk, but the recovery is likely to be gradual.

Table 4.72 Summary of all meadow stream functional condition predictions for Ansel Adams West Geographic Unit under all alternatives. Stream functional condition was determined using the Proper Functioning Condition (PFC) protocol. The streams are separated by those that are currently properly functioning, those that are functional at-risk with an upward trend, those that are functional at-risk with a non apparent trend, and those that are functional at-risk with a downward trend. The predictions are based on assumptions that grazing will continue about as it has in the past in most areas, except in meadows that are closed to grazing and those nearby meadows where grazing might move to.

Current stream functional condition rating (# with each rating)	Number of Meadows expected to have each trend					
	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Proper Functioning Condition (6)						
Toward potential	1	1	1	1	1	1
No change	5	4	5	4	4	5

Current stream functional condition rating (# with each rating)	Number of Meadows expected to have each trend					
	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Away from potential	0	1	0	1	1	0
Functional at-risk upward trend (5)						
Toward potential	1	1	1	1	1	1
No change	4	4	4	4	4	4
Away from potential	0	0	0	0	0	0
Functional at-risk non apparent trend (8)						
Toward potential	2	4	4	4	4	4
No change	5	4	4	4	4	4
Away from potential	1	0	0	0	0	0
Functional at-risk downward (1)						
Toward potential	0	0	0	0	0	0
No change	1	1	1	1	1	1
Away from potential	0	0	0	0	0	0
Total Ansel Adams West (20)						
Toward potential	4	6	6	6	6	6
No change	15	13	14	13	13	14
Away from potential	1	1	0	1	1	0

The one stream that may have a trend away from PFC is in Sadler to McClure meadow, for the same reasons as discussed under the previous meadow hydrologic function section. The four streams expected to have improved functional condition are all streams that appear to have stream alteration due to past uses, and not recent pack stock grazing. They appear to be slowly growing vegetation on raw stream banks and are likely to continue this slow recovery.

Trails: The effect of trails on soil and hydrologic resources is not substantial in the Ansel Adams West Geographic Unit. The trails that do have moderate to severe water and soil effects are likely to remain in their current condition under Alternative 1. The major differences between Alternative 1 and the other alternatives is that commercial pack stock would be allowed to use almost all system trails in Alternative 1. Therefore, some trails that currently have few impacts could have increased impacts with increased commercial pack stock use. However, it is unlikely that use would change, and therefore it is assumed that the effects on soil and hydrology would be the same as currently. It is a foreseeable future action that trails with moderate to severe resource impacts would be repaired over time under all alternatives. In this Geographic Unit, only the Anne Lake, McClure Lake and Timber Creek Trails have moderate or severe resource impacts, and therefore are the trails mostly likely to receive repair. Even if these trails are repaired within 20 years, it is unlikely to make a difference to soil and water resources on a Geographic Unit scale.

The user trail into Staniford Lake from the Lillian Lakes trail is on a steep slope and is poorly defined. Therefore, multiple trails are eroding due partially to pack stock use. A campsite accessed by commercial pack stock from this trail is within 100 feet of water and is contributing slight amounts of sediment to the lake. Use of the trail and campsite would likely continue. The trail is likely to become wider and possibly more incised with continued use, although the hillside is rocky and the rocks should prevent deep incision. Over time, the erosion from the trail may enter the lake and slightly increase fine sedimentation into the lake.

Campsites: Campsites generally do not cause unacceptable impacts to soil and water resources currently in this geographic unit. They are not expected to do so under Alternative 1 because management should not change from currently management. The only areas with more than occasional commercial pack stock use are Sadler Lake and Joe Crane Lake. One major stock holding campsite at Sadler Lake is within 10 feet of an intermittent stream, and is allowing increased sedimentation into that stream. It is a foreseeable future action that the campsite would be closed, because the Wilderness Plan requires that there should be no campsites within 50 feet of water. However, until the site is obliterated, it will continue to prevent infiltration due to compacted soil and therefore allow increased runoff to carry sediment into water. Other than at Sadler Lake, few campsites would have an effect to soil or water resources beyond their immediate footprint.

A spot/dunnage campsite on the west side at Staniford Lake might be obliterated over time because it does not meet Best Management Practices (BMPs). Until obliteration, it will continue to have bare compacted soil that facilitates erosion and small amounts of sediment entering the Lake. There does not appear to be increased sediment in this lake, and do not appear to be affecting beneficial uses, nor should they under Alternative 1.

Cumulative Impacts

This alternative has been analyzed in terms of the effects of past, present and reasonably foreseeable future actions to soil and hydrologic processes in the Ansel Adams West Geographic Unit. Past actions in this geographic unit are slightly different than other Geographic Units. It is one of the few areas where widespread cattle grazing continued in the area until the mid 1990s, causing soil compaction, stream incision, stream bank trampling, vegetation composition change, and lowering of water tables in some meadows. Dams were also built in the 1930s to extend the season of fishing downstream at Lillian, Rutherford and McClure Lakes. The dams may be slightly altering stream flow downstream, but there is little evidence of impacts to stream morphology or riparian vegetation.

This Geographic Unit has some of the most widespread soil compaction, stream function condition alteration, meadow hydrologic function alteration, and general alteration of hydrologic function. This is likely mainly due to cattle grazing that continued in the area until the 1990s. There are few impacts from commercial pack stock, focused near Sadler and Joe Crane Lakes. Alternative 1 would not add to cumulative impacts, and cumulative impacts in this area would likely be the same under all alternatives. Therefore, soil and water resource impacts would continue their slow recovery from past cattle grazing, and the effects would likely continue for the next few decades or centuries in meadows with gully erosion and stream incision.

Because there is little commercial pack stock use in the area currently, outside of the Sadler and Joe Crane Lake areas, actions related to pack stock management should not affect cumulative

impacts. In those areas, recent stock grazing and trailing appears to have contributed to soil compaction, soil erosion, and alteration of meadow and stream hydrologic function. There was likely cattle grazing here within the past 15 years, and the combination of past cattle grazing combined with recent pack stock grazing and trailing has led to these impacts.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis*, in the project record.

One of the three watersheds in the Ansel Adams and John Muir Wildernesses that is known to have potential Cumulative Watershed Effects (CWEs), Granite Creek, is in the Ansel Adams West Geographic Unit.

In the Granite Creek Watershed, there would likely be no difference in CWE potential under this alternative from the current condition because commercial pack stock use is currently not widespread. Meadows that were grazed by cattle in the past and suffered soil compaction, stream bank collapse and stream incision will likely continue their slow recovery of hydrologic function and stream functional condition, and soil compaction and bare soil will begin to recover. The area has not been grazed by cattle in over 10 years, and is not likely to be grazed by cattle in the future. The recovery process will likely take decades or centuries in most of the meadows, and will show only slight improvement in 20 years. It is possible that commercial pack stock use could increase in some areas, but if so, they would likely decrease in other areas within the watershed, because there are no nearby areas with commercial pack stock use that might move to this watershed. Therefore, the effects would likely not be different watershed-wide.

In the other five watersheds (North Fork San Joaquin River, Strawberry Creek, Middle Fork, Hoffman Creek, and Four Forks), there are no known cumulative watershed effects and none are expected under Alternative 1. Commercial pack stock use should not change from its current patterns and therefore should not cause positive or negative cumulative effects to other watersheds.

Ansel Adams West – Alternative 2 – Modified

Analysis

There should be very little change in effects to soil and hydrologic function relative to current conditions. There could, however, be a slow, steady upward trend in soil and hydrologic condition as effects of recent cattle grazing continue recovering. Most of the meadows appear to have had some vegetative vigor and composition improvement, but lack of hydrologic recovery to date. Ansel Adams West would continue to receive little recreational or commercial pack stock use under Alternative 2 – Modified. Therefore, most of the meadows with hydrologic function alteration, stream function alteration, and incised trails would be allowed to continue their slow recovery.

Meadows/Wetlands: Many meadows that were visited in the field in the Ansel Adams West Geographic Unit have hydrologic and soil alteration. Although few are expected to show more than minor recovery within the next 20 years, there are two meadows near Sadler Lake where hydrologic and soils improvements might occur with changes in pack stock management.

Meadow Hydrologic Function: The Ansel Adams West Geographic Unit has the highest percentage of visited meadows with hydrologic function alteration, and few of those meadows should have more than gradual, minor improvements in hydrologic function. Over 65 percent showed moderate to severe hydrologic function alteration. Because most of the impacts observed appear to be related to recent and historic cattle grazing, there should be little effect from any action regarding commercial pack stock use. Therefore, there should be little difference between the meadow hydrologic function effects of Alternative 2 – Modified and all of the other alternatives (Figure 4.9, Table 4.71).

It is assumed that only 2 of the 12 meadows with moderate to severe hydrologic function alteration have enough pack stock use to have contributed to the alteration. One of these meadows, the meadow between Sadler and McClure Lakes (sad13), will have grazing for one trip, estimated to be 12 stock for 3 nights, or 36 stock nights. Even with this grazing reduced from a high of 127 stock nights, the hydrologic function alteration is not likely to recover fully throughout the meadow because the water table appears to have dropped and non-meadow vegetation is encroaching. These processes may not be recoverable. However, meadow compaction, stream bank trampling, sod fragmentation, and spring head trampling should decrease over time, slightly improving meadow hydrologic function.

Sadler Lake Meadows (sad12) should show improvement in meadow hydrologic function with a gradual reduction in compaction and bare soil. Grazing will still be allowed near the current levels, but will be moved to the opposite side of the lake from current grazing, and access to campsites will be designated to allow some recovery of meadow and stream hydrologic function. Moving grazing to the north side of the lake may increase local trampling, hoof punching and loss of vegetative vigor, but 53 stock nights should not be enough to cause more than slight, local impacts in this good condition meadow which should not affect meadow hydrologic function.

The meadows that appear to have hydrologic function alteration due to past cattle grazing might slowly recover their hydrologic function, but will likely show only minor trends toward potential within 20 years. Many of the meadows have lowered water tables, compacted soil, and stream bank collapse; conditions which may take decades or centuries to recover. However, up to six of these meadows appear to have hydrologic function alteration that is beginning to recover and should continue to recover in the future.

In the Cora Analysis Unit, many of the most impacted meadows may have low levels of grazing under Alternative 2 – Modified. However, the levels are low enough that they are not likely to greatly affect meadow recovery. The incision and water table lowering is so widespread in Detachment, Knoblock and Chetwood Cabin Meadows that it is unlikely they will recovery their hydrologic function within many decades. While continuation of grazing may remove stream channel stabilizing vegetation and remove some vegetation, the proposed grazing was allocated at low enough levels to allow some vegetation to slowly grow on stream banks at a similar slow speed that it occurs today.

Meadow PFC: Under Alternative 2 – Modified, most meadow streams should remain in their current condition. The difference from all other alternatives should be minimal, although there could be slightly more streams with improved functional condition under Alternative 2 – Modified than under Alternative 1 (Figure 4.10, Table 4.72). About 1/3 of the meadows could show a slight, slow improvement in stream functional condition.

Of the 20 meadow streams analyzed for stream functional condition, six are expected to show some improvement. This prediction assumes that grazing would not be as high as allowed because the area is not heavily used by commercial pack stock anywhere except near Sadler Lake. If all of the proposed grazing is used, up to four fewer meadows would likely have improved stream functional condition. Two of the six streams that could have improved condition are in Sadler to McClure Meadow and Sadler Lake Meadow. Both of the areas are currently grazed, but under Alternative 2 – Modified, grazing would be prohibited or moved to another portion of the meadow. In Sadler to McClure Meadow, areas of the meadow have high enough productivity to allow vegetation to grow on stream banks and improve stream functional condition. At Sadler Lake, grazing would be moved to the opposite side of the lake from the current grazing, and over time, there could be slight reduction in bare stream banks as vegetation grows along denuded banks.

One meadow, Stevenson Meadow (Iac1), could have a minor trend away from potential stream functional condition (PFC). The meadow had no grazing reported in the past, but could have up to 175 stock nights under Alternative 2 – Modified. While the meadow is large and was found to be able to support 175 nights of grazing within the suitable portions of the meadow, it is possible that stock would congregate in some areas along streams. If so, they could increase stream bank trampling, reduce vegetative cover on the stream bank, and cause some increased stream erosion. However, because the stock nights were calculated so that utilization would not exceed standards, and because wet areas are considered unsuitable, it is likely that the increased impacts would be minor and only local, not leading to a functional at-risk stream rating.

Many meadows in this Geographic Area have functional at-risk streams associated with recent cattle grazing. Although many of these meadows would be open to a low level of commercial pack stock grazing under Alternative 2 – Modified, it is unlikely to substantially affect their stream functional condition in most meadows. The levels of grazing proposed are low, and streams in these large meadows are expected to have vegetative growth even with light pack stock grazing.

Meadow Soil Compaction: Many meadows in this area are currently compacted, with about half of the 28 analyzed showing moderate to severe compaction. There should be a slow reduction in compaction in most of these meadows, because it is mostly related to recent cattle grazing that will not occur in the future. Of the 13 meadows known to have moderate to severe compaction, 11 could be grazed under Alternative 2. However, only five of those are likely to have substantial grazing. These five could remain compacted, but are not likely to have increased compaction because the grazing allocations are very low relative to the recent cattle grazing that caused the compaction.

In meadows that currently have little to no compaction, there could be increased grazing in a few meadows, including the Sadler Pond Meadow and Stairway Meadow. There could be slight compaction in these meadows, especially in areas where pack stock might concentrate, such as dusting areas or near stream banks. The compaction should not exceed soil quality standards overall, because grazing will be limited to the number though to retain or improve meadow condition.

Trails: There should be few changes in trail effects to soil and water under this alternative because trails are not a large portion of the effects in this Geographic Unit. Only three trails, McClure Lake, Timber Creek, and Anne Lake trails, are known to have soil and hydrologic

resource effects currently. The effects on all three trails are no greater than moderate overall with few severe areas of erosion. The trail to McClure Lake has the most severe observed effects to soil productivity because it is eroded deeply in a few steep sections, and at one spot, the sediment from the trail has covered a small portion of a meadow. This trail could continue to be used by commercial pack stock under this alternative, and the steep, eroded trail segments would be a priority for stabilization. Until the stabilization occurred, the trail would likely continue to deepen, widen, and deposit sediment on the meadow, regardless of pack stock use levels, resulting in a loss of soil on the trail itself and a loss of soil productivity on the portion of the meadow buried by the sediment. On a watershed scale, trails are cumulatively a very small portion of the watershed effects, which are overwhelmingly meadow loss of hydrologic function attributable to past cattle grazing. However, where trails encounter sensitive areas such as streams and meadow, there is often impacts to soil and water primarily due to lack of long term maintenance and in some cases poor location.

Many of the trails in this geographic unit were not visited in the field due to the lack of commercial pack stock use throughout much of the unit. The effects of the non-visited trails on hydrologic and soil resources should not change under this alternative because they will continue to receive little or no commercial pack stock use with destination quotas in place.

Campsites: Campsite effects to soil and hydrologic processes should be the same as in the wilderness scale. As in the rest of the wilderness, the largest campsites, stock holding sites, would be designated at existing sites, and contained so they would likely not grow much larger. There would be no new stock holding sites, and therefore the area of bare soil from stock holding sites would either remain static or decrease. As in all alternatives, all campsites, whether used by stock or not, would be obliterated if they are within 50 feet of water, and in some cases those within 100 feet of water would be obliterated. This would have the effect of reducing campsite area near water where the bare, compacted soil can more easily erode into surface water and locally reduce water quality. This is expected to result in slightly, possibly immeasurably small improved water quality as the number of sites near water is reduced.

Cumulative Impacts

The cumulative impacts in the Ansel Adams West Geographic Unit should be the same under Alternative 2 as under Alternative 1. Although there would be more commercial pack stock grazing restrictions and controls on the number of destinations used, most of the current cumulative soil and water resource impacts are due to recent cattle grazing, and cannot be affected by controlling commercial pack stock use.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis*, in the project record.

The Ansel Adams West Geographic Unit contains two of the three watersheds that have over 1 percent ground disturbance currently, and therefore have a potential for CWEs (Edison Reservoir and Granite Creek watersheds). These watersheds were visited in the field, and the lack of evidence of downstream effects suggests that the watersheds have not experienced CWEs. However, the relatively high percentage of meadows with moderate-to-severe hydrologic function alteration contribute to CWE potential. Alternative 2, which pertains only to

commercial pack stock use, would likely have little to no effect on CWE potential, because most of the meadow hydrologic function alteration can be attributed to recent cattle grazing. Management under Alternative 2 – Modified could allow for increased commercial pack stock grazing in meadows where grazing is suitable, but grazing levels would be controlled and would be far less than past cattle grazing. Therefore, the potential for CWEs should gradually be reduced over time as meadows recover their hydrologic function, but the differences between Alternatives 1 through 4 should be negligible.

Ansel Adams West – Alternative 2

Analysis

There should be very little change in effects to soil and hydrologic function relative to current conditions. In the Ansel Adams West Geographic Unit, there should be very little, if any difference between the effects of Alternative 2 and Alternative 2 – Modified. There could be a slow, steady upward trend in soil and hydrologic condition as effects of recent cattle grazing continue recovery. Most of the meadows appear to have had some vegetative vigor and composition improvement, but lack of hydrologic recovery to date. Ansel Adams West would continue to receive little recreational or commercial pack stock use under Alternative 2 – Modified, about the same as under Alternative 2. Therefore, most of the meadows with hydrologic function alteration, stream function alteration, and incised trails would be allowed to continue their slow recovery.

Meadows/Wetlands: Many meadows that were visited in the field in the Ansel Adams West Geographic Unit have hydrologic and soil alteration. Although few are expected to show more than minor recovery within the next 20 years, there are two meadows near Sadler Lake where hydrologic and soils improvements might occur with changes in pack stock management.

Meadow Hydrologic Function: Because most of the impacts observed appear to be related to recent and historic cattle grazing, there should be little effect from any action regarding commercial pack stock use. Therefore, there should be little difference between the meadow hydrologic function effects of Alternative 2 – Modified and all of the other alternatives (Figure 4.9, Table 4.71).

The only difference in meadow management under Alternative 2 relative to Alternative 2 – Modified is that the meadow between Sadler and McClure Lakes (sad13) would be open to one trip a year for grazing. This should be between 30 and 40 stock nights. This level of grazing should be low enough that the current severe hydrologic function alteration in the meadow should remain about the same, with a possible very slight upward trend in the wet areas. The wet areas and stream banks would have less hoof punching and less compaction, and therefore could have a negligible improvement in hydrologic function. However, much of the meadow area where lupine and lodgepole are invading into the meadow would likely stay in the same condition, with what appears to be altered hydrologic function from unknown past uses possibly combined with current grazing.

Meadows in the rest of the geographic unit should have the same effects as under Alternative 2 – Modified, because stock camp management, destination quotas, grazing management, and number of stock using the area annually should be almost the same.

Meadow Stream PFC: Under Alternative 2, most meadow streams should remain in their current condition. The difference from all other alternatives should be minimal, although there could be slightly more streams with improved functional condition under Alternative 2 than under Alternative 1 (Figure 4.10, Table 4.72). The effects should be the same as under Alternative 2 – Modified because there is only different management in one meadow, where the increase in stock nights should be small enough to make no difference in stream functional condition.

Meadow Soil Compaction: The effects would be the same as under Alternative 2 – Modified, because meadow management in the same in all but one meadow, where there could be up to 40 more stock nights of grazing, and only once per year. This grazing should occur seldom enough and be at low enough levels that compaction should not be affected.

There should be a slow reduction in compaction in most currently compacted meadows, because it is mostly related to recent cattle grazing that will not occur in the future. Of the 13 meadows known to have moderate to severe compaction, 12 could be grazed under Alternative 2. However, only five of those are likely to have substantial grazing. These five could remain compacted, but are not likely to have increased compaction because the grazing allocations are very low relative to the recent cattle grazing that caused the compaction.

Trails: There should be few changes in trail effects to soil and water under this alternative because trails are not a large portion of the effects in this Geographic Unit. The effects should be the same as under Alternative 2 – Modified because trail management and overall levels of commercial pack stock use would be almost the same. The only difference in trail management is that the Chittendon Lake Trail could not be used by commercial pack stock under Alternative 2, and it could under Alternative 2 – Modified. The trail currently does not cause soil or water resource degradation, and continuing the current use should therefore not increase soil or water resource degradation. Therefore, the effects should be the same as under Alternative 2 – Modified.

Campsites: Campsite effects to soil and hydrologic processes should be the same as in the Wilderness scale. As in the rest of the wilderness, the largest campsites, stock holding sites, would be designated at existing sites, and contained so they would likely not grow much larger. There would be no new stock holding sites, and therefore the area of bare soil from stock holding sites would either remain static or decrease. As in all alternatives, all campsites, whether used by stock or not, would be obliterated if they are within 50 feet of water, and in some cases those within 100 feet of water would be obliterated. This would have the effect of reducing campsite area near water where the bare, compacted soil can more easily erode into surface water and locally reduce water quality. This is expected to result in slightly, possibly immeasurably small improved water quality as the number of sites near water is reduced.

Cumulative Impacts

The cumulative impacts in the Ansel Adams West Geographic Unit should be the same under Alternative 2 as under Alternative 2 – Modified and Alternative 1. Although there would be more commercial pack stock grazing restrictions and controls on the number of destinations used, most of the current cumulative soil and water resource impacts are due to recent cattle grazing, and cannot be affected by controlling commercial pack stock use.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis*, in the project record.

The Ansel Adams West Geographic Unit contains two of the three watersheds that have over 1 percent ground disturbance currently, and therefore have a potential for CWEs (Edison Reservoir and Granite Creek watersheds). These watersheds were visited in the field, and the lack of evidence of downstream effects suggests that the watersheds have not experienced CWEs. However, the relatively high percentage of meadows with moderate to severe hydrologic function alteration contribute to CWE potential. Alternative 2, which pertains only to commercial pack stock use, would likely have little to no effect on CWE potential, because most of the meadow hydrologic function alteration can be attributed to recent cattle grazing. Management under Alternative 2 could allow for increased commercial pack stock grazing in meadows where grazing is suitable, but grazing levels would be controlled and would be far less than past cattle grazing. Therefore, the potential for CWEs should gradually be reduced over time as meadows recover their hydrologic function, but the differences between Alternatives 1 through 4 should be negligible.

Ansel Adams West – Alternative 3

Analysis

The effects to soil and hydrologic resources should be almost the same as under Alternative 2 – Modified, except grazing effects could be different at about three meadows due to different grazing management. The Ansel Adams West Geographic Unit only has a few areas of high commercial pack stock use, such as Sadler Lake. There are also no major areas within or near the geographic unit where use is going to be curtailed enough to move use into Ansel Adams West.

Meadows: Of the 38 meadows with proposed grazing actions, only three have different actions proposed under Alternative 3 than Alternative 2. The other meadows will likely have the same soil and hydrologic effects as predicted under Alternative 2.

The main difference between Alternative 2 and 3 is that it is possible that there could be more traveling trips under Alternative 3. Traveling trips would not be specifically restricted to a certain number. Therefore, more meadows would receive their full grazing allocation. The effects would be minimal because many of the meadows within this geographic unit already have hydrologic function alteration or streams that are functional at-risk due to past cattle grazing. While full use of proposed grazing could slow recovery of these meadows, the use is so much less than recent cattle grazing that recovery should continue in most cases.

Meadow Hydrologic Function: Overall, meadow hydrologic function effects are likely to be the same as under Alternative 2 – Modified (Figure 4.9, Table 4.71). Management would be the same in all meadows, and therefore the effects should be the same.

PFC: Stream functional condition is likely to have the same effects under Alternative 3 as it would under Alternative 2 – Modified (Figure 4.10, Table 4.72). Grazing actions are the same in all meadows, and trail use will be managed the same on all but two trails that should not affect stream functional condition.

Cumulative Impacts

The past, present and reasonably foreseeable future actions are slightly different than other Geographic Units because there have been cattle grazing in Ansel Adams West within the past 15 years. These cumulative impacts would be the same as under Alternative 2 – Modified because they are dominated by recent cattle grazing and different pack stock management would have substantial enough to effects to alter cumulative impacts.

Cumulative Watershed Effects

CWE potential would be the same under Alternative 3 as under Alternative 2 – Modified, because management would be similar enough to preclude difference in area of soil disturbance.

Ansel Adams West – Alternative 4

Analysis

Alternative 4 should have very few differences between soil and hydrologic effects than the current condition or Alternatives 1 through 3. Differences could occur with different management of pastures in this unit, but otherwise, commercial pack stock use and effects to soil and hydrologic resources should remain low.

Meadows/Wetlands: Although the meadows would be managed slightly different under Alternatives 4, in fact the use would likely be the same as Alternative 2 – Modified in most portions of this Geographic Unit. The effects to soil and hydrologic conditions should therefore be about the same.

Meadow Hydrologic Function: The effects to meadow hydrologic function under Alternative 4 should be similar to Alternative 2 – Modified and slightly better than Alternative 1 (Figure 4.9, Table 4.71). For individual meadow predictions, see the table *Projected Changes to Meadow Stream Functional Condition and Meadow Hydrologic Function under All Alternatives* in the project record. Of the 24 meadows found to be suitable under Alternative 2 – Modified, five would have stock nights level reduced by 25 percent, and two would be closed to grazing. These management changes should not make a difference to meadow hydrologic function. While a 25 percent reduction in grazing could be enough to slightly reduce vegetation utilization and stream bank trampling, the reduction should not be sufficient to change hydrologic function effects. The two additional meadows that would be closed to grazing currently have severe hydrologic function alteration. Although prohibition of grazing in these meadows could help vegetation regrow on stream banks slightly faster or allow compaction to recover slightly faster, it is assumed that the meadows would not show significant hydrologic function recovery even without grazing.

In summary, of the 29 meadows analyzed for hydrologic function, three are expected to have a trend toward potential, 25 are expected to remain in their current condition, and one could expected to have a minor trend away from its potential. The one meadow expected to have a trend away from potential, the meadow between Stairway and Cargyle Meadow, currently has no hydrologic function alteration, and therefore a slight alteration would not be expected to make the meadow functional at-risk.

Stream Functional Condition (PFC): Stream functional condition is unlikely to be different under Alternative 4 than Alternative 2 – Modified in any meadow. In the two meadows that

would be closed to grazing under Alternative 4 and not under Alternative 2 – Modified, the streams have raw banks and lowered water tables. It does not appear that vegetation has begun to stabilize banks and improve their functional condition within 10 to 15 years without cattle grazing, and it appears unlikely that vegetation will begin to grow within decades. There could be some vegetative growth on point bars if it can get established between high flows, but it appears that the process of revegetation will take a long time.

Of the 20 meadows analyzed for stream functional condition (PFC), six are expected to have a trend toward potential, thirteen are expected to remain in their current condition, and one is expected to have a minor trend away from potential. The one stream expected to have a trend away from potential (in the meadow between Stairway and Cargyle) would likely only have minor negative effects. The grazing allocated was developed to prevent impacts to vegetation, soils, and hydrologic function, and is expected to do so.

Trails: The effects of trails to soil and water resources under Alternative 4 should be about the same as under Alternative 2. Effects from trails are not a large portion of watershed effects in this GU geographic unit, and trail management would not be substantially different under Alternative 4. Only two user trails would be closed to commercial pack stock under Alternative 4 that would not be closed under Alternative 1 through 3. The trails are currently not contributing to negative soil or water resource impacts, and therefore their closure should not affect soil or water resources.

Campsites: Campsites should have a slightly reduced negative effect on soil and water quality than under Alternative 2 – Modified. All campsites would be designated within two years under Alternative 4, including spot and dunnage sites as well as stock holding sites. All sites used by commercial pack stock would therefore meet BMPs within two years. There would be reduced compacted, bare area, especially near water. The difference would be negligible on a Geographic Unit scale because only four sites were found to be allowing substances to enter water.

Cumulative Impacts

The effect of Alternative 4 on cumulative impacts should be the same as under Alternatives 1 through 3. Commercial pack stock use patterns in the Ansel Adams West are that could affect soil and water resources would likely not change under Alternative 4. Most cumulative effects appear to have a much larger contribution from recent cattle grazing than commercial pack stock use, and therefore the changes to commercial pack stock use proposed in Alternative 4 would not likely affect cumulative impacts.

Cumulative Watershed Effects (CWE)

The potential for CWEs would be the same as under Alternative 1. This is because the main contribution to CWE potential in this watershed is cattle grazed meadows, and no Alternative would affect that impact. Although only suitable meadows would be grazed under this alternative, and a few trails would be closed to commercial pack stock use, the difference in disturbed ground would be negligible in the Ansel Adams West Geographic Unit.

Ansel Adams West – Alternative 5

Analysis

The Ansel Adams West Geographic Unit is one of the GUs least likely to show a change in current condition under Alternative 5. There are low levels of commercial pack stock use in most of the analysis unit, and therefore their exclusion should not have a large effect except in the few higher use areas such as Sadler Lake. This area has the highest percentage of analyzed meadows with hydrologic function alteration, attributable mainly to recent cattle grazing. Removal of pack stock would likely not have much positive impact on those meadows.

Meadows: The effects to meadow hydrologic function and stream functional condition should be almost the same as under Alternative 4 (Figure 4.9 and Figure 4.10, Table 4.71 and Table 4.72). That is because the only two meadows with impacts attributable to commercial pack stock grazing would be closed to grazing under Alternative 4. The other meadows appear to have hydrologic function alteration and stream function alteration due to recent cattle grazing. Therefore, removal of pack stock should not have a major effect on the meadows' condition. It is likely that removal of all commercial pack stock use could allow faster recovery than if there was even low levels of pack stock grazing because stream bank vegetation would not be eaten and stream banks would not be trampled at all. This would allow maximum potential for vegetation to stabilize stream banks and the meadow surface.

Trails: The effect to trails should be the same as at the wilderness-wide scale. There are few trail impacts in this geographic unit currently, and the removal of all pack stock would reduce the potential for future impacts to soil and water resources.

Campsites: While the effect of campsites on soil productivity and water quality is slight in the Ansel Adams West Geographic Unit, Alternative 5 could allow a greater reduction in those effects over time than any other alternative. The greatest difference would likely occur at Sadler Lake, where there are currently two major and numerous minor stock holding campsites. Under the other alternatives, the existing stock sites would not be used any more, but new sites might have to be created to allow stock holding at the lake. Under Alternative 5, the sites would no longer be used and no new sites would need to be created. If left alone, the sites would likely slowly decompact and revegetate, but would likely not be covered with duff because there are few trees at Sadler Lake. It might take decades, but the sites would eventually decompact and cease erosion.

Cumulative Impacts

Cumulative impacts to soil and water resources are expected to be slightly reduced under Alternative 5 in the Ansel Adams West Geographic Unit. There are only a few meadows that are currently grazed where removal of commercial pack stock could allow some recovery of hydrologic function. Because only a few trails are used by commercial pack stock, removal of commercial pack stock from those trails should only slightly reduce erosion levels or prevent future erosion. However, the slight reduction in campsites size and trail tread width and depth could cause local reduction in negative cumulative impacts. The greater beneficial effect would be from the continued rest from cattle grazing.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis*, in the project record.

There could be a slightly reduced risk for CWE potential under Alternative 5, because the area of disturbed ground from campsites and meadows would be slightly less than under the other alternatives with removal of all commercial pack stock use. However, only two meadows; Sadler Lake Meadow and Sadler to McClure Meadow, have hydrologic function alteration attributable to recent commercial pack stock grazing. These two meadows, along with the others with cattle grazing effects, would likely take decades to recover hydrologic function. While removal of commercial pack stock grazing might hasten recovery, the differences in time of recovery would likely be slight everywhere except near Sadler Lake. The reduction in campsite area disturbed would likely be too small to affect CWEs because most campsites would continue to be used by hikers or private pack stock parties.

Fish Creek/Convict/McGee – Alternative 1

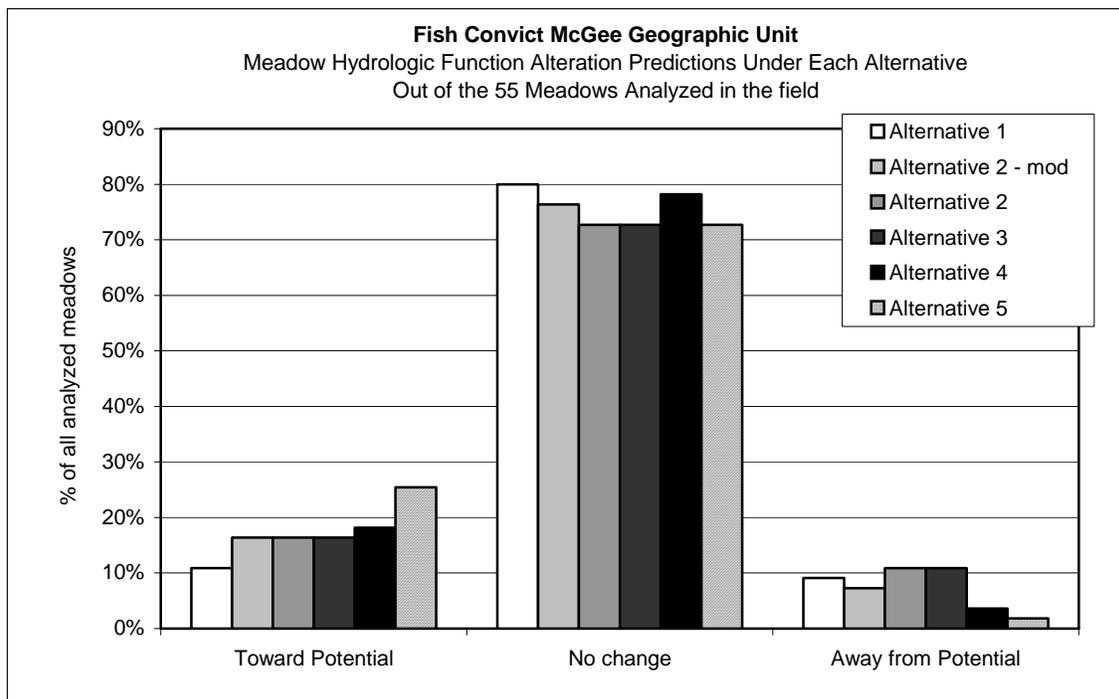
Analysis

The Fish Creek/Convict/McGee is the Geographic Unit is the area that shows the most widespread soil and hydrologic impacts at least partially attributable to recent commercial pack stock use. It contains one of the few watersheds, East Fish Creek, suspected of having cumulative watershed effects due at least partially to recent commercial pack stock use. This geographic unit is the most likely to continue to have continued widespread impacts from commercial pack stock use. It is also the most likely to show local changes in hydrologic and soil resources under all other alternatives. However, there are few existing impacts in the Convict, McGee and Margaret Lakes portions of the Geographic Unit, and they are expected to remain with little alteration of soil and water resources.

Meadows: Meadow condition is not likely to change from current condition in many locations under Alternative 1. The meadows in the Fish Creek portion of the Fish Creek/Convict/McGee Geographic Unit are the areas most likely to have differences between effects of Alternative 1 and the other alternatives because they currently has the greatest extent of negative effects due at least partially to commercial pack stock use. The action alternatives address only commercial pack stock use, and therefore are most likely to change soil and water resource conditions in the Fish Creek area. Alternative 1 is likely to have noticeably fewer meadows with improved hydrologic function.

Meadow Hydrologic Function: The Fish Creek/Convict/McGee Geographic Unit has the highest percentage of meadows found to have hydrologic function alteration of any geographic unit. That is expected to continue under Alternative 1. In all other alternatives, there is expected to be more recovery and fewer meadows trending away from potential hydrologic function condition (Figure 4.11).

Figure 4.11 A comparison of the effects of alternatives on meadow hydrologic function condition. The percent refers to the percent of all meadows that are expected to have a trend toward potential, away from potential, or remain in their existing condition.



Of the 55 meadows analyzed for hydrologic function, most are expected to remain in their current condition. About 10 percent are expected to have improved condition while 10 percent are expected to trend away from their potential hydrologic function (Table 4.73).

Table 4.73 Hydrologic Function Alteration Predictions for all meadows visited in the Fish/ Convict/McGee Analysis Unit, under all alternatives. The number of meadows predicted to have each trend was estimated by the IDT, using the meadow’s characteristics such as soil moisture, stream bank stability, and meadow productivity.

Trends By Number of Meadows						
Current Meadow Hydrologic Function Condition (# of meadows with that condition)	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No hydro alteration (23)						
Toward Potential	0	0	0	0	0	0
No change	23	22	21	21	23	23
Away from Potential	0	1	2	2	0	0
Slight hydro alteration (23)						
Toward Potential	5	6	6	6	6	10
No change	16	15	14	14	16	13
Away from Potential	2	2	3	3	1	0
Mod hydro alteration (4)						

Trends By Number of Meadows						
Current Meadow Hydrologic Function Condition (# of meadows with that condition)	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Toward Potential	0	1	1	1	1	1
No change	2	2	2	2	2	2
Away from Potential	2	1	1	1	1	1
Severe hydro alteration (5)						
Toward Potential	1	2	2	2	3	3
No change	3	3	3	3	2	2
Away from Potential	1	0	0	0	0	0
All Meadows Analyzed (55)						
Toward Potential	6	9	9	9	10	14
No change	44	42	40	40	43	40
Away from Potential	5	4	6	6	2	1

Six meadows are predicted to have improved hydrologic function condition under Alternative 1 (see *Projected Changes to Meadow Stream Functional Condition and Meadow Hydrologic Function under All Alternatives* table in project record). These are all meadows where trails are incised and diverting water out of the adjacent meadow, or historical trailing has caused headcuts to propagate into the meadow. Without trail repair, the improvement in hydrologic function would probably not occur because the incised trails will continue to capture water, and flowing water causes further incision. It is a reasonably foreseeable future action that some of these six trails, if not all, would be repaired within 20 years. If the trails are repaired, they could aggrade to a shallower trail, allowing the adjacent water table to rise up to the level of the trail. Further, trail repair would also likely include repair of headcuts propagating from the trail. With these repairs, meadow hydrologic function could improve in these meadows.

The five meadows where hydrologic function condition is expected to move away from potential all have at least slight hydrologic function alteration. They also have areas of saturated soils, stream banks with little armoring, or other areas vulnerable to hoof punching, chiseling, and compaction. All are currently grazed by commercial pack stock and are expected to be grazed in the future.

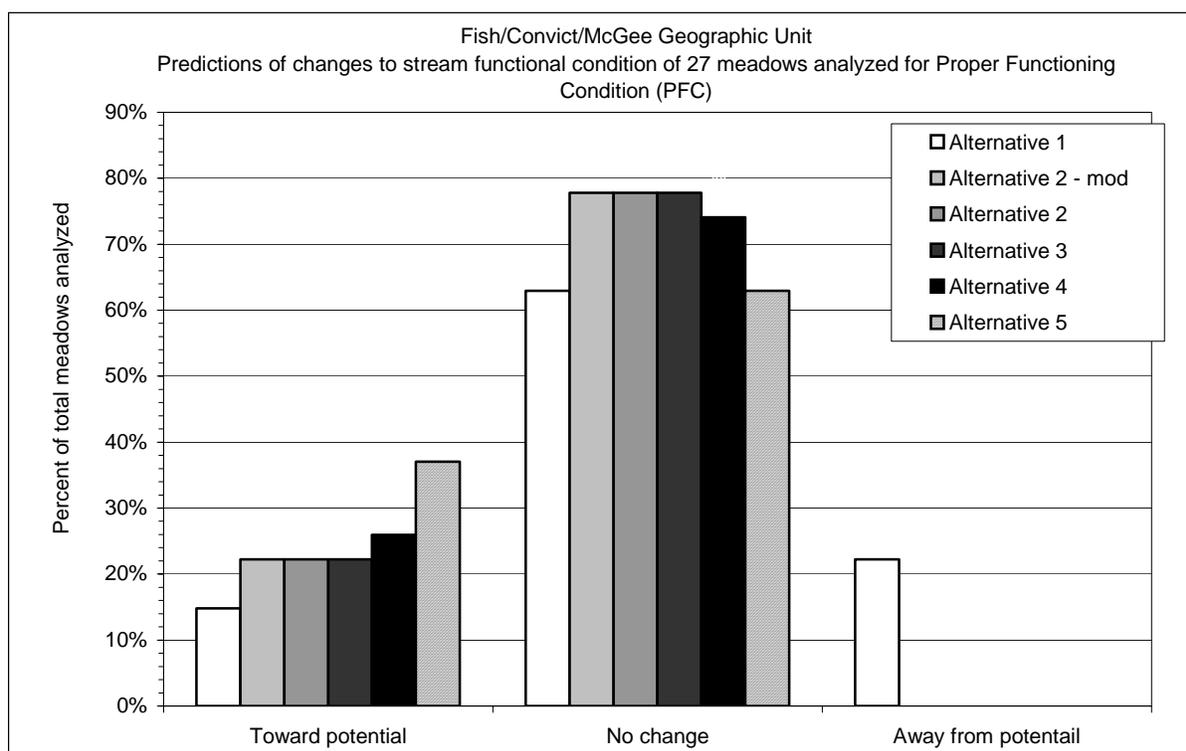
Two of these meadows, Jackson Meadow and Grassy Meadow, have the potential to have areas of permanent meadow loss if they continue to be used at the same levels as today. The upper portion of Jackson Meadow has reaches of deeply incised channels with active headcuts propagating laterally from those channels into the meadow. As the headcuts grow, the gullies below them capture water from the adjacent meadow and groundwater, and lower the water table. This process is currently occurring in Jackson Meadow, and continued grazing in the current location at recent levels would not allow vegetation to grow on the headcuts or stream banks to begin stabilizing them. Even without grazing, however, it is uncertain whether the headcuts would be stabilized by vegetation in the short-term. Active restoration of the headcuts could help prevent further propagation, but with continued grazing near the restored areas, they would be more likely to fail due to trampling and vegetation removal at the restoration sites.

Portions of Jackson Meadow are in good condition with high productivity, and continued grazing should only cause minor increases in sod fragmentation and stream bank trampling.

Grassy Meadow has incised and widened channels, and appears to have an increased sediment load in the streams above and below Grassy Lake. The meadow also has compacted soils and excessive bare soil. These effects are likely to continue and possibly worsen with continued grazing at current levels, because the streams cannot grow vegetation on their banks and begin to narrow and aggrade.

Meadow Stream Functional Condition (PFC): Stream functional condition is likely to move farther from potential in some meadows. Like meadow hydrologic function, Alternative 1 would be likely to have the most streams in poorer functional condition than any other alternative (Figure 4.12).

Figure 4.12. A comparison of predicted changes to stream functional condition (PFC) among alternatives for the streams where PFC was analyzed in the Fish Creek/Convict/McGee Geographic Unit. A total of 28 streams were analyzed for PFC, all within meadows or other grazed areas. This chart includes all streams analyzed, whether they are currently at proper functioning condition or functional at-risk.



Out of the 27 meadow streams analyzed for stream functional condition (PFC), about 60 percent of are projected to remain in their current condition. About 15 percent are expected to have improved condition and about 25 percent could move away from their potential stream condition.

The McGee Creek drainage was closed to commercial pack stock grazing from 2001 to 2003, and re-opening meadows could lead to some increased use. The one meadow expected to receive moderate levels of use is Martin's Meadow, which was grazed heavily until the mid 1990s. The meadow has streams that were functional at-risk with an upward trend in 2001, but non-functional in 2005, after a large storm in summer 2003. The stream has headcuts over four feet

tall advancing up the stream and laterally into the meadow, along trails and natural swales. Grazing could slightly increase the rate of advance of the headcuts, because streams could not grow vegetation on their banks. Due to the erosive nature of the meadow and size of the headcuts, they will likely continue to advance, increasing the length of stream with a non-functional rating, whether the meadow is grazed or not.

Four meadow streams are expected to have improved functional condition (Table 4.74). Three of those meadows are not expected to be grazed substantially by commercial pack stock under Alternative 1, because three have had little or no reported recent grazing, and the other, Second Crossing, would continue to be closed to grazing.

Table 4.74 Summary of all meadow stream functional condition predictions for the Fish/Convict/ McGee Geographic Unit under all alternatives. Stream functional condition was determined using the Proper Functioning Condition (PFC) protocol. The streams are separated by those that are currently properly functioning, those that are functional at-risk with an upward trend, those that are functional at-risk with a non-apparent trend, and those that are functional at-risk with a downward trend. The predictions are based on assumptions that grazing will continue about as it has in the past in most areas, except in meadows that are closed to grazing and those nearby meadows where grazing might move to.

Current stream functional condition rating (# with each rating)	Number of Meadows expected to have each trend					
	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Proper Functioning Condition (15)						
Toward potential	0	0	0	0	0	3
No change	12	15	15	15	15	12
Away from potential	3	0	0	0	0	0
Functional at-risk upward trend (3)						
Toward potential	1	1	1	1	1	1
No change	2	2	2	2	2	2
Away from potential	0	0	0	0	0	0
Functional at-risk non apparent trend (4)						
Toward potential	2	2	2	2	2	2
No change	2	2	2	2	2	2
Away from potential	0	0	0	0	0	0
Functional at-risk downward (5)						
Toward potential	1	3	3	3	4	4
No change	1	2	2	2	1	1
Away from potential	3	0	0	0	0	0
Total Fish Creek/Convict/McGee (27)						
Toward potential	4	6	6	6	7	10
No change	17	21	21	21	20	17
Away from potential	6	0	0	0	0	0

Six meadow streams would be expected to trend away from their potential functional condition. All but one (Martin's Meadow) are in the Fish Creek watershed, and about half are currently functional at-risk with a downward trend. These meadows would be expected to have continued moderate to heavy levels of commercial pack stock grazing. They either have non-armored stream banks or previously disturbed stream banks that are vulnerable to pack stock grazing. Grazing at current or increased levels could prevent the stream banks from recovering, and, over time, become extensive enough to reduce the streams' ability to withstand high flows.

Trails: Trails within the Fish Creek/Convict/McGee Geographic unit are some of the most heavily used by commercial pack stock, and also have some of the most widespread severe impacts to soil and hydrologic resources. These impacts include covering 1/3 of Baldwin/Scheelore Meadow with sediment eroded from a trail, possibly lowering the water table at Peter Pande Meadow, and diversion of spring channels at Duck Lake. These impacts are likely to continue and possibly worsen until the trails are repaired. Many of the trails causing soil and water resource impacts are in meadows where the soil is saturated at least part of the year. The trails are undesirable for pack stock and hikers to walk in, and they often leave the trail and form new trails that are in the drier adjacent meadow. This activity is likely to continue as long as the trails are in the wet meadows, and therefore the loss of soil and water diversion is likely to become worse until trail repair occurs. Continued use by commercial pack stock at levels similar as recently, along with continued hiker and private pack stock use, should slowly further degrade the trails if there is extensive pack stock use, or prevent recovery.

One trail, the Baldwin Canyon Trail above Baldwin/Sheelore meadow in McGee Canyon, is a high priority for repair. It eroded during large rainstorms in 2003, and sediment from the trail covered about 15 percent of the meadow. If the trail is not repaired soon, more sedimentation into the meadow could occur and the meadow could decrease in size, reducing soil productivity and water holding capacity in the area.

Repair of the McGee and Lee/Cecil Trails is a reasonably foreseeable future action, and is proposed for the next five years. All trails within the Tully Hole, Tully Lake, Lee/Cecil Lakes and McGee Canyon would likely have major reductions in their effects to soil and water resources. This would occur under all alternatives, and the effects are only slightly dependent on commercial pack stock use.

Campsites: Campsites would likely continue their current minor impacts to soil compaction and bare soil area and slight increases in sediment into water bodies. At least 13 spot/dunnage and stock holding sites were found to be out of compliance with BMPs. Over time, those sites would be obliterated, slightly reducing substance entry into water, regardless of the levels of commercial pack stock use.

Around Jackson Meadow, the area of bare soil due to campsites has grown in recent years, and it may continue to grow. The packers would be free to hold stock at any campsite, and therefore could increase bare soil area anywhere over 100 feet from surface water.

The Convict Analysis Unit currently receives little overnight commercial stock use, and is unlikely to receive more in the future. Therefore, most commercial pack stock impacts should be to trails and to spot/dunnage campsites. These impacts are not currently major in any location and should not be so in the future.

Cumulative Impacts

This geographic unit has one of the highest levels of commercial pack stock use. It also has the highest percentage of meadows with hydrologic function alteration at least partially attributable to commercial pack stock use. Further, this area, along with most of the AA/JM Wilderness, was grazed by sheep and cattle until the early to mid 1900s. Although the geographic unit remains with less than 1 percent of its land area disturbed and likely overall good water quality, it is one of the wilderness areas most impacted by commercial pack stock use. The only other use in the area is a minor amount of private pack stock use and a high level of backpacker and day hiker use. These uses would all continue, and the commercial pack stock use would likely continue to have disproportionately high impacts for the number of people accessing the wilderness. In this area, meadows grazed by commercial pack stock appear to have the largest impact to soil and water resources, more than campsites or trails. However, trails also contributed to meadow hydrologic function alteration and to local increases in fine sediment in surface water. Trails are used by backpackers and commercial and private pack stock, and it is impossible to determine which has the greater impact. The numbers of hikers are likely far greater than the number of pack stock, but each mule or horse likely has a greater effect on trails, loosening and removing more soil than each hiker.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis, in the project record.

The Fish Creek/Convict/McGee Geographic Unit contains the only watershed that may have Cumulative Watershed Effects due at least partially to commercial pack stock use. Fish Creek is incised and widened through most of its length, the result of a flood in 1982. It is uncertain whether the creek would have incised and widened if the watershed was not heavily used by commercial pack stock. It is possible, although not certain, that long-term meadow grazing impacts (from cattle and sheep as well as commercial pack stock) or general trail degradation from pack stock and hikers exacerbated the storms' effects and allowed the creek to incise and widen.

There is less commercial pack stock use currently in the Upper Fish Creek Watershed than there was in the 1960s and 1970s, and no sheep or cattle grazing, and it is likely that there is reduced potential for cumulative watershed effects from the past. However, continued grazing of meadows allows for continued soil compaction, stream bank trampling, vegetation removal and sod fragmentation that continues stream incision and excessive erosion. These effects may not increase the potential for cumulative watershed effects, but are likely to slow or prevent recovery.

Beyond commercial pack stock use, continued use by hikers and non-commercial pack stock would continue to retain disturbed soil to campsites and trails. This use should be the same under all alternatives.

Fish Creek/Convict/McGee – Alternative 2 – Modified

Analysis

The Fish Creek/Convict/McGee Geographic Unit has the second highest percent of analyzed meadows with hydrologic function alteration, and a high percentage of trails that affect soil and hydrologic function. The greatest impacts are in the upper Fish Creek watershed (Upper Fish Creek, Silver Divide, Cascade Valley and Purple Bench Analysis Units), and therefore the greatest resource improvement due to pack stock management change are likely to occur there under all action alternatives. In fact, out of the entire wilderness area, the Upper Fish Creek watershed is the area likely to see the greatest improvement in soil and hydrologic resource condition under Alternative 2 – Modified.

Meadows: The highest commercial pack stock grazing densities are in this Geographic Unit, and the largest reductions in grazing densities would be here. It is one of the few areas where the total maximum number of grazing nights would be reduced under Alternative 2 – Modified. The area currently has some of the most widespread hydrologic function and stream function alteration of all GUs. This geographic unit does not have as severe or widespread alteration of soil and hydrologic function as those that are grazed by cattle, however. It therefore has a greater chance of improvement under this action which applies only to commercial pack stock use.

Under Alternative 2 – Modified, there would be a one night stay limit for each traveling trip through the Silver Divide Analysis Unit. It is unknown whether this will reduce the demand for grazing enough that grazing allocations would not be fully used in some meadows. If the demand is greater than the available allocation, it will be difficult for the packers to find grazing nearby, and feed may need to be packed in.

Meadow Hydrologic Function: Meadow hydrologic function should improve more than under Alternative 1 overall (Figure 4.11, Table 4.73). Meadows within the Fish Creek/Convict/McGee Geographic Unit have different causes for their hydrologic function alteration, and therefore have different degrees of recovery estimated. For example, Cascade Valley Meadow is unlikely to show hydrologic function improvement even with very little grazing because the alteration is due to Fish Creek being incised throughout the valley. Aggradation of Fish Creek may never occur or may occur over centuries. Fish Creek incised in 1982 during a large flood, and appears to continue to widen. Point bars within the creek have little vegetation growing on them yet, and we assume there will not be much more recovery in the next 20 years. Grassy Meadow, on the other hand, has extensive areas with incised channels, but the water source for the meadow appears to largely be springs, and therefore even with an incised channel, the meadow should get enough water to quickly grow vegetation on stream banks and in the meadow with removal of grazing.

Of the 23 meadows found to have no hydrologic function alteration, all but one is expected to remain in their current condition. The Canyon West of Olive Lake (sil15) could have increases in grazing from none to 114 stock nights if the packers choose to graze their stock there. The meadow is suitable for grazing, but due to low productivity, any hoof punching, stream bank trampling, or vegetation removal may persist from year to year and eventually lead to slight alteration of meadow hydrologic function. If this begins to occur, the meadows will likely have grazing reduced or prohibited. In the long term, the meadow should only have very slight or no hydrologic function alteration.

Of the 23 meadows with slight hydrologic function alteration, 15 are expected to remain in their current condition, six are expected to have some trend toward potential, and two could have a trend away from potential.

Of the four meadows with moderate hydrologic function alteration, two are expected to have no change, while one each is expected to move toward and away from potential.

Of the five meadows found to have severe hydrologic function alteration, three are expected to remain in their current condition, and two may have a trend toward potential hydrologic function.

The six meadows that are expected to have a trend away from their potential could all receive more or the same levels of commercial pack stock grazing as they have recently. They also all have low to moderate productivity or some saturated soil areas that make the meadow vulnerable to sod fragmentation, stream bank trampling, and bare soil creation. Because grazing stock nights were developed considering meadow capacity, these effects should be minor and within standards.

No grazing will occur in the Convict Analysis Unit, and only 14 grazing nights were used from 2001 to 2003. Therefore, there should continue to be few to no effects to meadow soil or hydrologic resource from grazing.

Meadow Stream Functional Condition (PFC): Stream functional condition would be expected to improve in almost ¼ of analyzed meadows, more than under Alternative 1 (Figure 4.12). Currently, 15 of the analyzed stream segments are properly functioning, while 12 are functional at-risk.

Of the 15 streams rated at PFC, all are expected to remain in their current condition (Table 4.74). Of the 12 streams rated functional at-risk, six are expected to remain in their current condition, six could have a trend toward their potential, and none should trend away from their potential.

Those stream segments expected to have a trend toward their potential will either have grazing removed, reduced, or remain about the same as recent reported use. These meadows all have their water source intact over most of the meadow and have moderate to high productivity. Therefore, vegetation can grow back on stream banks relatively quickly and improve the ability of the stream to withstand high flows. No meadows where streams were rated for PFC should have a trend away from potential. However, two stream segments with a current unknown rating could have a trend away from their potential (Box Canyon above Grassy and Olive Lake West) could have grazing increased from 2001 to 2003 use, and have low to moderate productivity. If the packers keep their stock away from vulnerable streambanks, the streams will likely either remain in their current state or move closer to their potential, as vegetation will have a chance to slowly grow on the streambanks. If the commercial pack station operators cannot avoid further trampling sensitive streambanks, it is a foreseeable future action that these meadows would be closed or the recommended stock nights would be reduced. In Martin's Meadow, as discussed under Alternative 1, the stream is likely to have an increased length of non-functional stream whether it is grazed or not.

For individual meadow predictions under all alternatives, see the table *Projected Changes to Meadow Stream Functional Condition and Meadow Hydrologic Function under All Alternatives* in the project record.

Meadow Soil Effects: Of the 14 meadows that currently have moderate to severe compaction, six could be grazed under Alternative 2 – Modified. The grazing would only be over 40 stock

nights at Tully Hole Meadow and Horse Heaven. The allotted grazing is not likely enough to increase compaction beyond its current state, because it is lower than past reported grazing, which is assumed to have caused the compaction.

Trails: The contribution from trails to soil erosion and local water quality degradation should be less than currently and under Alternative 1 and 3, but greater than Alternatives 4 and 5. Under this Alternative, five of the 14 trails with a moderate to severe resource rating would not be used by commercial pack stock. While removal of commercial pack stock alone will not usually allow a trail to stop eroding, the removal of stock will allow for more easily constructed, longer term repair that should reduce erosion once it is completed. Coupled with trail repair, removal of pack stock could reduce erosion and subsequent sedimentation into surface water.

Campsites: This geographic unit should not have substantially different effects to campsites than any other geographic unit or Alternatives 3 through 5. As in other Geographic Units, stock holding sites will be designated and there should be about the same number or fewer than today. All campsites less than 50 feet from water and some less than 100 feet of water would eventually stop being used and possibly be rehabilitated over time, reducing the chance of water quality degradation and soil erosion. All stock holding or spot/dunnage sites would be designated, and would be designed to meet BMPs. Within 2 years, all commercial pack stock-related campsites would meet BMPs. Therefore, there could be a slight reduction of sediment and manure entering water from campsites.

Cumulative Impacts

The Fish Creek/Convict/McGee Geographic Unit contains some of the areas most likely to have reduced soil and water resource impacts. It is the area with the second highest incidence of meadow hydrologic function alteration and stream functional condition (PFC) alteration.

The reduction in negative cumulative impacts is most likely within the Fish Creek Watershed, including the Silver Divide, Upper Fish Creek, Purple Bench and Cascade Valley Analysis Units. In this area, the current impacts, including stream incision, meadow hydrologic function alteration, and local increased sedimentation into surface water, are likely at least partially attributable to recent commercial pack stock use, particularly grazing and trail use. Past uses including commercial pack stock grazing, possibly livestock grazing, and recreational use, and concurrent uses including private pack stock use and hiker use, likely also contributed to the soil and water resource conditions. Because the Fish Creek Watershed is one of the areas with the greatest impacts related to recent commercial pack stock use, it is one of the areas where more stringent management proposed in Alternative 2 – Modified has the potential to reduce negative impacts.

Although other uses, such as private pack stock use and hiker use, would continue to occur, commercial pack stock use is relatively heavy within the Fish Creek Watershed, and reduction of that use would likely help reduce impacts. Within Fish Creek, there would be a one night stay for traveling commercial pack stock trips, 29 of the 55 meadows analyzed would be closed to grazing, and campsites would be designated. These actions would help reduce the extent of pack stock use, the duration of grazing, and would likely allow improved meadow condition, improved stream condition, and a slight reduction in bare soil from campsites.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis* in the project record.

In summary, the Fish Creek Watershed within the Fish Creek/Convict/McGee Geographic Unit is the only watershed that may have cumulative watershed effects at least partially related to commercial pack stock use of trails and grazing of meadows. Although it is uncertain whether the cause was natural or related to heavy use of the area, Fish Creek incised and widened during a storm in 1982 along much of its length. It is possible that the reduced water holding capacity in meadows upstream, tributary incision, or incision at trail crossings contributed to the incision of the main Fish Creek channel. The Fish Creek Watershed has some of the highest levels of commercial pack stock use and commercial pack stock grazing. It is also used by the greatest number of separate commercial pack stations. Under Alternative 2 – Modified, reductions in grazing stock nights, a reduction in the number of traveling trips through the area, and a reduction in the number of pack stations allowed to use the area would all likely result in less commercial pack stock use and fewer soil and water impacts associated with that use. Therefore, the potential for cumulative watershed effects should slightly decrease in the long-term.

Fish Creek/Convict/McGee – Alternative 2

Analysis

The Fish Creek/Convict/McGee Geographic Unit has the second highest percent of analyzed meadows with hydrologic function alteration, and a high percentage of trails that affect soil and hydrologic function. The greatest impacts are in the upper Fish Creek watershed (Upper Fish Creek, Silver Divide, Cascade Valley and Purple Bench Analysis Units), and therefore the greatest resource improvement due to pack stock management change are likely to occur there under all action alternatives. In fact, out of the entire Wilderness area, the Upper Fish Creek watershed is the area most likely to see the improvement in soil and hydrologic resource condition under Alternative 2.

Meadows: The highest current commercial pack stock grazing densities are in this Geographic Unit, and the largest reductions in grazing densities under Alternative 2 would be here. It is one of the few areas where the total number of grazing nights would be reduced under Alternative 2. The effects would be very similar as under Alternative 2 – Modified because there would be substantially different management in only 3 meadows, and other management, such as a one-night stay in the geographic unit, designated stock holding campsites, and destination quotas, would be the same.

Meadow Hydrologic Function: Meadow hydrologic function should be the same overall as under Alternative 2 – Modified, except in two meadows (Figure 4.11, Table 4.73).

The two meadows where hydrologic function predictions are different are The Box Canyon above Grassy (sil2) and Rainbow to Margaret (mar4). The Box Canyon above Grassy would not be grazed under Alternative 2 – Modified, but would be grazed under this alternative. Because the area has relatively low productivity and is vulnerable to compaction, it is possible that the increase in stock nights from none to 67 could cause a slight downward shift in hydrologic function. In the meadow between Rainbow and Margaret Lakes, there is an old trail that is

locally affecting the meadow's hydrologic function by diverting groundwater into the trail that is incised about three feet. Allowing up to 127 stock nights in this meadow, as proposed under Alternative 2, could cause a slight downward shift in meadow hydrologic function as the area around the trail is hoof punched and vegetation is removed. Under Alternative 2 – Modified, it was predicted that there would be no change in the meadow's current slight hydrologic function. Under this alternative, it is unlikely that 127 stock nights would be used in this meadow, as only 4 were reported in the past, and there are no nearby areas being closed to grazing. Therefore, the differences between the alternatives in this meadow could be negligible.

Meadow Stream Functional Condition (PFC): Stream functional condition would be expected to improve in up to ¼ of analyzed meadows, the same as under Alternative 2 – Modified (Figure 4.12). Management would be different in six meadows in the Fish Creek/Convict/McGee Geographic Unit, but the difference to stream functional condition would be negligible because the difference in management is not substantial in any meadow where stream functional condition is known. It is possible that the Box Canyon above Grassy (sil2) could have a trend away from potential stream functional condition under Alternative 2, although current stream condition as defined using the PFC protocol is unknown. It is known that the access trail to the meadow is in a stream for a short distance, and use of this trail to access the grazing area could increase hoof punching, stream bank disturbance, and nickpoints within the stream.

For individual meadow predictions under all alternatives, see the table *Projected Changes to Meadow Stream Functional Condition and Meadow Hydrologic Function under All Alternatives* in the project record.

Meadow Soil Effects: Of the 14 meadows that currently have moderate to severe compaction, 6 could be grazed under Alternative 2. The grazing would only be substantial numbers at Tully Hole Meadow and Horse Heaven. The allotted grazing is not likely enough to increase compaction beyond its current state, because it is lower than past reported grazing, which is assumed to have caused the compaction. Compaction overall is likely to be about the same as under Alternatives 2 – Modified, 3 and 4, slightly less than under Alternative 1, and more than under Alternative 5.

Trails: The contribution from trails to soil erosion and local water quality degradation should be almost the same as under Alternative 2 – Modified. Under this Alternative, 6 of the 14 trails with a moderate to severe resource rating would not be used by commercial pack stock. While removal of commercial pack stock alone will not usually allow a trail to stop eroding, the removal of stock will allow for more easily constructed, longer term repair that should reduce erosion once it is completed. Coupled with trail repair, removal of pack stock could reduce erosion and subsequent sedimentation into surface water.

Campsites: This geographic unit should not have substantially different effects to campsites than any other geographic unit or Alternatives 3 through 5. As in other geographic units, stock holding sites will be designated and there should be about the same number or slightly fewer than today. All campsites less than 50 feet from water and some less than 100 feet of water would eventually stop being used and possibly be rehabilitated over time, reducing the chance of water quality degradation and soil erosion. All stock holding or spot/dunnage sites would be designated, and would be designed to meet BMPs. Within two years, all commercial pack stock-related campsites would meet BMPs. Therefore, there could be a slight reduction of sediment and manure entering water from campsites.

Cumulative Impacts

The Fish Creek/Convict/McGee Geographic Unit contains some of the areas most likely to have reduced soil and water resource impacts. It is the area with the second highest incidence of meadow hydrologic function alteration and stream functional condition (PFC) alteration.

The reduction in negative cumulative impacts is most likely within the Fish Creek Watershed, including the Silver Divide, Upper Fish Creek, Purple Bench and Cascade Valley Analysis Units. In this area, the current impacts, including stream incision, meadow hydrologic function alteration, and local increased sedimentation into surface water, are likely at least partially attributable to recent commercial pack stock use, particularly grazing and trail use. Past uses including commercial pack stock grazing, possibly livestock grazing, and recreational use, and concurrent uses including private pack stock use and hiker use, likely also contributed to the soil and water resource conditions. Because the Fish Creek Watershed is one of the areas with the greatest impacts related to recent commercial pack stock use, it is one of the areas where more stringent management proposed in Alternative 2 has the potential to reduce negative impacts.

Although other uses, such as private pack stock use and hiker use, would continue to occur, commercial pack stock use is relatively heavy within the Fish Creek Watershed, and reduction of that use would likely help reduce impacts. Within Fish Creek, there would be a one night stay for traveling commercial pack stock trips, 17 of the 28 meadows analyzed would be closed to grazing, and campsites would be designated. These actions would help reduce the extent of pack stock use, the duration of grazing, and would likely allow improved meadow condition, improved stream condition, and a slight reduction in bare soil from campsites.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document *Commercial pack stock use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis* in the project record.

In summary, the Fish Creek Watershed within the Fish Creek/Convict/McGee Geographic Unit is the only watershed that may have cumulative watershed effects at least partially related to commercial pack stock use of trails and grazing of meadows. Although it is uncertain whether the cause was natural or related to heavy use of the area, Fish Creek incised and widened during a storm in 1982 along much of its length. It is possible that the reduced water holding capacity in meadows upstream, tributary incision, or incision at trail crossings contributed to the incision of the main Fish Creek channel. The Fish Creek Watershed has some of the highest levels of commercial pack stock use and commercial pack stock grazing. It is also used by the greatest number of separate commercial pack stations. Under Alternative 2, reductions in grazing stock nights, a reduction in the number of traveling trips through the area, and a reduction in the number of pack stations allowed to use the area would all likely result in less commercial pack stock use and fewer soil and water impacts associated with that use. Therefore, the potential for cumulative watershed effects should slightly decrease in the long-term.

Fish Creek/Convict/McGee – Alternative 3

Analysis

The effect to soil and hydrologic resources should be the same under Alternative 3 as they are under Alternative 2 – Modified. There could potentially be more traveling trips to the area in Alternative 3, as in the other Geographic Units. The only substantial difference in effects to soil and hydrologic resources should be the lack of a one night stay under Alternative 3 in the Upper Fish Creek, Cascade Valley, Purple and Silver Divide Analysis Units. Therefore, traveling trips might be more likely to remain longer in those areas, possibly creating larger campsites as stock could be brought in and out of camp more times per year, creating more social trails and general bare area due to increased stock movement. However, because grazing would still be limited under Alternative 3, traveling trips might not use this area as heavily as they have in the past if the packers decide not to pack in feed, and they may not create larger campsites or more bare area.

Meadows/Grazing: Grazing would be managed the same as Alternative 2 in all meadows, and therefore there should be no specific grazing area with different effects.

However, in some portions of the Fish Creek/Convict/McGee Geographic Unit, mainly in the Margaret Analysis Unit, Alternative 3 would allow for less predictability for meadow effects. Throughout the Margaret Analysis Unit, few meadows are currently grazed, and under Alternatives 1, 2 – Modified, and 2, hundreds of stock nights of grazing would be allocated. However, under Alternatives 2, quotas would allow only minor increases in spot/dunnage trips or traveling trips, and the increased use would be spread across the analysis unit. Under this alternative, there would be no quotas on traveling trips or spot/dunnage trips. Therefore, if a packer wished to increase use in one area and use all of the allocated stock nights of grazing, it is possible that meadows could see greatly increased use. The predictions for meadow hydrologic function and stream functional condition changes would be the same as under Alternative 2, however, because the differences in the effects of partial and full utilization of stock nights is not well understood, and the worst effects were assumed in this case.

Trails: There are about six trails where commercial pack stock will be allowed to travel under Alternative 3 where they would not be allowed to travel under Alternative 2. All the trails could have a slightly increased potential for erosion under Alternative 3, but none are heavily used now nor would they be likely to be heavily used in the future. Therefore, the erosion potential is not likely to be measurably larger. There are two trails that would provide access to destinations that would not be accessible under Alternative 2. The destinations are Sharktooth Lake and Ram Lake. There could be slightly more bare ground due to dunnage campsites at these locations under Alternative 3 and therefore slightly reduced infiltration and possibly increased soil loss. However, the designated sites would be over 100 feet from water and therefore there should not be increased sediment delivery to water or other effects on water quality.

Cumulative Impacts

The cumulative effects should be the same as under Alternative 2, because past, present, and reasonably foreseeable future actions are the same, and management is similar enough that the difference in cumulative effects should be negligible.

Fish Creek/Convict/McGee – Alternative 4

Analysis

As under Alternatives 2, 2 – Modified and 3, the Fish Creek/Convict/McGee is the Geographic Unit that is most likely to have changes from the current condition. The area has been used heavily by commercial pack stock recently, and has soil and water resource effects likely attributable to recent commercial pack stock use. The greatest reduction in soil and water resource effects is likely to be from reduction of grazing in this area. However, reduction of use on trails and campsites could also reduce soil compaction and erosion, and local water quality degradation and alteration of stream morphology.

Meadows: Portions of this geographic unit should see the greatest reductions in commercial pack stock grazing compared to other Geographic Units. From 2001 to 2003, the largest number of stock nights of grazing reported in this Geographic Unit was 2002, with over 2,100 stock nights reported. Roughly the same number of stock nights may be expected annually under Alternative 1. Under Alternatives 2 and 3, about 1,600 stock nights is the recommended high. Under this alternative, the recommended high stock nights of grazing are less than 800 annually. It is unknown how much grazing would be use by private stock.

The reductions in pack stock grazing are likely to lead to improvement of meadow soil and hydrologic function conditions over time. The improvement should be especially noticeable in the Silver Divide, Upper Fish Creek, Cascade Valley, and Purple Bench Analysis Units because they currently show negative soil and hydrologic effects from pack stock. In those analysis units combined, the largest number of stock nights of grazing reported was in 2002, at about 1,350 stock nights. Roughly the same number of stock nights could be expected annually under Alternative 1. Under Alternatives 2, 2 – Modified and 3, about 900 stock nights of grazing is the recommended high. Under this alternative, the recommended high stock nights of grazing is about 270 annually, or less than 1/3 of the recent reported use. It is unknown how much grazing would be use by private stock.

Decreased grazing in this geographic unit could lead to increased grazing in other nearby Geographic Units, especially Ansel Adams East, which is easily accessed from the Fish Creek area. Under Alternative 4, however, grazing would also be limited in other geographic units, and each meadow or grazing zone will have an allocation that would not cap grazing. The effects of increases in other areas are discussed in their geographic unit section.

Meadow Hydrologic Function: Of the 55 meadows analyzed for hydrologic function, it is expected that 43 would remain in their current condition, while 10 could show some improvement in hydrologic function and two could show downward trend in hydrologic function.

The number of meadows with hydrologic function alteration under Alternative 4 should be less than Alternative 1 and similar as under Alternatives 2 and 3, although there should be slightly fewer meadows with hydrologic function alteration (Table 4.73, Figure 4.11). Four meadows that would be open under Alternative 2 – Modified would be closed to commercial pack stock grazing under Alternative 4. Three of the four meadows that would be closed under Alternative 4 were predicted to have slightly worsened hydrologic function under Alternative 2 – Modified and should have static condition under Alternative 4. Six other meadows would have decreased

grazing allocations, and one, the meadow between Rainbow and Margaret Lakes (mar4) may have reduced hydrologic function alteration under Alternative 4.

Meadow PFC: The number of streams with a trend toward proper functioning should be similar under Alternative 4 as under Alternative 2 – Modified (Figure 4.12, Table 4.74). There are only 2 streams out of the 28 analyzed for PFC that are expected to have any noticeable difference in stream functional condition under the two alternatives. Olive Lake West would be closed to grazing under Alternative 4, and therefore should have static, good stream condition. Jackson Meadow (sil8) contains the stream most likely to show some change from current condition. Under Alternative 4, the meadow would have no commercial pack stock grazing, where the recent high was 318 stock nights. Although the very upper portion of the meadow has low productivity and streams are not likely to show improved condition, the streams in the middle portion of the meadow could have some vegetation grow on banks because the productivity is higher in that portion of the meadow.

Trails: There could be slight reduction in soil and water resource impacts from trails under Alternative 4. Under this alternative, 7 out of 51 system trails would be closed to commercial pack stock use that would not be closed under Alternatives 1 through 3. The greatest effect is likely the reduction of use at the destinations accessed by those seven trails. Beyond a reduction in system trail use, there would also be the associated reduction in campsite use and user trail use. There could be a subsequent gradual reduction in area of compacted and bare soil, and some local reduction of sedimentation into surface water. Geographic Unit wide, the difference is likely to be minimal.

Campsites: There could be a slight reduction in bare soil and compacted soil under Alternative 4. All stock holding and spot/dunnage sites would be designated. While backpackers would still use most sites, stock holding and spot/dunnage sites at popular commercial pack stock areas, such as those at Jackson and Grassy Meadows, could be reduced in numbers. While the sites would likely take decades to decompact and grow vegetation, duff would likely cover the sites after a few years and lessen the volume of soil lost through erosion.

Cumulative Impacts

Negative cumulative impacts are expected to be slightly reduced under Alternative 4. The overall reduction in number of meadows grazed, the reduced stock nights, and fewer trails approved for commercial pack stock use suggests the potential for a cumulative impact is unlikely when compared to the existing condition. The reduction (or improvement) in cumulative impacts under Alternative 4 is less than Alternatives 1 through 3 and greater than alternative 5. Current effects from hikers and non-commercial pack stock would remain the same, and therefore most campsites and trails would remain in their current condition, because most campsites and trails are used by non-commercial users.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis* in the project record.

Cumulative Watershed Effects should be similar as under Alternative 2 – Modified, although there could be a greater reduction in CWE potential. The only watershed in the area with

suspected potential CWEs is the East Fish Creek Watershed. Grazing would be reduced in this watershed from a reported high of 1,340 stock nights to about 270, while it was about 900 under Alternative 2. Therefore, although the number of campsites and trail condition should be the same as under Alternative 2 – Modified, the reduced grazing should reduce the overall area of disturbed ground and hydrologic function alteration over the long-term.

Fish Creek/Convict/McGee – Alternative 5

Analysis

The Fish Creek/Convict/McGee Geographic Unit is likely to have the largest improvement to soil and water resource condition out of any geographic unit. Alternative 5 would likely have the least negative impacts of any alternatives. This geographic unit is likely the only one that contains a watershed that could have a noticeable reduction in cumulative watershed effects under Alternative 5. The improvement should be the greatest in the Fish Creek Watershed, in the Silver Divide, Upper Fish Creek, Cascade Valley and Purple Analysis Units. Those areas receive some of the highest levels of commercial pack stock use in the Ansel Adams and John Muir Wilderness areas, and therefore should have the largest change to resource impacts with removal of all commercial pack stock. The greatest improvement should be with removal of grazing, which could lead to improvement in stream functional condition, meadow hydrologic function, and soil productivity.

Meadows: Alternative 5 is likely to allow more meadows to have improved hydrologic function condition than any other alternative (Figure 4.11, Table 4.73). The difference between meadow conditions under Alternative 1 and Alternative 5 could be substantial. This area has some of the most severe and widespread impacts to meadow hydrologic function at least partially attributable to recent pack stock grazing, and removal of pack stock grazing could therefore have the greatest positive effect.

Meadow Hydrologic Function: Alternative 5 should have the least negative effect to meadow hydrologic function out of any alternative, although the difference between Alternatives 4 and 5 should be slight (Figure 4.11). Of the 55 meadows analyzed, about 27 percent are expected to show improved hydrologic function condition. Under Alternative 4, about 20 percent of meadows are expected to show improved hydrologic function condition.

Of the 32 meadows that currently have at least slight hydrologic function alteration; about half are likely to remain in their current condition. Almost all of these meadows, other than Tully Hole, have hydrologic function alteration mostly due to other uses than recent commercial pack stock grazing, such as an historical trail or incisement of Fish Creek. Therefore, removal of pack stock use is not likely to allow any recovery of hydrologic function. In the case of Tully Hole, its moderate hydrologic function alteration is likely related to commercial pack stock grazing. However, the alteration includes hummocks and a slightly incised stream channel, which could both take decades or centuries to return to a more natural condition.

Meadow Stream Functional Condition (PFC): Alternative 5 is likely to have the most streams with improved stream functional condition out of all alternatives, and the most widespread improvement from current conditions (Figure 4.12, Table 4.74). The difference in this geographic unit could be larger than any other geographic unit.

Of the 27 meadow streams analyzed for PFC, it is projected that 37 percent could have improved functional condition under Alternative 5. In contrast, only 15 percent are expected to have improved condition under Alternative 1. The difference is because all meadows would be closed to commercial pack stock grazing, and many meadows of these meadows have been grazed heavily by commercial pack stock in the recent past. The recent heavy pack stock grazing appears to be at least partially responsible for the reduction of stream functional condition, and removal of all grazing should allow maximum recovery.

Trails: The effects to soil and water resources should be the same as under the wilderness scale. It is a foreseeable future action that trails in the McGee, Silver Divide and Upper Fish Creek Analysis Units would have major repair. The trail project is proposed for implementation before 2010. If the project receives funding, the most impactful trails would be stabilized and could have reduced soil loss and reduced diversion of surface water in those analysis units.

Campsites: The effects to soil and water resources should be the same as under the wilderness scale. The greatest reduction in the extent of bare and compacted soil from campsites should be in the Silver Divide, Upper Fish Creek, Cascade Valley and Purple Bench Analysis Units. The area should continue to be a popular destination for backpackers, however, so campsite extent would not be drastically reduced overall with the cessation of use only in stock holding and spot/dunnage sites.

Cumulative Impacts

Cumulative impacts to soil and water resources are expected to be reduced under Alternative 5. The reduction in number of meadows grazed, trails used by any pack stock, and campsites used by stock holding parties suggests that impacts should be reduced from current levels. The reduction (or improvement) in cumulative impacts under Alternative 5 would be more than any other alternative. In the Fish Creek/Convict/McGee Geographic Unit, many of the negative effects to soil and water resources, such as trail incision, meadow hydrologic function alteration, and stream hydrologic condition alteration (PFC) can be at least partially attributable to commercial pack stock use. Therefore, removal of that use could cause improved conditions. However, continuation of private pack stock use and hiker use could sustain most of the local effects from campsites and trails.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis* in the project record.

There should be a long-term reduction in potential for CWEs with removal of all commercial pack stock. The main difference between the effects of Alternative 5 and the other alternatives would be the difference in grazing effects. Because no meadows would be grazed by commercial pack stock, there would be a large reduction in grazing, especially in the East Fish Creek Watershed. This reduction in grazing, along with less pack stock on trails, would reduce the area of ground disturbance to below 1 percent of the total land area, reducing cumulative effects. The improvements to meadow hydrologic function good take decades, so the improved watershed condition should be long-term.

Mono Creek/Rock Creek – Alternative 1

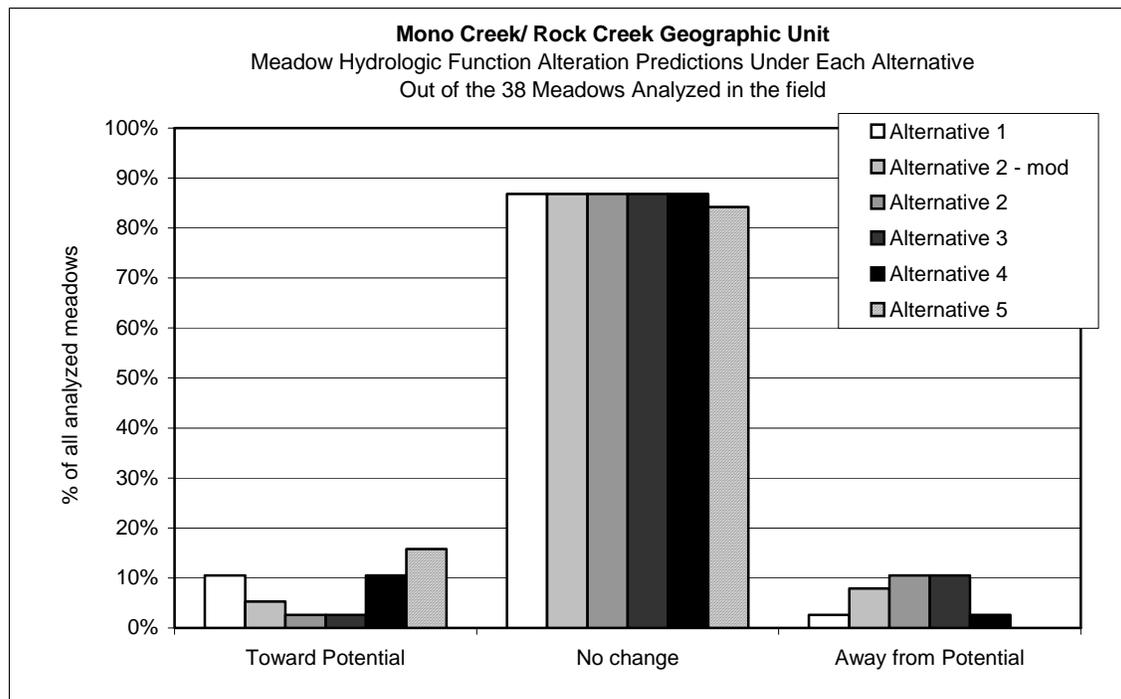
Analysis

The Mono Creek/Rock Creek Geographic Unit should not show a change to soil and hydrologic resources under Alternative 1 relative to its current condition. The current condition includes a few trails and meadows causing severe soil and hydrologic alteration locally, but as the rest of the wilderness, good condition overall. Portions of the area currently receive heavy pack stock use, and many traveling trips with overnight stock use and grazing. Continued current use under Alternative 1 could cause a minor downward trend in soil and hydrologic function in some locations over time. A portion of the Graveyard Analysis Unit continues to be grazed by cattle and cattle grazing effect will continue regardless of pack stock management.

Meadow: The Rock Creek/ Mono Creek Geographic Unit is varied in the type of commercial pack stock use and other uses. In the Little Lakes Valley Analysis Unit, there is heavy day hiker and backpacker use, with little commercial pack stock use and no overnight commercial pack stock use. Therefore, the meadows have soil compaction, sod fragmentation and stream bank trampling mainly from hikers and anglers and not pack stock. Although some of the hikers and anglers are brought to the area by commercial pack stock, the vast majority of the use is non-pack stock users. In the Graveyard Analysis Unit at the west end of the Mono Creek/Rock Creek area, there is an active cattle allotment. The lower elevation meadows in the Graveyard Analysis Units have moderate to severe soil and hydrologic resource impacts attributable to cattle grazing. There is almost no overnight commercial pack stock use in the area, suggesting that the commercial pack stock use would continue to be a negligible effect. In the Mono Creek watershed, including the Laurel, Hopkins, Second Recess, Fourth Recess, Pioneer, and Silver Pass Analysis Units, there is regular overnight commercial pack stock grazing and related meadow compaction, stream bank trampling, stream incision, and sod fragmentation. Under Alternative 1, soil and water resource alteration related to commercial pack stock would likely continue to be most prominent in the Mono Creek Watershed area.

Meadow Hydrologic Function: Most of the 38 meadows analyzed for hydrologic function should remain in their current condition under Alternative 1. It is predicted that hydrologic function could improve in two more meadows under Alternative 1 than under Alternatives 2 and 3 (Figure 4.13). The differences between alternatives would likely be minor in the Mono Creek/Rock Creek Geographic Unit.

Figure 4.13 A comparison of the effects of alternatives on meadow hydrologic function condition.



Four of the 38 meadows analyzed would be expected to have improved hydrologic function and one would be expected to have worse hydrologic function under Alternative 1. The other 33 would be expected to remain in their current condition. Currently, about 2/3 of the meadows analyzed have no hydrologic function alteration, and the remaining 1/3 have at least slight alteration.

Table 4.75 Hydrologic Function Alteration Predictions for all meadows visited in the Mono Creek/Rock Creek Geographic Unit. The predictions are given as number of meadow expected to have a trend toward potential, away from potential, or remain in their current condition with no change. The number of meadows predicted to have each trend was estimated by the IDT, using the meadow’s characteristics such as soil moisture, stream bank stability, and meadow productivity.

Trends By Number of Meadows						
Current Meadow Hydrologic Function Condition (# of meadows with that condition)	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No hydro alteration (25)						
Toward Potential	0	0	0	0	0	0
No change	24	24	24	24	24	25
Away from Potential	1	1	1	1	1	0
Slight hydro alteration (5)						
Toward Potential	1	0	0	0	1	2
No change	4	4	4	4	4	3
Away from Potential	0	1	1	1	0	0

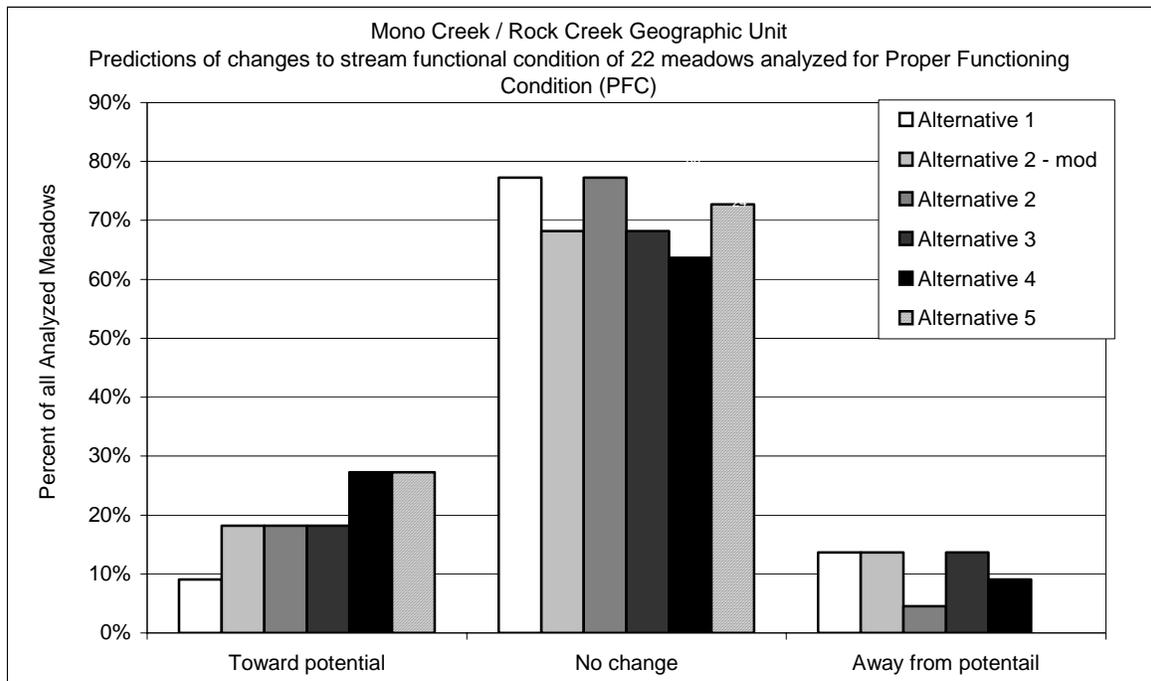
Trends By Number of Meadows						
Current Meadow Hydrologic Function Condition (# of meadows with that condition)	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Mod hydro alteration (5)						
Toward Potential	2	2	1	1	2	3
No change	3	2	2	2	3	2
Away from Potential	0	1	2	2	0	0
Severe hydro alteration (3)						
Toward Potential	1	0	0	0	1	1
No change	2	3	3	3	2	2
Away from Potential	0	0	0	0	0	0
All Meadows Analyzed (38)						
Toward Potential	4	2	1	1	4	6
No change	33	33	33	33	33	32
Away from Potential	1	3	4	4	1	0

The four meadows that could have improved hydrologic function have all been grazed by cattle within the past decade and are all within the Graveyard Analysis Unit. None have had reported commercial pack stock grazing since 2001 and are not expected to be grazed by commercial pack stock in the future. None of these meadows has been grazed by cattle within the past few years, and it is expected that cattle will not graze the meadows in the future. Therefore, these moderate to high productivity meadows are likely to have gradual reduced compaction, vegetation growing on stream banks, and revegetation of bare soil that should help improve the meadows' hydrologic function.

The one meadow that could have worse hydrologic function under Alternative 1, North of Mono Rock (for1) is currently grazed and has little current hydrologic function alteration. However, the meadow received variable grazing between 2001 and 2004, and show signs of the beginnings of hydrologic function alteration, such as sod fragmentation, stream bank trampling, and vegetation removal. If grazing continues at the highest levels used in the past few years, these impacts could persist year-to-year and begin accumulating over time, eventually reducing the ability of the meadow sod to prevent erosion from surface runoff over the meadow.

Meadow Stream Functional Condition (PFC): About 75 percent of meadow streams are expected to remain in their current functional condition, with slightly more than 10 percent expected to both have improved and worsened conditions. Alternative 1 and Alternative 3 share the lowest expected number of streams to move closer to potential functional condition (Figure 4.14). Currently, about 2/3 of the streams analyzed are at proper functioning condition, while the other 1/3 are functional at-risk.

Figure 4.15 A comparison of predicted changes to stream functional condition (PFC) among alternatives for the streams where PFC was analyzed in the Rock/Mono Creek Geographic Unit. A total of 23 streams were analyzed for PFC, all within meadows or other grazed areas. This chart includes all streams analyzed, whether they are at proper functioning condition or whether they are currently functional at-risk.



Of the 17 meadow streams analyzed for functional condition using the PFC protocol, two are expected to have improved stream condition while three could move away from potential (Table 4.76). The two streams expected to move toward functional condition are in the meadows expected to have improved hydrologic function condition. The three expected to trend away from potential are the meadow near the camp North of Mono Rock (for1), Third Recess Meadow complex (for4) and the Hopkins/Bench Camp Meadow (for8). These meadows are all regularly grazed by commercial pack stock and have poorly armored stream banks and saturated soil areas that are easily chiseled by pack stock. All currently have low levels of hoof punching and stream trampling, below stream bank trampling standards of 20 percent annually. Only one, the stream in Hopkins/Bench Camp Meadow, was rated functional at-risk. However, all of these streams are vulnerable to trampling and erosion, and if use continues to be high in repeated years, it is possible that the sod fragmentation and stream bank trampling would accumulate enough to begin causing a reduction in stream function.

In the Silver Peak Analysis Unit, Silver Pass Meadow currently has severe hydrologic function alteration and has a stream that is functional at-risk with a downward trend. Continued pack stock use could propagate compaction, continue stream bank trampling, and prevent any vegetation from growing on stream banks. The water table in Silver Pass Meadow is already lowered, but continued use at current levels could allow high flows to further incise and widen the channel, lowering the water table further and possibly eventually allowing permanent vegetation alteration in the drier 2/3 of the meadow.

Table 4.76 Summary of all meadow stream functional condition predictions for the Mono Creek/Rock Creek Geographic Unit under all alternatives. Stream functional condition was determined using the Proper Functioning Condition (PFC) protocol. The streams are separated by those that are currently properly functioning, those that are functional at-risk with an upward trend, those that are functional at-risk with a non-apparent trend, and those that are functional at-risk with a downward trend. The predictions are based on assumptions that grazing will continue about as it has in the past in most areas, except in meadows that are closed to grazing and those nearby meadows where grazing might move to.

Current stream functional condition rating (# with each rating)	Number of Meadows expected to have each trend					
	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Proper Functioning Condition (14)						
Toward potential	0	0	1	0	1	1
No change	12	11	12	11	11	13
Away from potential	2	3	1	3	2	0
Functional at-risk upward trend (2)						
Toward potential	1	1	1	1	2	2
No change	0	1	1	1	0	0
Away from potential	1	0	0	0	0	0
Functional at-risk non apparent trend (1)						
Toward potential	0	0	0	0	0	0
No change	1	1	1	1	1	1
Away from potential	0	0	0	0	0	0
Functional at-risk downward (5)						
Toward potential	1	3	2	3	3	3
No change	4	2	3	2	2	2
Away from potential	0	0	0	0	0	0
Total Mono Creek/Rock Creek (22)						
Toward potential	2	4	4	4	6	6
No change	17	15	17	15	14	16
Away from potential	3	3	1	3	2	0

Meadow Soil Effects: Twenty-nine meadows were analyzed for soil compaction in the Mono Creek/Rock Creek Geographic Unit. Of those, about 30 percent (8 meadows) were found to have moderate to severe compaction. Only three of those appear to have compaction from recent pack stock use. Another one, Graveyard Meadow, is currently grazed by cattle. Those four meadows are likely to continue to receive similar use in the future and the compaction is likely to remain. The other four meadows either had past cattle or pack stock grazing that no longer occurs. Therefore, the compaction in those meadows is expected to slowly decrease over time through soil freezing and thawing, rodent activity in the soil, and vegetation growth.

There is moderate sod fragmentation extent in about 1/3 of the meadows analyzed. Most of these meadows are currently grazed by commercial pack stock or cattle, although some, such as those in Hilton Creek, likely received past commercial pack stock grazing and currently may have pack stock traveling over them but little grazing. Most of these meadows would likely not see much reduction in sod fragmentation under Alternative 1, although the meadows in Hilton Creek may show some reduction because they are no longer grazed.

Trails: Within the Mono Creek watershed, user and system trails are causing local soil loss, surface water diversion, and possibly slight increased sedimentation into surface water. These trails would likely remain in similar condition under Alternative 1 and all other alternatives. Reduction of trail impacts to soil and water resources likely depends more on trail maintenance and repair than whether they are used by commercial pack stock or not. However, increased trail erosion, trail widening and multi-trailing is more likely with pack stock use because pack stock are heavier and less likely to remain within the trail tread, and therefore more likely to remove soil or widen the trail. If use remains as it is, there should be few changes to trails other than a gradual increase in erosion and multi-trailing on heavily used trails. If pack stock use shifts to new areas, especially in the recesses tributary to Mono Creek, there could be increased trail incision, widening and multi-trailing because those trails often go through meadows where the area adjacent to the trail is non-hardened and easily chiseled by hooves.

As in all other alternatives, a reasonably foreseeable future action is that trails with severe resource impacts will eventually be repaired. In this geographic unit, nine trails have moderate to severe impacts to soil and water resources. If we assume those trails would be repaired within 20 years, it is likely that the local impacts would decrease on those nine trails, even with continued commercial pack stock use.

Campsites: Campsites are generally causing excessive bare, compacted soil and possible local water quality effects only in the Hilton Lakes Analysis Unit and along the Mono Creek Corridor (A map of all BMP site locations is in the project record). In these areas, there is a high concentration of campsites, both those used by commercial pack stock and those used by backpackers. It is a foreseeable future action that campsites too close to water, such as the two stock holding camps near the confluence of Mono and Hopkins Creeks, would be closed in a gradual and piecemeal fashion. Therefore, there would be a gradual reduction in sedimentation into surface water from campsites.

The Hilton Analysis Unit receives heavy commercial pack stock use, but little to no overnight commercial pack stock use has been reported. Under Alternative 1, the same use patterns should continue. There would likely be a continuation of dense campsites at Davis Lakes, where there is excessive compacted soil. Continued use could lead to gradual enlargement of campsites, which could eventually increase sedimentation into surface water.

Cumulative Impacts

This alternative has been analyzed in terms of the effects of past, present and reasonably foreseeable future actions to soil and hydrologic processes in the Mono Creek/Rock Creek Geographic Unit. Past, present and reasonably foreseeable future actions are the same as at the wilderness scale. Present and recent past actions differ from the general wilderness only in the Graveyard Analysis Unit, where cattle grazing continues today. Past and present actions have caused some local increases in compacted soil, stream bank trampling, stream incision and

increased sedimentation into surface water. However, other than in the Graveyard Analysis Unit, these effects are generally dispersed and minor enough to prevent widespread cumulative impacts.

Alternative 1 would allow commercial pack stock use to continue in all areas that are currently not closed to use. Therefore, the local compacted soil, stream bank trampling, stream incision and increased sedimentation into surface water due to campsites, commercial pack stock grazing, and trails should continue.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis*, in the project record.

Of the five watersheds within the Mono Creek/Rock Creek watershed, one may have Cumulative Watershed Effects that have moved downstream from upstream land uses. Along Cold Creek, recent cattle grazing appears to have caused stream incision, increased fine sedimentation into streams, soil compaction, and lowering of water tables in the meadows. It is uncertain whether these effects are due to grazing only in the meadows where the stream impacts occur, or whether they are cumulative watershed effects that have been transported downstream from grazing in the higher portions of the watershed. Either way, the effects do not appear to be related to commercial pack stock use. While cumulative watershed effects could continue with continued cattle grazing, Alternative 1 will cause little to no change in cumulative watershed effects.

Mono Creek/Rock Creek – Alternative 2 – Modified

Analysis

The Rock Creek and Mono Creek Geographic Unit has variable hydrologic processes, geomorphology, meadow types, and use patterns. Therefore, Alternative 2 – Modified will likely have different effects on different portions of the unit. Improvements in soil and water condition are expected to occur in some specific areas. For example, in Hilton Creek, use would be reduced overall and the impacts to soil and hydrologic resources would likely decrease in extent over time. In contrast, in some areas (e.g. Little Lakes Valley) there should not be a substantial change in commercial pack stock use, and soil and hydrologic resource effects would be unchanged.

Other local areas could degrade slightly relative to the existing condition. In the Mono Creek watershed, use would be moved from areas that currently have concentrated use and local severe stream and meadow condition alteration, and moved to areas that currently have few impacts. This could cause an increase in extent of soil and hydrologic alteration, but a decrease in the severity because locations where use would be shifted to are more suitable for the use.

Water quality should meet nondegradation standards as required in the Water Quality Control Plans, because commercial use would be curtailed to areas where it is suitable, stock camp would be designated and would meet BMPs, and trails contributing to water quality degradation would be prioritized for repair.

Meadows: The management changes proposed in Alternative 2 – Modified are likely to cause changes in the soil and hydrologic processes of only a few local meadows. There could be a

rapid improvement to negative soil and hydrologic effects from commercial pack stock use in some meadows, and an increase in negative soil and hydrologic effects in others. While this alternative closes the most vulnerable and altered meadows to grazing, it allows for an increase in grazing from current levels in many meadows that could have a slight degradation in stream functional condition, increases in sod fragmentation, and possibly a slight trend away from potential meadow hydrologic function.

The number of traveling trips would be reduced in the Mono Creek Corridor from 35 trips to 16 trips, reducing grazing demand by about half. Even with this reduction in demand, the reduction in grazing in the Fourth Recess Analysis Unit would possibly cause grazing to increase in another nearby analysis unit, likely Hopkins Creek or Second Recess.

Predictions for individual meadow condition under all alternatives can be found in the table, *Projected Changes to Meadow Stream Functional Condition and Meadow Hydrologic Function under All Alternatives* in the project record.

Meadow Hydrologic Function: There is little change predicted for meadow hydrologic function under Alternative 2 – Modified. Overall, Alternatives 2 – Modified, 2 and 3 could have the fewest meadows moving toward their potential hydrologic function and the most moving away from it out of any of the alternatives, although the differences should be minor (Figure 4.13, Table 4.75).

Of the 38 meadows analyzed for hydrologic function alteration, 8 currently have moderate to severe hydrologic function alteration. Only two of those meadows appear to have a contribution to hydrologic function alteration from recent commercial pack stock use. Those meadows are Silver Pass Meadow (sip6) and Hopkins/Mono Creek confluence (for8). Under Alternative 2 – Modified, Silver Pass Meadow would be rested from grazing and Hopkins/Mono Creek Confluence meadow would be limited to 19 stock nights. Silver Pass Meadow would likely show little improvement in hydrologic function in the short or medium-term, because the meadow has an incised channel and actively collapsing stream banks that are not likely to begin growing vegetation and aggrading for decades. Hopkins/Mono Creek Confluence could show some improvement in stream functional condition and decrease in sod fragmentation with grazing limitations, and is the only impacted meadow predicted to have improved hydrologic function.

One meadow (Second recess) without current hydrologic function alteration would be expected to move away from its potential. It has 278 stock nights proposed and 23 is the highest use reported. The increased allowable use is limited to the carrying capacity assumed for the meadow, and not likely to have a major negative impact to hydrologic function. However, there could be slightly increased compaction, bare sod, sod fragmentation, and stream bank trampling. All of these could contribute to slight downward trends in hydrologic function.

PFC: As with hydrologic function alteration, stream functional condition (PFC) is likely to have the greatest number move away from their potential and the lowest number move toward their potential under Alternatives 2 – Modified, 2 and 3 (Figure 4.14, Table 4.76). The difference would likely be minor, however.

Of all 22 meadow streams analyzed, about 68 percent are expected to remain with their current condition, about 18 percent are expected to trend toward proper stream functional condition, and 4 percent are expected to move away from their potential.

Of the five meadow stream segments rated functional at-risk with a downward trend, two are expected to have no change and three are expected to move closer to their potential.

The one meadow rated functional at-risk with a non-apparent trend (Pocket Meadow in the Silver Pass Analysis Unit) is expected to remain in its current condition under all alternatives, because the incised stream banks and raw point bars do not appear to have substantial revegetation and would likely continue to have slow revegetation.

The two meadows that were rated functional at-risk with an upward trend (Middle Graveyard Meadow and Mono/Hopkins Meadow) could either remain in their current upward trend, or have slight changes in either direction. Mono/Hopkins Meadow (for8) could be grazed under Alternative 2 – Modified, but at the relatively low level of 19 stock nights. The stream banks in both of these meadows are already trampled and lack vegetation in some areas, making them susceptible to further trampling and unable to withstand high flows. These trampled stream banks are critical areas that should not receive any trampling under this alternative, but if stock cannot be managed to avoid stream banks, stream functional condition could move away from potential. Middle Graveyard Meadow would not be grazed under this alternative, but there should only be a minor improvement in stream functional condition without grazing, because the stream is already deeply incised.

Soil Effects: Soil compaction will likely remain about the same overall, with some meadows having the potential for increased compaction and some with the potential for reduced compaction. Eight meadows in this geographic unit currently have moderate to severe compaction. Five of those have some grazing allocated to them under Alternative 2 – Modified. Four of them have enough grazing allocated to them that compaction could continue its current severity and extent, although only four will likely receive all of their allocated grazing regularly. Of the meadows that currently do not have any compaction observed, four or five could have enough grazing to increase compaction locally where the pack stock congregate. However, only one or two of these meadows will likely receive anywhere near their full allotted grazing, mainly near the Mono Creek corridor in Hopkins Creek and in the Second Recess analysis units.

One meadow, Turk Meadow in the Hilton Analysis Unit, is currently not grazed but has moderate compaction and slight hydrologic function alteration. The meadow covers 57 acres, and even if most of the 243 stock nights allocated are used, compaction and hydrologic function alteration should only increase in local areas where stock congregate, if the stock is managed to use different portions of the meadow each year or throughout each season.

Trails: Trail contribution to resource effects should be slightly reduced under this alternative, but only if trail repairs are completed. There is a high percentage of system and user trails in this geographic unit known to be causing soil erosion, diversion of water, and sedimentation into surface water, especially within the Analysis Units along Mono Creek. Because many of these trails are high use trails, they are high priorities for repair. Six of the fourteen system trails with moderate to severe resource ratings would be designated not suitable for commercial stock, one would be reopened after repair. The others would likely need repair more often to prevent future erosion because pack stock are heavier and are more likely to displace trail structures and chisel soil along trails.

Commercial pack stock will be prohibited from using many of the user trails in the Pioneer Basin, which will eventually decrease soil erosion, especially when the trails are repaired.

Campsites: The area of bare and compacted soil due to campsites should be slightly reduced under Alternative 2 – Modified, although not as much as under Alternatives 4 and 5. The reductions should be especially large near Davis Lakes, in the Hilton Creek Analysis Unit where the concentration of sites is currently high. The designation of fewer stock holding sites than currently exists should eventually reduce the area of bare soil once they are covered with litter or actively rehabilitated.

In the Little Lakes Analysis Unit, there would be some reduction in commercial pack stock use at Gem Lakes, which should help reduce lake shore compaction and bare soil creation near the lake and campsites. This could help reduce soil loss and lakeshore morphology alteration through time.

The one major stock holding campsite causing sedimentation into Mono Creek is at the confluence of Hopkins and Mono Creeks. This camp is within 10 feet of a stream, and commercial pack stock use will no longer be allowed at this camp. This should reduce local sedimentation into Mono Creek but would be a negligible contribution to overall sediment reduction in Mono Creek.

Cumulative Impacts

The past, present, and reasonably foreseeable future actions under Alternative 2 – Modified are the same in the Mono Creek/Rock Creek Geographic Unit as they are at the wilderness scale.

The area currently has some local cumulative effects to soil and water resources along trails, in meadows, and at campsites. In some areas, such as along Mono Creek, these effects appear to be attributable to past and recent commercial pack stock use as well as hiker use of trails and campsites. In other areas, such as in the Graveyard Analysis Unit, recent and continuing cattle grazing has compacted meadows, caused channel incision, and altered meadow hydrologic function, with little to no contribution from commercial pack stock users. In the areas such as the Mono Creek Corridor, where commercial pack stock use appears to have contributed to soil and water resource degradation, Alternative 2 – Modified would likely reduce negative cumulative effects. Improvement is likely because Alternative 2 – Modified closes meadows to commercial pack stock use that are unsuitable for grazing, designates stock holding campsites to reduce the number of sites being used, and limits grazing on other meadows that are suitable for grazing. Overall, this alternative should reduce the area of bare soil, improve stream functional condition, and reduce erosion and sedimentation into surface water.

However, even in areas where commercial pack stock management would change, this action would not affect private pack stock users or backpackers. Therefore, it is possible that the number of campsites would remain about the same, although grazing would still be reduced in areas sensitive to grazing impacts.

In areas such as the Graveyard Analysis Unit, where commercial pack stock use does not appear to be contributing to the existing local cumulative soil and water resource effects, Alternative 2 – Modified would likely cause no change.

Because much of the area has high levels of backpacker and/or day hiker use, water quality from human waste will continue at levels the same as today. Although the extent of current water quality effects are unknown, water quality should not degrade, because grazing use is curtailed, stock holding campsites would be designated to meet BMPs, and non-commercial use should remain about the same.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document, *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis* in the project record.

This area appears to have potential cumulative watershed effects only within the Graveyard Analysis Unit, which is in the Edison Reservoir watershed. The Cold Creek portion of the Edison Reservoir Watershed appears to have an increased potential for cumulative watershed effects due to recent and continuous cattle grazing. Under Alternative 2 – Modified, increased commercial pack stock grazing would be permitted in the upper portions of the watershed, in the Middle Graveyard Creek and Upper Cold Creek Complex. It is unlikely that the full allocated grazing would be used in this area, because there has not been more than twenty stock nights of grazing in the entire Cold Creek Watershed in recent years. It is possible that grazing could move to this area from nearby areas closed to grazing. However, even with the full use of allocated stock nights, there should not be an increase in potential for cumulative watershed effects although it could slow or prevent improvement.

Mono Creek/Rock Creek – Alternative 2

Analysis

The Rock Creek and Mono Creek Geographic Unit has variable hydrologic processes, geomorphology, meadow types, and use patterns. Therefore, Alternative 2 will likely have different effects on different portions of the unit. The effects should be very similar to Alternative 2 – Modified, although there could be slightly improved soil and water resource conditions compared to Alternative 2. Improvements in soil and water condition relative to Alternative 1 are expected to occur in some specific areas.

The similar effects expected under Alternatives 2 and 2 – Modified are due to the similar management proposed. Both alternatives have destination quotas, limits on traveling trips through Mono Creek, they limit grazing only to suitable meadows with almost the same meadows open to grazing, and they allow stock camps only at designated sites that would meet BMPs. The differences are that Alternative 2 has fewer destinations and stock camps, and therefore use would be concentrated to a smaller area.

Meadows: The management changes proposed in Alternative 2 are almost the same as under Alternative 2 – Modified. Three meadows, Middle Graveyard Meadow (gra2), Silver Pass Lake Meadow (sip7) and Upper Graveyard Meadow (gra11) would be open to grazing under Alternative 2, but were rested or closed under Alternative 2 – Modified. This could lead to greater negative impacts in these two meadows, although the differences would likely be slight

Predictions for individual meadow condition under all alternatives can be found in the table, *Projected Changes to Meadow Stream Functional Condition and Meadow Hydrologic Function under All Alternatives* (available in the project record).

Meadow Hydrologic Function: There is little change predicted for meadow hydrologic function under Alternative 2. Overall, meadow hydrologic function should have the same changes as predicted under Alternative 2 – Modified in all but two meadows. (Figure 4.13, Table 4.75).

The one meadows where meadow hydrologic function is expected to be different than as described under Alternative 2 – Modified is Middle Graveyard Meadow. Under Alternative 2, the meadow could receive up to 41 stock nights. With that grazing, there could be slightly increased compaction, bare sod, sod fragmentation, and stream bank trampling. All of these could contribute to slight downward trends in hydrologic function. Under Alternative 2 – Modified, the meadow would be rested and it was expected that the rest could allow a slight upward trend in meadow hydrologic function.

The other two meadows with different management, Silver Pass Lake Meadow (sip7) and Upper Graveyard Meadow (gra11), should not have differences in hydrologic function due to this management. Upper Graveyard Meadow should remain in the same condition whether it is grazed or not, due to the severe stream incision and headcuts that could continue for decades. Silver Pass Lake Meadow is large and resilient to stock impacts due to its lack of wet areas and well-armored stream channels.

Stream Functional Condition (PFC): As with hydrologic function alteration, stream functional condition (PFC) is likely to be very similar as predicted under Alternative 2 – Modified (Figure 4.14, Table 4.76).

Under Alternative 2, two more meadow streams would be expected to have a trend away from potential that were expected to remain in the same condition under Alternative 2 – Modified. Those meadows are Upper Graveyard Meadow (gra11) and Silver Pass Lake Meadow (sip7).

Soil Effects: Soil compaction will likely be about the same as under Alternative 2 – Modified, because management proposed would be the same in all but three meadows. None of those three meadows currently have compaction, and neither alternative should increase compaction because stock night densities are low enough (less than 12 stock nights per acre) to prevent more than local compaction at sites of concentration.

Trails: Trail contribution to resource effects should be slightly reduced under this alternative, but only if trail repairs are completed. There is a high percentage of system and user trails in this geographic unit known to be causing soil erosion, diversion of water, and sedimentation into surface water, especially within the analysis units along Mono Creek. Because many of these trails are high use trails, they are high priorities for repair. However, only two of the 14 system trails with moderate to severe resource ratings would be designated not suitable for commercial stock. The others would likely need repair more often to prevent future erosion because pack stock are heavier and are more likely to displace trail structures and chisel soil along trails.

Commercial pack stock will be prohibited from using many of the user trails in the Pioneer Basin, which will eventually decrease soil erosion, especially when the trails are repaired.

Campsites: The area of bare and compacted soil due to campsites should be slightly reduced under Alternative 2, slightly more than under Alternative 2 – Modified. The reductions should be especially large near Davis Lakes, in the Hilton Creek analysis unit, where the concentration of sites is currently high. The designation of fewer stock holding sites than currently exists should eventually reduce the area of bare soil once they are covered with litter or actively rehabilitated.

The one major stock holding campsite causing sedimentation into Mono Creek is at the confluence of Hopkins and Mono Creeks. This camp is within 10 feet of a stream, and commercial pack stock use will no longer be allowed at this camp. This should reduce local

sedimentation into Mono Creek and be a negligible contribution to overall sediment reduction in Mono Creek.

Cumulative Impacts

The past, present, and reasonably foreseeable future actions are the same in the Mono Creek/Rock Creek Geographic Unit as they are at the wilderness scale.

The area currently has some local cumulative effects to soil and water resources along trails, in meadows, and at campsites. In some areas, such as along Mono Creek, these effects appear to be attributable to past and recent commercial pack stock use as well as hiker use of trails and campsites. In other areas, such as in the Graveyard Analysis Unit, recent and continuing cattle grazing has compacted meadows, caused channel incision, and altered meadow hydrologic function, with little to no contribution from commercial pack stock users. In the areas such as the Mono Creek Corridor, where commercial pack stock use appears to have contributed to soil and water resource degradation, Alternative 2 would likely reduce negative cumulative effects. Improvement is likely because Alternative 2 closes meadows to commercial pack stock use that are unsuitable for grazing, designates stock holding campsites to reduce the number of sites being used, and limits grazing on other meadows that are suitable for grazing. Overall, this alternative should reduce the area of bare soil, improve stream functional condition, and reduce erosion and sedimentation into surface water.

However, even in areas where commercial pack stock management would change, this action would not affect private pack stock users or backpackers. Therefore, it is possible that the number of campsites would remain about the same, although grazing would still be reduced in areas sensitive to grazing impacts.

In areas such as the Graveyard Analysis Unit, where commercial pack stock use does not appear to be contributing to the existing local cumulative soil and water resource effects, Alternative 2 would likely cause no change.

Because much of the area has high levels of backpacker and/or day hiker use, water quality from human waste will continue at levels the same as today. Although the extent of current water quality effects are unknown, water quality should not degrade, because grazing use is curtailed, stock holding campsites would be designated to meet BMPs, and non-commercial use should remain about the same.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document, *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis* in the project record.

This area appears to have potential cumulative watershed effects only within the Graveyard Analysis Unit, which is in the Edison Reservoir watershed. The Cold Creek portion of the Edison Reservoir Watershed appears to have an increased potential for cumulative watershed effects due to recent and continuous cattle grazing. Under Alternative 2, increased commercial pack stock grazing would be permitted in the upper portions of the watershed, in the Middle Graveyard Creek and Upper Cold Creek Complex. It is unlikely that the full allocated grazing would be used in this area, because there has not been more than twenty stock nights of grazing in the entire Cold Creek Watershed in recent years. It is possible that grazing could move to this area

from nearby areas closed to grazing. However, even with the full use of allocated stock nights, there should not be an increase in potential for cumulative watershed effects although it could slow or prevent improvement.

Mono Creek/Rock Creek – Alternative 3

Analysis

In the Mono and Rock Creek Geographic Unit, there is potential for improvement in soil and hydrologic resources under Alternative 3. The effects should be similar to Alternative 2 – Modified in most of the Geographic Unit other than the Silver Pass and Graveyard Analysis Units. In those analysis units, there could be an increase in commercial pack stock grazing that could slightly worsen meadow or stream hydrologic function condition.

Uses other than grazing, including campsites and trails, will likely have the same effects on soil and hydrologic resources as under Alternative 2 – Modified. Campsite and trails management would be almost the same, and therefore their effects will be discussed only briefly under Alternative 3.

Meadows: Conditions in meadows could be slightly worse under Alternative 3 than under Alternative 2 – Modified, although the effects should be the same in most locations. The impacts should be less widespread and severe than under Alternative 1 (Figures 4.13 and 4.14, Tables 4.75 and 4.76). Under Alternative 2 – Modified, a range of effects was predicted in the Silver Pass and Graveyard Analysis Units. Worsening conditions would only occur in a few locations if grazing use increased to the proposed allowable use levels. Under Alternative 2 – Modified, the limitations on traveling trips would likely prevent any substantial local increases in grazing. Under Alternative 3, there are no specific limits on the number of traveling trips that could occur. The number of traveling trips is only limited by the number of stock at each pack station and trailhead quotas. The same nearby grazing areas would be closed to use, and therefore there is a good chance that some or all of the five meadows with increased grazing could have slight downward trends in stream and/or meadow hydrologic function.

The effects to meadows would be very similar as Alternative 2 – Modified, because the management proposed for meadows would be almost the same. The only difference is that one meadow, Middle Graveyard Meadow, would be expected to have a minor trend away from natural hydrologic function under Alternative 3, where it was expected to have a minor trend toward natural hydrologic function under Alternative 2 – Modified. The difference is that under Alternative 3, the meadow could be grazed to 41 stock nights.

Trails: The effects to soil and water resources from trails are likely to be the same as under Alternative 2 – Modified. There are only about two more trail miles open to stock under Alternative 3 than under Alternative 2 – Modified. There could be more pack stock traffic on those trails, causing slightly more trail erosion and soil loss. The effect should be negligible, as the difference is only about 2 percent of the total trail miles in the Mono Creek/Rock Creek Geographic Unit.

Campsites: Alternative 3 should have the same campsite effects as Alternative 2 in the Mono Creek/Rock Creek Geographic Unit. That is because under both alternatives, the same 17 campsites would be designated.

Cumulative Impacts

The cumulative impacts in the Mono Creek Rock Creek Geographic Unit should be similar to Alternative 2, and there should not be detrimental cumulative effects. Alternative 3 should reduce negative cumulative effects to soil and water resources relative to Alternative 1. The difference to soil and water effects between Alternatives 2 – Modified and 3 is that under Alternative 3, more traveling trips would be allowed, and therefore more grazing might occur. The grazing effects would likely be the same as predicted under Alternative 2 – Modified, but negative effects would be more likely to occur, while under Alternative 2, it would be expected that the predicted negative effects would be less likely to occur.

As under all alternatives, hiker and backpacker use would remain about the same, contributing to slight water quality degradation through human waste disposal, trail use, use of soaps, waste water disposal, and trail use.

Mono Creek/Rock Creek – Alternative 4

Analysis

There could be fewer negative effects to soil and water resources under Alternative 4 than under Alternatives 1 through 3, especially in the Hilton and Graveyard Analysis Units. In other areas, such as the Little Lakes Valley Analysis Unit, the effects should be the same as under Alternatives 1 through 3. As under all alternatives other than Alternative 5, there should be only an overall slight improvement for soil and water resources. Grazing would be allowed in fewer meadows and access to some destinations that are used by commercial pack stock currently would no longer be allowed. While these actions would occur across the wilderness, the percent of areas with reduced use in this Geographic Unit is larger than in others. The reduced use should have the effect of decreasing the number of meadows with the potential for hydrologic function alteration, decrease the number of streams that are not properly functioning, and decrease the amount of bare soil because of the reduced number of stock holding campsites. The improvements should be slight in most locations.

Meadows/wetlands: Meadow condition should improve from current conditions in most areas with altered meadow condition. There should also be fewer negative soil and hydrologic effects to meadows than under Alternatives 2 – Modified, 2 and 3. However, there should be a greater extent of negative effects than under Alternative 5.

Meadow Hydrologic Function: Under Alternative 4, there should be fewer meadows that trend away from their potential hydrologic function and more meadows that trend toward their hydrologic function than under Alternatives 1 through 3 (Figure 4.13, Table 4.75). As under all alternatives, most meadows should remain with their current hydrologic function.

Out of the 38 meadows analyzed for hydrologic function alteration, 33 are expected to remain in their current condition. Four are expected to trend toward their potential and none should trend away from their potential. The four meadows that are expected to trend toward their potential are Hopkins/Mono Creek Confluence Meadow, (for8), Hilton Creek/Turk Meadow (hil8), Upper Graveyard Meadow (gra11), and Middle Graveyard Meadow (gra2). Grazing will be eliminated or substantially reduced from current grazing on these meadows under Alternative 4. Hilton Creek/Turk Meadow, Middle Graveyard and Upper Graveyard Meadow have not been grazed recently by commercial pack stock. They all appear to have hydrologic function alteration due to

past grazing, from commercial pack stock at Hilton Creek/Turk Meadow and cattle at Middle and Upper Graveyard Meadow. The meadows are predicted to have improved hydrologic function because they would likely continue to recover from past grazing. Soil should slowly decompact, vegetation should increase vigor, and stream banks should slowly have vegetation begin to cover the banks. Upper Graveyard Meadow has severe hydrologic function alteration currently, but the stream banks appear to be revegetating and the meadow appears to have retained much of its water source from springs. The meadow is currently compacted, but as it decompacts, the spring water may allow the meadow to recover some of its hydrologic function even though the stream is unlikely to aggrade. The recovery, if it occurs, should be minor within 20 years. Hilton Creek/Turk Meadow has only minor hydrologic function, which should be able to show recovery within 20 years without grazing.

Hopkins/Mono Creek Confluence Meadow would likely show some recovery under Alternative 4 because grazing would be reduced to only 13 to 20 stock-nights per year. The meadow was reported to have 134 stock nights in 2003 and 118 in 2002. Also, the trail to the campsite near the meadow runs through the meadow and is incised and contributing to meadow hydrologic function alteration. Under Alternative 4, there would be no campsite at the meadow. The removal of the campsite, as well as reduction of grazing nights to only 13 stock nights, should allow this moderate productivity meadow to revegetate and decompact, thus reducing hydrologic function alteration.

The one meadow that is likely to have hydrologic function trending away from potential is Second Recess Meadows (sec14), as described under Alternative 2. This would only occur if the meadow were used to near its full proposed allocation of 278 stock nights.

Stream Functional Condition (PFC): Alternative 4 would likely have fewer stream channels move away from PFC and more move toward PFC than under Alternative 2 – Modified, although the difference would be minor and not likely to be noticeable on a Geographic Unit scale (Figure 4.14, Table 4.76). Overall, it is predicted that out of the 22 streams analyzed for PFC, 14 would remain in their current condition. Six might have a trend toward their potential, while two could have a trend away from their potential.

The two meadows that could trend away from their stream functional condition potential would have many more stock nights allocated than have been recently used. Both meadows, Silver Pass Lake Meadow and Second Recess Meadow, could see drastically increased grazing because nearby grazing would be curtailed and the packers might begin grazing new meadows. The stock night allocations correspond with carrying capacity, and therefore the effects should be minor. Volcanic Knob Meadow is not likely to be grazed to anywhere near its full capacity because there is very little commercial pack stock use reported in the area, and it is assumed that it is not a destination that packers are likely to move to. If they do move to Volcanic Knob Meadow, the effects would likely be no more than a slight, local move away from potential stream functional condition that should not move the stream to a functional at-risk condition.

The six meadows that could trend toward their potential would be the same meadows described in the hydrologic function section above, plus two more; Silver Pass Meadow (sip6) and Middle Graveyard Meadow (gra2). Neither meadow would be grazed under Alternative 4. These meadows both have severe hydrologic function alteration currently that does not appear to be able to show any recovery within 20 years due to severe stream incision that has altered most of the meadows' water source. However, the stream condition is more easily recoverable than

hydrologic function alteration, and there may be enough productivity in these meadows to allow vegetation to grow on stream banks and point bars. Vegetation growth could help streams withstand high flows without eroding and therefore could improve the streams' functional condition.

Meadow Soils: Soil compaction will likely have little change overall, although a few meadows may have potential for increased compaction and others have potential for reduced compaction. Eight meadows currently have moderate to severe compaction. Five of those have some grazing allocated to them under Alternative 4. Four of them have enough grazing allocated to them that compaction could continue its current severity and extent, although only three likely will receive their full proposed grazing level. Of the meadows that currently do not have any observed compaction, four or five could have enough grazing to locally increase compaction where the pack stock congregate. They would be the same four or five meadows as under Alternative 2 – Modified.

Trails: The Mono Creek/Rock Creek Geographic Unit is one of the units likely to have a slight reduction in soil and water resource impacts from trails under Alternative 4, although the reduction would likely be slight and local. Under Alternative 4, 12 system trails (out of 50 in the Geographic Unit) would be closed to commercial pack stock that would be open under Alternatives 1 through 3. Closure of the trails to commercial pack stock would likely not reduce the trail impacts to soil and water resources, but would help prevent further trail incision, soil loss, and stream crossing trampling and stream bank erosion. It is a foreseeable future action under all alternatives that the trails with moderate to severe resource impacts would be repaired within 20 years. Without pack stock use on these trails, they would be more likely to remain stable without soil erosion, incision or widening.

Campsites: The area of bare and compacted soils due to campsites should be slightly reduced under Alternative 4, likely more than under Alternatives 1 through 3, but less than under Alternative 5. All stock holding and spot/dunnage sites would be designated, limiting expansion of sites and therefore increases in bare and compacted soil. While Alternative 2 would have about 17 stock holding sites, Alternative 4 would have 12. Most sites in the geographic unit are used by backpackers and not commercial pack stock clients. Therefore, the effects of reduction in pack stock holding sites and spot/dunnage campsites would likely be small on a geographic unit scale. Locally, however, where the stock holding sites were no longer used, rehabilitation could reduce the area of bare soil, compacted soil and reduce erosion into surface water. The improvement should be largest along the Mono Creek corridor in the Fourth Recess and Second Recess Analysis Units, although unlikely to affect overall water quality in Mono Creek.

Cumulative Impacts

The cumulative impacts under Alternative 4 would likely be similar to Alternative – Modified, 2 and 3. Five more meadows would be closed to commercial pack stock grazing than under Alternative 3 and six more meadows would be closed than under Alternative 4. However, these meadow closures would not likely have effects on overall cumulative impacts. The meadows closed are mainly those that do not currently have soil or water resource impacts, and therefore their closure would not reduce cumulative impacts beyond Alternatives 2 – Modified, 2 and 3. This alternative would slightly reduce cumulative impacts relative to Alternative 1.

Cumulative Watershed Effects

The cumulative watershed effects (CWEs) observed in the Graveyard Analysis Unit (Edison Watershed) would likely remain about the same under Alternative 4. The effects appear to be due mainly to recent cattle grazing, and restrictions on commercial pack stock use would not likely alter conditions.

Mono Creek/Rock Creek – Alternative 5

Analysis

The Mono Creek/Rock Creek Geographic Unit is one of the areas that would likely have the greatest reduction in negative impacts to soil and water resources under Alternative 5. This area receives a high level of commercial pack stock use, and therefore removal of pack stock is likely to make a noticeable difference to resource effects.

Meadows: Alternative 5 is likely to allow the greatest number of meadows to have improved soil and hydrologic conditions of any alternative, and the only one where no meadows could have increased negative soil or hydrologic impacts related to commercial pack stock use. The predicted difference between the alternatives is minor on a geographic unit scale, but should be substantial in popular destinations and grazing areas.

Meadow Hydrologic Function: As with all other alternatives, meadow hydrologic function is unlikely to change in most meadows. However, under Alternative 5, the greatest percentage of meadows should have improved hydrologic function condition and, unlike all other alternatives, none should have a trend away from potential hydrologic function (Figure 4.13, Table 4.75).

Of the 38 meadows analyzed for hydrologic function in the field, 85 percent would be expected to remain in their current condition and the other 15 percent would be expected to have an improved trend. Six of the thirteen meadows that are currently known to have hydrologic function alteration would likely have an improved trend, because their altered hydrologic function is at least partially attributable to commercial pack stock use. See table, *Projected Changes to Meadow Stream Functional Condition and Meadow Hydrologic Function under All Alternatives* in the project record for individual meadow comparisons. The other seven meadows would not likely have improvement in hydrologic function alteration. These meadows would likely remain in their current condition for one of various reasons. Some of the meadows, such as Graveyard Meadow (Graveyard Analysis Unit) and Pocket Meadow (Silver Peak Analysis Unit), have impacts that are not related to recent commercial pack stock grazing. The hydrologic function is severely altered in those meadows and is unlikely to change with removal of light pack stock grazing. Other meadows, such as Silver Pass Meadow (Silver Peak Analysis Unit), appear to have hydrologic function alteration due at least partially to recent commercial pack stock use. The hydrologic function is severely altered in the meadow, and is unlikely to show recovery over decades or centuries, if ever, until the stream can aggrade and the water table can begin to return to its previous height nearer the surface of the meadow.

Meadow Stream Function Condition (PFC): Under Alternative 5, there would likely be fewer streams made to have worse functional condition than under any other alternative (Figure 4.14, Table 4.76). The difference should not be major, however. Of 22 meadow streams analyzed, about 75 percent would be expected to remain in their current condition and about 25 percent would be expected to have improved condition. In comparison, Alternative 1, with the

least improvement expected in stream condition, could also have about 75 percent of streams with no change in condition, but about 13 percent could have degraded condition while the other 13 percent could have improved condition.

No meadows would be expected to have a trend away from potential under Alternative 5 because none would be grazed and none are known to have other factors that could cause a downward trend. Three of the eight streams that were found to be currently functional at-risk would be likely to remain in their current condition. These three streams have impacts that do not appear to be related to recent pack stock grazing. Therefore, removal of the light or non-existent pack stock grazing that was occurring in the meadows is unlikely to change their stream functional condition.

Trails: Alternative 5 is most likely to prevent future soil and water resource impacts from trails, but is unlikely to reduce current impacts. Some trails in this geographic unit, such as those in the Hilton Creek Watershed, in the Mono Creek Corridor and in Third Recess and Hilton Creeks, receive heavy pack stock use. Removal of pack stock use from those trails may prevent increased erosion and trail incision because less soil is thought to be removed by hikers than pack stock. However, these trails are not likely to aggrade or narrow without maintenance or repair. It is a foreseeable future action that the trails with moderate to severe resource impacts would be repaired, and removal of pack stock could allow those repairs to last longer without the trail beginning to erode and incise again.

Campsites: The difference between campsite effects to soil and water resources would likely be small between alternatives. However, within the Mono Creek Corridor and within the Hilton Creek Analysis Unit, where there is a high density of campsites, the reduction in use at stock holding sites and spot/dunnage sites could allow for some reduction in bare and compacted soil and reduction in sedimentation into surface water. The reduction in campsite area would likely be minor because backpackers would probably continue to use the same number of campsites as they are currently and they use the majority of the campsites in the Mono Creek/Rock Creek area.

Cumulative Impacts

Cumulative impacts to soil and water resources are expected to be reduced under Alternative 5. The major reduction in number of meadows grazed, trails used by any pack stock, and campsites used by stock related parties suggests that impacts should be reduced from current levels. The reduction (or improvement) in cumulative impacts under Alternative 5 would be more than any other Alternative. In the Mono Creek/Rock Creek Geographic Unit, many of the negative effects to soil and water resources, such as trail incision, meadow hydrologic function alteration, and stream hydrologic condition alteration (PFC) can be at least partially attributable to commercial pack stock use. Therefore, removal of that use could cause improved conditions. However, continuation of private pack stock use and hiker use could sustain most of the local water quality and geomorphology effects from campsites and trails.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see the document, *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis* in the project record.

This area appears to have potential cumulative watershed effects only within the Graveyard Analysis Unit, which is in the Edison Reservoir watershed. Alternative 5 should cause no changes to CWE potential. The effects would be similar to the current condition, because cattle grazing would continue, there would continue to be little pack stock grazing, and campsites and trails would likely continue to be used by backpackers. However, under this alternative, there would be no commercial pack stock in the area. Therefore, the meadows in the upper Cold Creek sub-watershed would not be grazed by pack stock, and would likely continue a slow recovery as cattle did not begin to graze the area again. There might be an eventual slight reduction in campsite area and trail length, because there could be less overall use at Graveyard Lakes. However, backpackers would still visit Graveyard Lakes and would likely continue use of most existing campsites.

Bishop/Humphreys – Alternative 1

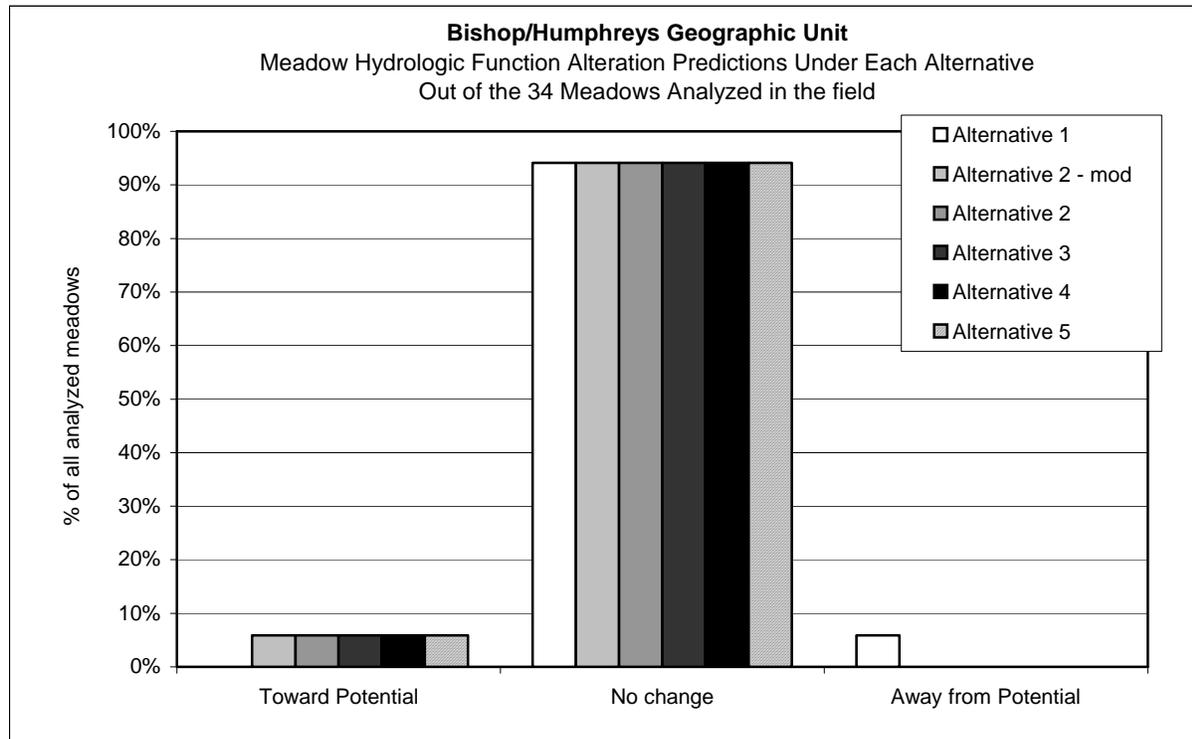
Analysis

There should be few changes to soil and hydrologic condition under Alternative 1, because there should be few changes in commercial pack stock use patterns in the Bishop/Humphreys area. Unlike most other geographic units, trails and campsites in the geographic unit are the largest known contributor to soil and water resource impacts, and are likely to continue to be so in the future. There is little grazing in this geographic unit, mostly concentrated in French Canyon, and there are only a few grazed meadows with soil and water resource impacts. Unless use patterns change, the area should remain with few soil and water resource impacts.

Meadows: Most meadows in the Bishop Humphreys Geographic Unit generally have few impacts to soil and water resources. The only meadow that is currently known to have more than slight hydrologic function alteration is Hutchinson Meadow, which has severe compaction over a small area and stream bank trampling. A few other meadows also have stream functional condition alteration. Depending on use patterns, meadows within French Canyon could see some increased soil and water resource degradation, but overall, the meadows in this geographic unit should remain in relatively good condition overall.

Meadow Hydrologic Function: There are few meadows with hydrologic function alteration in the Bishop/Humphreys area, and only one is expected to have any change under Alternative 1. Therefore, meadow hydrologic function should remain good in almost all of this geographic unit. There are also few expected differences between alternatives, as shown in Figure 4.15.

Figure 4.15 A comparison of the effects of alternatives on meadow hydrologic function condition in the Bishop Humphreys Geographic Unit. The y-axis represents the percent of the 34 meadows that are in each trend category.



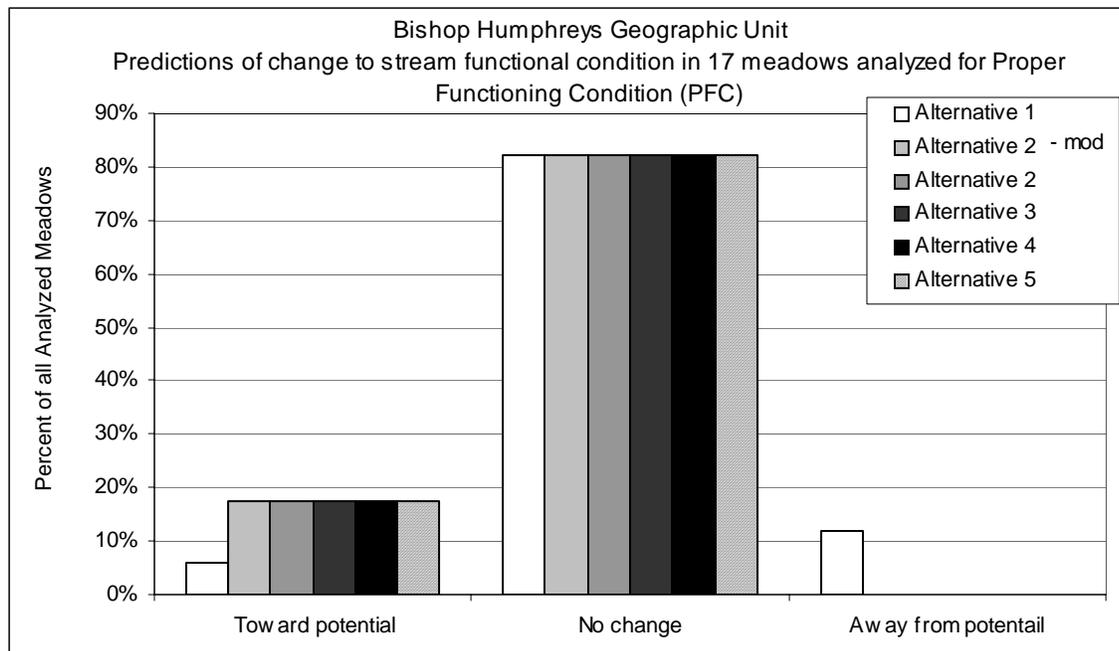
Out of 34 meadows analyzed for hydrologic function, only two are expected to have any change under Alternative 1 (Table 4.77). Those meadows are the wet meadow adjacent to Waterfall Camp and the meadow at the confluence of Merriam Creek and French Canyon. Both of these meadows are very wet. The wet meadow Adjacent to Waterfall Camp is likely a fen, and does not currently receive grazing. Stock traveling through the fen to get from Waterfall Camp to graze on the other side of the fen have caused deep hoof punches that appear to have begun small rills. If the fen continues to be trampled, more rills may develop and they could begin to incise and grow larger during overland flow. Fens can be lost over time if they are exposed to oxygen through sod fragmentation (Cooper et al., 2004a) and the current use of the area could be irreparably harming the fen. If stock is kept out of the fen, it would likely recovery very quickly, as the water table and spring flows appear to be intact. The meadow at the confluence of Merriam Creek and French Canyon had reported grazing only in 2003, and previously had few impacts. The meadow has wet soils year-round and most of the meadow never reaches range readiness. If the meadow continues to be grazed as heavily as it was in 2003, it is likely that there would be increased sod fragmentation, bare soil, and soil displacement, possibly leading to hummocking or soil loss from the meadow.

Table 4.77 Hydrologic Function Alteration predictions for all meadows visited in the Bishop Humphreys Geographic Unit, under all alternatives. The number of meadows predicted to have each trend was estimated by the IDT, using the meadow's characteristics such as soil moisture, stream bank stability, and meadow productivity.

Current Meadow Hydrologic Function Condition (# of meadows with that condition)	Trends By Number of Meadows					
	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No hydro alteration (30)						
Toward Potential	0	0	0	0	0	0
No change	30	30	30	30	30	30
Away from Potential	0	0	0	0	0	0
Slight hydro alteration (3)						
Toward Potential	0	1	1	1	1	1
No change	2	2	2	2	2	2
Away from Potential	1	0	0	0	0	0
Mod hydro alteration (1)						
Toward Potential	0	1	1	1	1	1
No change	1	0	0	0	0	0
Away from Potential	0	0	0	0	0	0
Severe hydro alteration (0)						
Toward Potential	0	0	0	0	0	0
No change	0	0	0	0	0	0
Away from Potential	0	0	0	0	0	0
All Meadows Analyzed (34)						
Toward Potential	0	2	2	2	2	2
No change	32	32	32	32	32	32
Away from Potential	2	0	0	0	0	0

Meadow Stream Functional Condition (PFC): Few meadow streams in the Bishop/Humphreys Geographic Unit are known to have hydrologic function alteration, and few are likely to have changes in condition under Alternative 1. Fewer streams should show improved condition under Alternative 1 than any other alternative, but the difference would likely be minor (Figure 4.16).

Figure 4.16 A comparison of predicted changes to stream functional condition (PFC) among alternatives for the streams where PFC was analyzed in the Bishop/Humphreys Geographic Unit. A total of 17 streams were analyzed for PFC, all within meadows or other grazed areas. This chart includes all streams analyzed, whether they are at proper functioning condition or whether they are currently functional at-risk.



Of the 17 streams analyzed for stream functional condition, four are known to be functional at-risk. One of those stream segments is expected to have an improved trend, while one is expected to have a worsened condition (Table 4.78).

Table 4.78 Summary of all meadow stream functional condition predictions for the Bishop Humphreys Geographic Unit under all alternatives. Stream functional condition was determined using the Proper Functioning Condition (PFC) protocol. The streams are separated by those that are currently properly functioning, those that are functional at-risk with an upward trend, those that are functional at-risk with a non-apparent trend, and those that are functional at-risk with a downward trend. The predictions are based on assumptions that grazing will continue about as it has in the past in most areas, except in meadows that are closed to grazing and those nearby meadows where grazing might move to.

Current stream functional condition rating (# with each rating)	Number of Meadows expected to have each trend					
	Alternative 1	Alternative 2 –modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Proper Functioning Condition (13)						
Toward potential	0	0	0	0	0	0
No change	12	13	13	13	13	13
Away from potential	1	0	0	0	0	0
Functional at-risk upward trend (0)						
Toward potential	0	0	0	0	0	0
No change	0	0	0	0	0	0

Current stream functional condition rating (# with each rating)	Number of Meadows expected to have each trend					
	Alternative 1	Alternative 2 –modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Away from potential	0	0	0	0	0	0
Functional at-risk non apparent trend (3)						
Toward potential	1	2	2	2	2	2
No change	2	1	1	1	1	1
Away from potential	0	0	0	0	0	0
Functional at-risk downward (1)						
Toward potential	0	1	1	1	1	1
No change	0	0	0	0	0	0
Away from potential	1	0	0	0	0	0
Total Bishop Humphreys (17)						
Toward potential	1	3	3	3	3	3
No change	15	14	14	14	14	14
Away from potential	1	0	0	0	0	0

The stream segments expected to move away from its potential condition is in the same meadow that is expected to have a downward trend in hydrologic function, at the French Canyon Merriam Creek Confluence (fre14). The one stream segment expected to have improved condition is at the Upper Pine Lake Inlet. The trail was near the stream and it appears that stock were watering in the area, or just walking around from the nearby stock holding camp. The stream crossing also widened the stream beyond normal at a stream crossing. The stream banks are chiseled and there appears to be minor stream widening. The crossing is scheduled for repair in 2005, to confine the use to a narrower crossing and stabilize the channel. Therefore, it is expected that the stream functional condition would improve as stock are less likely to walk on the stream banks.

Trails: Incised trails are leading to surface water diversion in various areas of this geographic unit, and would likely continue in the same locations under Alternative 1. The main system trail through French Canyon is incised and there are multi-trails in many areas. Although the multi-trail have often been blocked with branches and rocks from further use, the trails still do not have erosion control structures and continue to be a pathway for surface water. The water flowing down the trails appears to be further incising them, or at least not allowing vegetation to grow in and begin to capture sediment. The situation is similar on the trail to Elba and Moon Lakes and on many trails near Golden Trout Lakes where a network of system and non-system trails is contributing sediment into adjacent lakes and streams.

The Gable, Pine Creek, Granite Park, Horton, Humphreys, Lamarck, and North Piute Analysis Units are all only used for pass through on trails and for some spot and dunnage trips. None of these analysis units have widespread hydrologic or soil resource impacts, and none are expected to have a change in condition under Alternative 1. All of these units have some trail incision leading to soil loss and slight water diversion. The trail incision is likely due to a combination of commercial pack stock use, hiker use, and private pack stock use, and would not change under

any alternative because changes only in commercial pack stock management is not likely to affect the trails.

As with other alternatives, there is the potential for increased trail incision and widening with continued pack stock use, but there would likely be little to no recovery without active restoration. Therefore, the trails currently causing water diversion and soil loss will likely continue to do so until they are repaired, regardless of commercial pack stock use.

Campsites: Campsite extent and effects to water quality should remain about the same under Alternative 1, with some reduction in sites near water in the long-term. There are many campsites and associated social trails around Piute Lake in the Piute Analysis Unit and Golden Trout Lakes in the Glacier Analysis Units. The campsites themselves are usually over 100 feet from the lake, but they are causing excessive bare, compacted soil. The Piute Lake area is heavily used by backpackers and stock supported parties, but there is no stock holding at the lake. Therefore, it is unlikely that the density and size of sites would change under any alternative, because the action regards only commercial pack stock use. The campsite at Waterfall Camp in French Canyon is currently not meeting BMPs for campsites, as it is less than 50 feet from water and there is manure and sediment from the site entering ephemeral streams. Ephemeral streams do not flow year-round, but usually only during snowmelt and right after rainfall. Sediment and manure built up during summer can reach the nearby creek when it flows. It is a reasonably foreseeable future action under all alternatives that this site would be contained over time, reducing its potential for water quality degradation. Until containment occurs, there could be continued small volumes of sediment entering intermittent streams.

Cumulative Impacts

Alternative 1 has been analyzed in terms of the effects of past, present and reasonably foreseeable future actions to soil and hydrologic processes. Past, present and reasonably foreseeable future actions in the Bishop Humphreys Geographic Unit are the same as in the general Ansel Adams and John Muir Wildernesses. However, there may have been more concentrated historical sheep grazing because Piute Pass was an entry point for shepherds.

Generally, this geographic unit has few soil or water resource impacts outside of the French Canyon Corridor and Golden Trout Lakes in Piute Canyon. In those areas, some incised trails, and meadows with headcuts and bare soil. Many of these impacts appear to be historical or cumulative effects from a combination of historical sheep grazing, historical and current recreational use, and historical and recent commercial pack stock use. Impacts in most of the meadows appear to be recovering and should continue recovery under Alternative 1. Trail impacts are likely to remain the same as today, causing some water diversion and soil erosion. It is a foreseeable future action that the trails causing the most severe water diversions and dewatering of meadows would be repaired within 20 years. If the trails are repaired, many soil and water resource impacts in this geographic unit would cease.

Bishop/Humphreys – Alternative 2 – Modified

Analysis

The Bishop/Humphreys Geographic Unit is currently has meadow hydrologic function, stream functional condition, and soil condition near potential over most of its area, with some exceptions in heavily used meadow areas and adjacent to trails. Because Alternative 2 –

Modified would not change commercial pack stock use much in this area, it is assumed that there will be few changes in the current hydrologic and soil conditions.

Meadows/wetlands: There are a few meadows within the Bishop/Humphreys area that have some hydrologic function alteration due to trailing or grazing. However, most of the heavily used areas are used mainly for spot/dunnage trips, and grazing occurs regularly in only a few areas. Therefore, the grazing impacts are substantial only in a few locations, and changes in management should change meadow conditions only locally.

Grazing levels reported for the entire French Canyon have been about the same as the proposed grazing, but it is uncertain where the grazing occurred and therefore uncertain whether the proposed grazing will have different effects. If grazing occurs mainly where it has in the past within French Canyon, there should be no change in the generally good condition of meadows in the Canyon. The one exception will be the Merriam Confluence, where 126 stock nights of grazing were reported in 2003. This area would be prohibited for grazing, and therefore the packers would need to disperse their grazing nights in other portions of the canyon. The sod fragmentation and trampling at Merriam Confluence should then decrease.

Meadow Hydrologic Function Alteration: There should be improved hydrologic function in a few meadows in this area, although the vast majority is likely to remain in their current condition (Figure 4.15). The effects should be slightly improved hydrologic function in more meadows than under Alternative 1, but the same as all other alternatives.

Thirty-four meadows in this geographic unit were visited in the field and analyzed for grazing suitability and current condition. Of the 34 analyzed, only four were determined to have any hydrologic function alteration. Two of the meadows with hydrologic function alteration are expected to remain in the same condition under this alternative, because grazing management should not change in those meadows and they are not vulnerable to further impacts (Table 4.77). For individual meadow comparisons, see the table, *Projected Changes to Meadow Stream Functional Condition and Meadow Hydrologic Function under All Alternatives* in the project record.

Two meadows are predicted to have a trend toward hydrologic function potential. These meadows, the meadow adjacent to Waterfall Camp (fre3) and Hutchinson Meadow (gla12), have very different conditions and expected changes. The meadow Adjacent to Waterfall Camp does not currently have grazing, but stock travel through the wet meadow to access grazing. Under Alternative 2 – Modified, this practice would be prohibited, and the packers would be required to prevent use of the area. Because the meadow is wet, the many hoof punches and rills currently in the meadow should revegetated quickly and improve hydrologic function condition. Hutchinson Meadow is regularly grazed currently, with a high concentration of grazing (up to 290 stock nights reported) in an area of the meadow less than 3 acres. Grazing would be reduced to about 70 stock nights, possibly allowing for some reduced sod fragmentation, reduced stream bank trampling, and increased vegetative vigor that could allow hydrologic function to improve.

Meadow Stream Functional Condition: Stream functional condition could change in a few meadows in this Geographic Unit, but should remain about the same overall. The effects should be similar under all action alternatives, though slightly more streams should have improved condition than under Alternative 1 (Figure 4.16).

Seventeen stream segments were analyzed for stream functional condition (PFC) and 13 were found to be properly functioning. None of the properly functioning stream segments are predicted to change from their current condition (Table 4.78).

In the meadow streams with a functional at-risk rating, one is predicted to remain in its current condition and three are expected to move toward their potential. One meadow with a functional at-risk downward trend is likely to improve completely within a few years. The fen next to Waterfall Camp (French Canyon Analysis Unit) would be prohibited to grazing or any trailing. The meadow is a fen, which is very wet, and it is expected that the hoof punches and small headcuts throughout the meadow should grow in with vegetation within a few years, reducing the chance for high flows to cause erosion of the wet meadow. Another meadow expected to have an improved stream condition is at the Upper Pine Lake Inlet (in the Pine Creek Analysis Unit), where trail repair already completed should eventually allow the stream crossing to have fewer hoof punches and increased vegetative growth on stream banks. Hutchinson Meadow (in the Glacier Analysis Unit) would have reduced grazing under Alternative 2 – Modified, likely allowing more vegetation to grow on stream banks and reducing the annual stream bank trampling.

Trails: There will likely be a gradual reduction of trail impacts to water quality and soil loss, as trails are gradually repaired. Some of the extensive user trails around Golden Trout Lake should slowly recover as they are made off-limits to commercial pack stock, although the recovery might not occur without active rehabilitation. If the trails revegetate, their potential to contribute sediment to surface water should be reduced. Along French Canyon, the system trail is multi-trailed and incised along much of its length, possibly diverting surface water from areas directly adjacent to the trail. It is unlikely that the entire extent of the trail will receive the heavy maintenance necessary within the next few decades, and therefore the trail will likely continue its slight alteration of surface water flow. The most severely eroded trail known in this Geographic Unit, the trail to Elba and Moon Lakes, will be a priority for repair. Until then, it will continue to divert stream flow, overland flow, and lower the water table in meadows adjacent to the trail. After it is repaired, stream flow and surface flow will likely recover natural patterns.

Campsites: Under this alternative, the Bishop/Humphreys Geographic Unit should have the same effects from campsite designation and closures as in other Geographic Units and wilderness-wide. There should be a slight reduction in bare area and impermeable soil near water. The site with the greatest potential for reduction in bare soil and erosion is Waterfall Camp. The camp is currently about four acres of bare, dusty soil that is easily eroded and appears to be contributing sediment and manure to nearby intermittent streams. The site will eventually be contained to a smaller size further from surface water, and erosion from the site into creeks should be reduced.

Cumulative Impacts

The past, present and reasonably foreseeable future actions are the same in this geographic unit as in the wilderness-wide area. Some of the areas within the Bishop Humphreys area receive relatively heavy commercial pack stock and other recreational use, more than some other portions of the wilderness.

Alternative 2 – Modified is unlikely to change current cumulative impacts. Those current impacts include some erosion from trails used by commercial pack stock and other recreational

users, particularly in French Canyon and near Golden Trout Lakes. Although Alternative 2 – Modified will cap use to these areas, it would not likely reduce the use enough to reduce the cumulative effects. These effects are local and do not cause cumulative watershed effects.

Bishop/Humphreys – Alternative 2

Analysis

The effects under Alternative 2 should be the same as described under Alternative 2 – Modified in the Bishop/Humphreys Geographic Unit. This geographic unit has very little difference in proposed management under the two alternatives, and the effects should therefore be the same. Two more system trails would be open to commercial pack stock under Alternative 2, but the difference to soil and water resources would not be noticeable. The trails would continue to be used by others users and neither trail currently has more than slight erosion or diversion of surface water, so the use of these trails by commercial pack stock should not alter their current condition.

Meadows/wetlands: The effects to meadow soil and hydrologic function should be the same as under Alternative 2 – Modified. Management would be the same in all meadows, and about the same number of stock would be expected to be held overnight under both alternatives due to similar destination quotas and traveling trip quotas.

Trails: There will likely be a gradual reduction of trail impacts to water quality and soil loss, as trails are gradually repaired, the same as under Alternative 2 – Modified. Two trails, the trail to Ruwau Lake and the trail to Lamarck Col, would be closed to commercial pack stock use under Alternative 2 – Modified, but open under this alternative. Lamarck Col trail gets little pack stock use currently, and the continuation of that use should not affect the trail condition related to soil and water resources. The Ruwau Lake trail closure should not affect the trail condition, since it is used by many hikers. However, the closure would prevent access to Ruwau Lake by commercial pack stock, which could help reduce the extent of camps at the lake and possibly reduce the number of people camping at the lake. This could help reduce lakeshore compaction.

Campsites: Under this alternative, the Bishop/Humphreys Geographic Unit should have the same effects from campsite designation and closures as in other geographic units and wilderness-wide. There should be a slight reduction in bare area and impermeable soil near water. The site with the greatest potential for reduction in bare soil and erosion is Waterfall Camp. The camp is currently about four acres of bare, dusty soil that is easily eroded and appears to be contributing sediment and manure to nearby intermittent streams. The site will eventually be contained to a smaller size further from surface water, and erosion from the site into creeks should be reduced.

Cumulative Impacts

The past, present and reasonably foreseeable future actions are the same in this geographic unit as in the wilderness-wide area. Some of the areas within the Bishop Humphreys area receive relatively heavy commercial pack stock and other recreational use, more than some other portions of the wilderness.

Alternative 2 is unlikely to change current cumulative impacts. Those current impacts include some erosion from trails used by commercial pack stock and other recreational users, particularly in French Canyon and near Golden Trout Lakes. Although Alternative 2 will cap use to these

areas, it would not likely reduce the use enough to reduce the cumulative effects. These effects are local and do not cause cumulative watershed effects.

Bishop/Humphreys – Alternative 3

Analysis

The effects to soil and water resources under Alternative 3 should be similar to Alternative 2 – Modified, although there could be local slight differences due to different grazing practices. The proposed meadow management would be the same in this geographic unit, and therefore the effects have the potential to be the same. However, because traveling trips are not specifically restricted as much under Alternative 3, there is likely to be more use in the areas farther than one day from the trailhead. In this Geographic Unit, French Canyon is likely the only place where use would be different under the two alternatives. That is because it is the only area where the proposed grazing is larger than the past reported grazing, and there is potential for increased use. The meadows in the French Analysis Unit could therefore receive increased stream bank disturbance, sod fragmentation, soil compaction, and bare soil creation. The change in this area is not likely, however, because the trailhead quotas do not reduce use from current use in Pine Creek, the main trailhead for this area. There is no motivation for packers to have more overnight stock-holding trips in the backcountry, as in some geographic units where trailhead quotas might restrict entry and encourage the packers to keep their stock in the wilderness more nights.

Trail and campsites would be managed almost the same under Alternative 3 as under Alternative 2 – Modified. Only one more mile of trail would be open to commercial pack stock, and one more stock holding campsite would be designated. The difference in effects should therefore be negligible.

Cumulative Impacts

Because the direct and indirect effects are only negligibly different from under Alternative 2, the cumulative impacts are the same as under Alternative 2.

Bishop/Humphreys – Alternative 4

Analysis

There should be very little difference in impacts to soil and hydrology under the action alternatives. Access to destinations is slightly different, with up to 10 destinations not accessible to commercial pack stock under Alternative 4 that were open under Alternative 2 – Modified.

Meadows: Meadow management is proposed to be the same other than a 25 percent reduction of grazing nights in Hutchinson Meadow (Glacier Analysis Unit). The small reduction in grazing should not make a difference in the degree of hydrologic function alteration or stream functional condition.

Trails: As with other alternatives and other Geographic Units, improvement in trail condition is unlikely under this action, even with removal of commercial pack stock from six system trails and at least eight user trails that would be open under Alternatives 1 through 3. This could limit further trail erosion, widening, soil loss and surface water diversion from trails such as the Merriam Lake Trail (French Analysis Unit), Saddlerock Lake Trail (Glacier Analysis Unit), and Chocolate-Ruwau Loop Trail (Bishop Analysis Unit). However, the erosion and water diversion

that is occurring on trails throughout the Bishop/Humphreys area would likely not be reduced without trail repair and maintenance. It is a reasonably foreseeable future action that the nine trails with moderate to severe resource effects would be repaired within 20 years. If so, the effects to soil and water resources should be reduced, but until then, they should remain about the same as currently under all Alternatives.

Campsites : The reduction in overall commercial pack stock use, and designation of all stock holding and drop sites, could lead to a reduction in the number of campsites needed. Some campsites could eventually be obliterated or naturally have reduced soil compaction and bare soil. The difference should be minimal, however, because backpacker use should remain about the same, and backpackers would be able to camp wherever they wished. There would likely be some reduction in bare, compacted soil over time with fewer stock holding campsites, but it would occur slowly unless the sites were actively restored.

Cumulative Impacts

Negative cumulative impacts are expected to be slightly reduced under Alternative 4. The overall reduction in number of meadows grazed, the reduced stock nights, and less number of trails approved for commercial pack stock use suggests the potential for a cumulative impact is unlikely when compared to the existing condition. The reduction (or improvement) in cumulative impacts under Alternative 4 is less than Alternatives 1 through 3 and greater than Alternative 5.

The majority of use would continue to be from hikers and backpackers, and their small negative effects to water quality and stream morphology would continue.

Bishop/Humphreys – Alternative 5

Analysis

The Bishop/Humphreys Geographic Unit could have a slight reduction in impacts to soil and water resources under Alternative 5, but the difference from the other alternatives would be minor. The areas that would be most likely to have improved condition would be the French Canyon Corridor and the area around Golden Trout Lakes, which are the most heavily used areas by commercial pack stock. The local impacts to soil and water resource condition are due mainly to trails, however, and simply removing commercial pack stock from the trails is not likely to improve their condition, until the trails are repaired.

Meadows: There is unlikely to be a major difference in meadow condition under Alternative 5 than under Alternatives 1 through 4. That is because few meadows in this area currently have moderate or severe soil and resource effects currently, and therefore changes in grazing management should not make much difference in meadow condition overall.

Meadow Hydrologic Function: The same meadows are likely to have improved hydrologic function under Alternative 5 as under Alternatives 4 (Figure 4.15, Table 4.77). Only two meadows are expected to have improved hydrologic function alteration while 32 are expected to remain in their current condition. The two meadows that have altered hydrologic function related to commercial pack stock, Hutchinson Meadow and Adjacent to Waterfall Camp would not be grazed under Alternative 5 (or Alternative 4). They should have reduced compaction, stream bank trampling, and sod fragmentation for improved hydrologic function.

Meadow Stream Functional Condition (PFC): There is likely to be improved stream functional condition in the same streams as under Alternative 4 (Figure 4.16, Table 4.78). Three streams that currently have hydrologic function alteration would be expected to have improved condition, while one would be expected to remain in its current condition. The stream expected to remain in its current condition with no commercial pack stock grazing is in Elba Lake Meadow (French Canyon Analysis Unit). A small stream segment appears to have been incised due to historical grazing or trail use. The incision does not appear to be able to lessen naturally without some restoration.

Trails: The effect to soil and water resources from trails is likely to be the same as wilderness-wide. There could be a reduction in the extent of user trails near Golden Trout Lakes, however. The user trails around the lakes are generally not deeply incised, and over time, they could revegetate and have reduced erosion. The area is used for by many spot/dunnage parties and not overnight by commercial pack stock, but might have reduced number of campers overall with reduction of spot/dunnage trips. The number of user trails could be reduced with an overall reduction in campers to the area.

Campsites: The effect to soil and water resources from campsites is likely to be the same as wilderness-wide, with a possible slight reduction in the extent of bare, compacted soil. There could be a measurable reduction in the extent of bare soil due to campsites near Golden Trout Lakes. The Golden Trout Lakes area contains many sites used for spot/dunnage trips. Without commercial pack stock use, there could be a slight decrease in the total number of campsites needed at this heavily used area.

Cumulative Impacts

Cumulative impacts to soil and water resources are expected to be slightly reduced under Alternative 5. The major reduction in trails used by pack stock, and campsites used by stock holding parties suggests that impacts should be reduced from current levels. The reduction (or improvement) in cumulative impacts under Alternative 5 would be more than any other Alternative. The areas most likely to show improvement are in and around Hutchinson Meadow, and near Golden Trout Lakes, because that is the area with the greatest soil and water resource impacts from commercial pack stock use. Many of the negative effects to soil and water resources, such as trail incision, meadow hydrologic function alteration, and stream hydrologic condition alteration (PFC) can be at least partially attributable to commercial pack stock use. Therefore, removal of that use could cause improved conditions. However, continuation of private pack stock use and hiker use could sustain most of the local effects from campsites and trails.

Florence/Bear – Alternative 1

Analysis

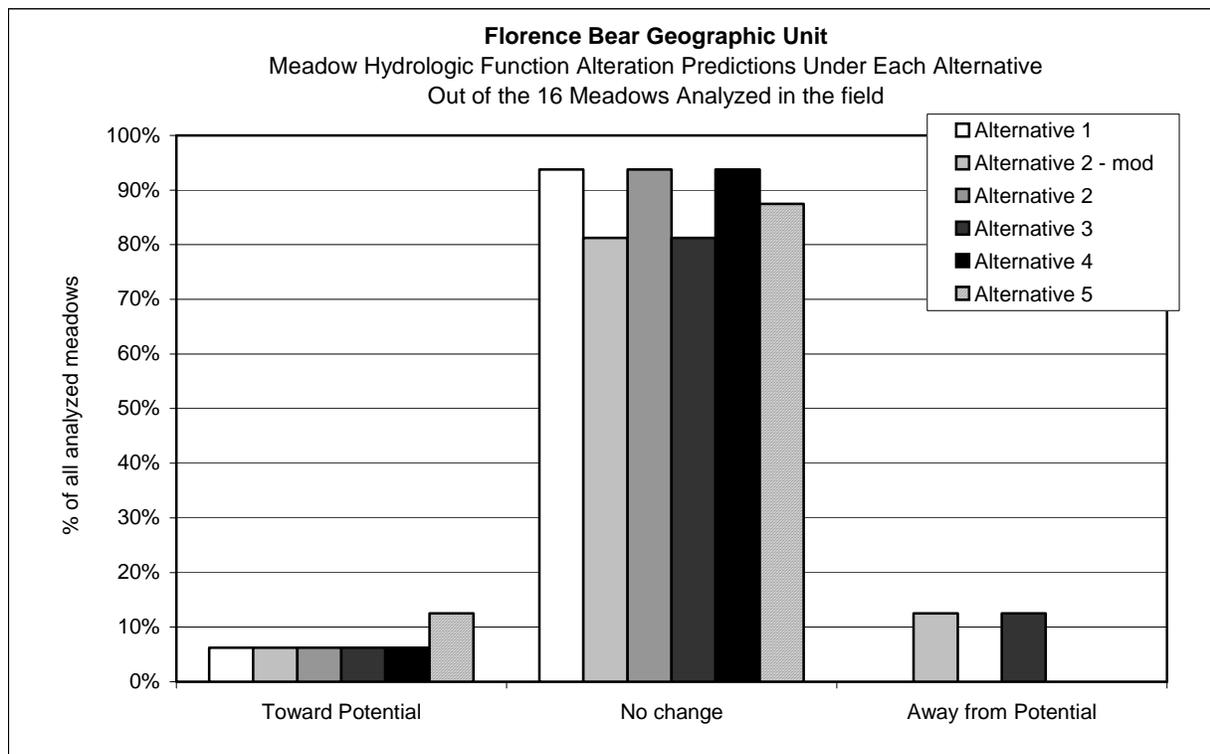
There should be few changes in soil and hydrologic resource condition relative to current condition because there should be few changes in commercial pack stock use-patterns. The largest impact to soil and hydrologic condition related to pack stock is likely grazing, although it occurs only in a few locations. There are few known impacts to soil and hydrology in this Geographic Unit, and it will likely remain that way.

The Bear Lakes, East Florence, Ward Mountain, Bolsillo, Ershim, Dutch, Dutch/Boulder and Apollo Analysis Units are not known to have major or widespread impacts to soil and water resources. They have little to no commercial pack stock use and are not expected to have increased use in the future under Alternative 1 or other alternatives. Therefore, there is not expected to be any change in impacts to soil and water resources under any alternative and will not be discussed further.

Meadows: The Florence/Bear Geographic Unit generally has few effects outside of its five pastures (Blayney, Double, Jackass, Hellhole, and Poison Meadows). This area contains the only pack stock pastures within the Ansel Adams and John Muir Wildernesses. Some of the pastures, such as Double Meadow, show few hydrologic or soils effects, with only slight vegetation composition change and vegetation removal. Others, such as Lower Blayney Meadow, have streams with altered condition and some hydrologic function alteration. Jackass, Hellhole, and Poison meadows are located below Florence dam, which also alters hydrologic function. It is likely that these meadows would remain in their degraded state, and that meadows in good condition would remain in good condition.

Meadow Hydrologic Function: Meadow hydrologic function is likely to change in only one meadow, and there should be very little difference between alternatives (Figure 4.17). That is because this area receives little commercial pack stock use and the actions in all alternatives apply only to commercial pack stock.

Figure 4.17 A comparison of the effects of alternatives on meadow hydrologic function condition in the Florence/Bear Geographic Unit.



Seven of the 16 meadows analyzed for hydrologic function currently have at least slight hydrologic function alteration. Of those, only one meadow is likely to show improved hydrologic

function condition (Table 4.79). That meadow, Rosemarie Meadow, appears to be recovering from past impacts. Although the meadow remains grazed at low levels, (the highest reported use was 38 stock nights in this 11-acre meadow), incised channels have revegetated and bare soil appears to be filling in. If the meadow continues to be grazed at low levels, it is likely that the recovery would continue.

The Sallie Keyes Analysis Unit has two areas with concentrated commercial pack stock use. These areas are near Sallie Keyes Lakes and near Blayney Meadows. Near Sallie Keyes Lakes, there is some evidence of historical grazing impacts from an unknown user, which appears to be recovering over the dry areas of the meadow and should continue its recovery. However, the wet portions of the meadow have severe sod fragmentation and hoof punching, which would likely continue under Alternative 1. This could lead to soil loss and loss of soil productivity. Blayney Meadow, which is used as a pasture, is partially on private land and partially on Forest Service Land. The meadow has moderate hydrologic function alteration due to commercial pack stock grazing, and this would likely continue in its current condition under Alternative 1. It is possible that the meadow could have increased compaction, sod fragmentation and stream trampling impacts with continued use, but the productivity likely would allow some recovery every year, keeping the meadow in an overall static condition.

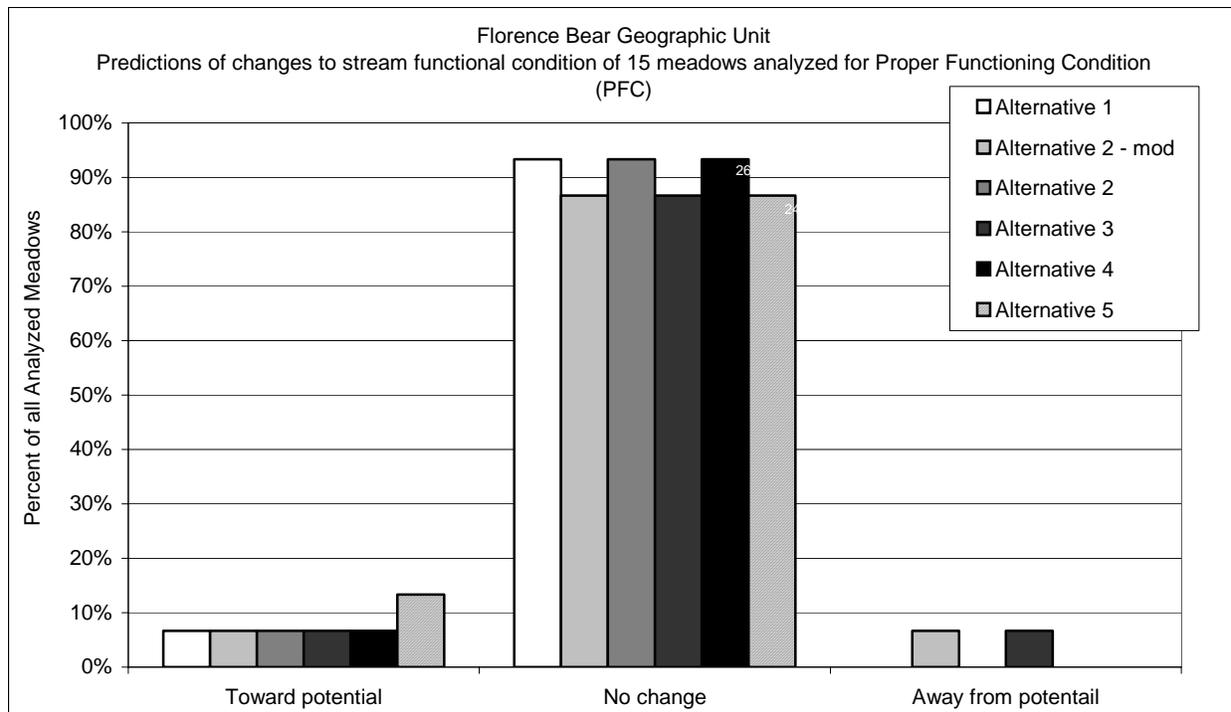
Table 4.79 Hydrologic Function Alteration Predictions for all meadows visited in the Florence/Bear Geographic Unit. The number of meadows predicted to have each trend was estimated by the IDT, using the meadow's characteristics such as soil moisture, stream bank stability, and meadow productivity. The predictions assume that the some meadows would not receive their allocated stock nights, if they are in an area not likely to received increased use. The prediction underestimates the worst possible effects, but is a more realistic estimation. The potential effects if all stock nights were used are included in the text.

Current Meadow Hydrologic Function Condition (# of meadows with that condition)	Trends By Number of Meadows					
	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No hydro alteration (9)						
Toward Potential	0	0	0	0	0	0
No change	9	9	9	9	9	9
Away from Potential	0	0	0	0	0	0
Slight hydro alteration (4)						
Toward Potential	1	1	1	1	1	2
No change	3	3	3	3	3	2
Away from Potential	0	0	0	0	0	0
Mod hydro alteration (1)						
Toward Potential	0	0	0	0	0	0
No change	1	0	1	0	1	1
Away from Potential	0	1	0	1	0	0
Severe hydro alteration (2)						
Toward Potential	0	0	0	0	0	0

Current Meadow Hydrologic Function Condition (# of meadows with that condition)	Trends By Number of Meadows					
	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No change	2	1	2	1	2	2
Away from Potential	0	1	0	1	0	0
All Meadows Analyzed (16)						
Toward Potential	1	1	1	1	1	2
No change	15	13	15	13	15	14
Away from Potential	0	2	0	2	0	0

Meadow Stream Functional Condition (PFC): There is likely to be very little change to stream functional condition under Alternative 1, because use should be about the same. Currently, few streams are known to be functional at-risk, except those downstream from Florence Dam. There should also be very few differences between Alternative 1 and any other alternative (Figure 4.18).

Figure 4.18 A comparison of predicted changes to stream functional condition (PFC) among alternatives for the streams where PFC was analyzed in the Florence/Bear Geographic Unit. Sixteen streams were analyzed for PFC, all within meadows or other grazed areas. The percent on the y-axis is the percent of the 16 meadows predicted to have each trend. This chart includes all streams analyzed, whether they are at proper functioning condition or functional at-risk.



Fifteen streams were analyzed for stream functional condition, and four were found to be functional at-risk. Those streams are in Hilgard, Hellhole, Jackass and Rosemarie Meadows.

Hilgard and Rosemarie both have stream bank chiseling, streambank vegetation removal, incised streams, and collapsing banks at least partially due to current and historical commercial pack stock use. Only one of those, the stream in Rosemarie Meadow, is likely to have a change in condition (Table 4.80). The stream is likely to have continued recovery from what appears to be past stream incision, widening, and gullyng.

Hilgard Meadow has been grazed in recent years by commercial pack stock, and has compacted soils, vegetation composition change, and a widened stream through the meadow. The use in the meadow should continue at recent levels, and the impacts to the stream and meadow should remain the same.

Table 4.80 Summary of all meadow stream functional condition predictions for the Florence/Bear Geographic Unit under all alternatives. Stream functional condition was determined using the Proper Functioning Condition (PFC) protocol. The streams are separated by those that are currently properly functioning, those that are functional at-risk with an upward trend, those that are functional at-risk with a non-apparent trend, and those that are functional at-risk with a downward trend. The predictions are based on assumptions that grazing will continue about as it has in the past in most areas, except in meadows that are closed to grazing and those nearby meadows where grazing might move to.

Current stream functional condition rating (# with each rating)	Number of Meadows expected to have each trend					
	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Proper Functioning Condition (11)						
Toward potential	0	0	0	0	0	0
No change	11	11	11	11	11	11
Away from potential	0	0	0	0	0	0
Functional at-risk upward trend (1)						
Toward potential	1	1	1	1	1	1
No change	0	0	0	0	0	0
Away from potential	0	0	0	0	0	0
Functional at-risk non apparent trend (3)						
Toward potential	0	0	0	0	0	1
No change	3	2	3	2	3	2
Away from potential	0	1	0	1	0	0
Functional at-risk downward (0)						
Toward potential	0	0	0	0	0	0
No change	0	0	0	0	0	0
Away from potential	0	0	0	0	0	0
Total Florence/Bear (15)						
Toward potential	1	1	1	1	1	2
No change	14	13	14	13	14	13
Away from potential	0	1	0	1	0	0

Meadow Soil Effects: Soil compaction does not appear to be substantial in the overall Florence/Bear Geographic Unit. Three meadows out of the eleven analyzed for soil compaction have slight to moderate compaction. All meadows, Rosemarie Meadow in the Seldon Analysis Unit, Boot Meadow in the Sallie Keyes Analysis Unit, and Hilgard Meadow in the Italy Analysis Unit, currently have some pack stock grazing and have likely had grazing for many years. All of them would likely continue to be grazed. Boot Meadow and Rosemarie Meadow may have slow compaction recovery because they are not grazed regularly, but Hilgard Meadow is unlikely to show much recovery in compaction because it is grazed every year. It is likely that the pastures Jackass Meadow, Hell Hole Meadow, Poison Meadow, Double Meadow and Lower Blayney Meadow also have some compaction, but the extent or severity is unknown. If they are compacted, they are likely to remain so under Alternative 1.

Trails: There are currently few soil or water resource impacts from trails, with only the Italy Pass trail known to have moderate or severe water or soil resource concerns. There is unlikely to be increased or decreased impacts with continuation of the current use patterns.

Campsites: There are currently few known soil or water resource impacts from campsites. There is unlikely to be a change in the extent of bare, compacted soil or water quality under Alternative 1 if use remains as it is today. Under Alternative 1, packers could begin using any campsite as a stock holding site, as long as it was over 50 to 100 feet from water. There could then be an increase in bare and compacted soil extent. However, there is no indication that use would change and therefore there would be more stock holding sites under Alternative 1.

Cumulative Impacts

The past, present and reasonably foreseeable future actions in the Florence/Bear Geographic Unit are the same as the wilderness in general, although the impacts from the dam at Florence are unique. The Florence Lake Dam alters stream flow and stream morphology downstream, including in the wilderness pastures at Jackass, Poison and Hellhole Meadows.

Under Alternative 1, there would likely be no change to cumulative impacts, because the current uses of commercial pack stock, private pack stock users, and hikers should remain the same. Further, the most severe single impact in the geographic unit, Florence Lake Dam, would continue to alter stream flow, water quality, riparian vegetation and meadow/wetland hydrologic function. The dam is going through Federal Energy Regulatory Commission (FERC) relicensing, and flows could improve meadow condition. Most of the remaining area has few known soil or water resource impacts.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis*, in the project record.

In summary, none of the watersheds within the Florence/Bear Geographic Unit was found to have existing cumulative watershed effects. Further, none of the watersheds is expected to have increased potential for cumulative watershed effects under Alternative 1 because there would continue to be low use through most of the area.

Florence/Bear – Alternative 2 – Modified

The soil and hydrologic effects under all action alternatives should be almost the same because most campsite, trail, and grazing management would be the same. The only difference would be local and due to different grazing allocations at the pastures Jackass, Double and Lower Blayney Meadows.

Meadows: Under Alternative 2 – Modified, meadow hydrologic function should improve in one meadow and move away from potential in two meadows (Jackass Meadow and Lower Blayney Meadow). Sixteen meadows were analyzed for hydrologic function.

Meadow stream functional condition was analyzed in 15 meadows, and one is expected to have improved condition while another (Jackass Meadow) is expected to move away from potential stream functional condition.

Jackass Meadow, in the East Florence Analysis Unit, is currently managed as a pasture. The entire complex is about 135 acres, and only about 10 percent is within wilderness. Currently, 400 stock nights annually are permitted for this meadow complex. It is unknown whether they are all normally used. The meadow currently has severe hydrologic function alteration over less than 1/3 of the meadow due to flow alterations from Florence Dam. The South Fork San Joaquin River is regulated here by the dam, and therefore the flow volumes, flow timing, water temperature, sediment load and stream morphology are altered. Cessation of commercial pack stock grazing could only cause slight to moderate improvement to the meadow's hydrologic function, because the dam effects will remain. Under Alternative 2 – Modified, grazing could be increased from about 400 stock nights per year to 2,025 overall. This could increase stream bank trampling, vegetation removal, and meadow compaction. There could therefore be a slight downward trend overall in meadow hydrologic function and stream functional condition. However, it is unlikely that 2,025 stock nights will be used in this meadow by commercial pack stock, as only 400 have been permitted and used in the past and there is likely not a need for 2,025 stock nights

It is possible that the packers would graze more in the area around Sallie Keyes Lake under Alternative 2 – Modified than they do currently. That would, however, require a shift in recent use patterns that is not likely to occur. There is no nearby use being curtailed or other reason that the packer would begin taking more trips into the Sallie Keyes area.

In the East Florence Analysis Unit, Double Meadow is likely the only area where there could be changes in soil or hydrologic condition under Alternative 2 – Modified. Although the pack stations did not report use in Double Meadow using the standard reporting system, they verbally communicated that they usually graze the meadow with 15 to 30 head for about 5 weeks, using the meadow as a pasture for non-working stock in the off-season (Smith 2004). This could be anything up to about 1000 stock nights for the 60-acre meadow. Under Alternative 2 – Modified, the meadow could continue to be used as a pasture and could have up to 1,250 stock nights. There would also likely be no hydrologic function alteration and the meadow would continue to be near potential hydrologic function. The meadow currently has no hydrologic function alteration, and little to no compaction, stream bank disturbance, sod fragmentation, or bare sod. Therefore, the small increase in stock nights from the recent high of up to 1000 should not alter meadow hydrologic function, because the moderate-high productivity and stream bank stability should be able to prevent hydrologic or soil alteration from these stocking rates.

In the Sallie Keyes Analysis Unit, Lower Blayney Meadow has a proposed 544 stock nights of grazing could lead to a slight downward trend of meadow hydrologic function. The meadow currently has slight to moderate hydrologic function alteration over more than 1/3 of the meadow. Sixty stock nights of commercial grazing was reported in 2001, and none in 2002 or 2003. The meadow is also used by recreational pack stock, but grazing levels are unknown. It is possible that with commercial pack stock grazing of 544 stock nights, stream incision and headcuts could worsen because of increased stream bank trampling, meadow compaction, and vegetation removal that could reduce stream bank stability and encourage further incision.

Cumulative Impacts

The past, present, and reasonably foreseeable future actions are the same over most of this geographic unit than as they are in the wilderness and in other geographic units, although the impacts from the dam at Florence are unique. The Florence Lake Dam alters stream flow and stream morphology downstream, including in the wilderness pastures at Jackass, Poison and Hellhole Meadows.

The construction of the dam affected flow the South Fork San Joaquin River through the wilderness area. The alteration from the dam, along with grazing, appears to have caused local cumulative effects in Jackass Meadow. Under Alternative 2 – Modified, Jackass Meadow could have more grazing than is currently permitted. Therefore, it is possible that the stream banks already altered by past grazing and dam operations could show increased disturbance. It is more likely, however, that grazing would remain about the same and the cumulative impacts of commercial pack stock grazing and flow alterations from Florence Dam would continue the functional at-risk condition of the stream.

Other than in Jackass Meadow, the Cumulative Impacts in the Florence/Bear Geographic Unit should be the same as under Alternative 1. The use proposed in the area limits further expansion to new areas, but would not likely alter pack stock use from its current pattern.

Florence/Bear – Alternative 2

Analysis

Most of the Florence/Bear Geographic Unit should have little change to its current local and mainly minor impacts to soil and hydrologic resources. Much of the area was not visited in the field due to low levels of reported or requested pack stock use, but due to low levels of reported use of any kind, it is assumed that there are few impacts in the unvisited areas.

Meadows: Meadow conditions are unlikely to change because grazing management proposed in Alternative 2 is similar to the existing condition.

Meadow Hydrologic Function: Only one meadow out of the sixteen analyzed for hydrologic function is likely to show changed hydrologic function condition under Alternative 2 (Table 4.79). That meadow, Rosemarie Meadow, could gradually have improved hydrologic function condition as past compaction and stream bank trampling slowly recovers. There should be no difference between Alternative 2 and Alternative 1 because there should be little actual change in use under Alternative 2 (Figure 4.17).

Meadow Stream Functional Condition (PFC): Under Alternative 2, only one out of the 15 streams analyzed for PFC should have improved hydrologic function condition (Table 4.80).

With controls on the levels of grazing in Rosemarie Meadow, the stream banks could continue to have increased vegetative cover that stabilizes the banks and makes the stream move toward PFC. The other meadows would likely remain in their current condition, which is generally good. There should be no difference between Alternative 2 and Alternative 1 (Figure 4.18), because Alternative 2 does not proposed substantial changes to current management.

Cumulative Impacts

The Cumulative Impacts in the Florence/Bear Geographic Unit should be the same as under Alternative 1. The use proposed in the area limits further expansion to new areas, but would not likely alter pack stock use from its current pattern.

Florence/Bear – Alternative 3

Analysis

The soil and hydrologic effects under Alternative 3 should be almost the same as under Alternative 2 – Modified because campsite, trail, and grazing management would be the same. The only difference could be from the lack of destination quotas, which would allow expansion or relocation of overnight or spot/dunnage use to areas that might not be suitable for increased use.

Meadows: The effects to meadow soil and hydrologic function would be the same as described under Alternative 2 – Modified in almost all meadows.

It is possible that the packers would graze more in the area around Sallie Keyes under Alternative 3 than under Alternative 2. That would, however, require a shift in recent use patterns that is not likely to occur. There is no nearby use being curtailed or other reason that the packer would begin taking more trips into the Sallie Keyes area. The effects should not be different in that area than under Alternative 2.

Cumulative Impacts

The cumulative impacts should be the same as under Alternative 2 – Modified because management that affects soil and water resource impacts is the same.

Florence/Bear – Alternative 4

Analysis

There should be little difference between effects to soil and water resources under Alternative 4 and Alternative 2 over most of the Geographic Unit. However, there could be a noticeable improvement in meadow condition at the pastures Hellhole, Poison and Jackass Meadows in the Hooper and East Florence Analysis Unit. Otherwise, the relatively low levels of commercial pack stock use in this area should remain about the same, and therefore the effects to soil and water resources should be about the same as currently and under Alternative 2.

Meadows: Grazing would have substantially different management recommendations relative to Alternative 2 in only three pastures near the wilderness boundary; Hellhole (Hooper Analysis Unit), Poison (Hooper Analysis Unit), and Jackass Meadows (East Florence Analysis Unit). These meadows are currently managed as pastures, with 200, 200 and 400 annual stock nights

allocated, respectively. Under Alternative 4, the meadows would not be permitted as pastures. All grazing use would be required to be associated with pack trips. Because pack trips do not use these locations as destinations, nor are they likely to do so in the future, it is likely that these meadows receive only recreational and administrative pack stock use. Therefore, the amount of vegetation removal, soil compaction, sod fragmentation and stream bank trampling should be reduced under Alternative 4 relative to current conditions and the effects predicted under Alternative 2. These pastures could have some recreational pack stock grazing and Forest Service Administrative pack stock grazing under Alternative 4, but the level of grazing they would receive, and whether it would affect hydrologic resources, is unknown.

Meadow Hydrologic Function: Even in the pastures, where little grazing is likely to occur under Alternative 4, there should not be any substantial changes in meadow hydrologic function relative to Alternative 1. Two of the three pastures have severe hydrologic function because they have alterations of flow from operations of Florence Reservoir. Although pack stock grazing might be able to make the hydrologic function of the meadows worse, removal of grazing by itself is not expected to improve the meadows' hydrologic function. However, current hydropower licensing efforts may change flow conditions below Florence Dam, which combined with a reduction in grazing is expected to synergistically result in improved hydrologic and riparian conditions in Jackass Meadow.

The third pasture, Poison Meadow, has slight hydrologic function alteration now, evident in non-meadow vegetation encroachment and vegetation composition change and stream incision and headcuts. It is assumed that the vegetation change could be due to stream incision related to longer-term pack stock grazing in the pasture. Meadow hydrologic function will likely remain slightly altered under Alternative 4.

Meadow Stream Functional Condition (PFC): As with meadow hydrologic function, stream functional condition in meadows is unlikely to be different from under Alternative 2, for the same reasons described above in the Meadow Hydrologic Function section

Meadow Soil Effects: There would likely be little change in compaction due to changes in commercial pack stock grazing other than in the three pastures; Jackass Meadow, Hell Hole Meadow, and Poison Meadow. All three meadows have been grazed relatively heavily by commercial pack stock in recent years, and none should receive commercial grazing under Alternative 4. Therefore, the meadows can begin to decompact from vegetation growth, rodent activity and freeze-thaw action in the soil. It is unknown how long it would take soil to show substantial reduction in compaction, but the change would likely be minor within 20 years.

Sod fragmentation should show similar patterns to soil compaction, with differences between Alternative 2 – Modified and 4 only in the pastures. None of the pastures has more than minor sod fragmentation currently, and removal of grazing should allow that sod fragmentation to recover.

Trails: The hydrologic and soil effects from trails should be negligibly different under Alternatives 2 through 4. Under Alternative 4, two system trails, the Hell Hole Trail and the Hooper Diversion Trail would be prohibited for commercial pack stock use. These trails have no known resource effects, and therefore closing the trails to pack stock would probably have little direct effect on soil or water resources. Closure of the Hell Hole Trail would prohibit access to the Hell Hole areas, which would have little direct effect because the area is closed to grazing

under this alternative, and the grazing is the only known negative effect on soil and hydrologic processes.

Cumulative Impacts

Cumulative impacts are expected to be slightly and locally reduced under Alternative 4. The overall reduction in number of meadows grazed, the reduced stock nights, and less number of trails approved for commercial pack stock use suggests the potential for a cumulative impact is unlikely when compared to the existing condition. Further, current hydroelectric licensing efforts may have a future impact of changing the flow regime in Jackass Meadow, thereby improving hydrologic and riparian conditions. The reduction (or improvement) in cumulative impacts under Alternative 4 is less than Alternatives 1 through 3 and greater than Alternative 5.

Cumulative Watershed Effects

For a full discussion of cumulative watershed effects, see *Commercial Pack Stock Use in the Ansel Adams and John Muir Wildernesses: Cumulative Watershed Effects Analysis* in the project record.

In summary, none of the watersheds within the Florence/Bear Geographic Unit was found to have existing cumulative watershed effects. Further, none of the watersheds are expected to have increased potential for CWEs under Alternative 4, because use should stay about the same in most areas of the geographic unit. The only changes would be reduction in grazing use on meadows that currently have some hydrologic function alteration, and therefore, there could be a slight, local reduction in CWE potential.

Florence/Bear – Alternative 5

Analysis

The Florence/Bear Geographic Unit should have very little change to soil and hydrologic resource condition under Alternative 5 relative to current condition and the other alternatives. There is little pack stock use currently in the area, other than pass through use. The exception is the pastures in the Hooper, East Florence, and Sallie Keyes Analysis Units, where there is heavy commercial pack stock grazing. The effects should be similar to Alternative 4, although there should be slightly less bare, compacted soil and soil loss due to an eventual reduction in the number of stock holding campsites.

Meadows: The effects to meadows should be almost the same as under Alternative 4. The meadows that currently have resource impacts, including the pastures at Jackass, Hellhole, Poison, Double, and Lower Blayney Meadows, would not be used as pastures under Alternative 4 or 5. The only other meadow with major resource concerns, Hilgard Meadow (Italy Analysis Unit), would likely only have minor improvement in condition under Alternative 5, and no change in condition under Alternative 4. The overall difference in meadow soil and hydrologic condition would likely be minor.

Meadow Hydrologic Function: Meadow hydrologic function effects should be the same as under Alternative 4 (Table 4.79, Figure 4.17). The only meadow with current hydrologic function alteration that would have different grazing management would be Hilgard Meadow, which would be open to grazing under Alternative 4. However, its hydrologic function alteration

is due mainly to the incised, widened stream through the meadow. The aggradation and narrowing of the channel would likely take decades or centuries, and should therefore the meadow hydrologic function should improve only very slowly under Alternative 5.

Meadow Stream Functional Condition (PFC): There could be slightly more meadows with improved stream condition under Alternative 5 than under any other alternative (Table 4.80, Figure 4.18). Under Alternative 5, two streams are expected to have improved condition, while under the other alternatives, one stream is expected to improve condition. The one different meadow is Hilgard Meadow, where it is expected that removal of commercial pack stock grazing could allow vegetation to grow on stream banks and allow some sinuosity to return to the apparently widened and straightened stream.

Trails: The water and soil resource effects from trails should be the same in Florence/Bear as under the wilderness scale. Trails are currently causing a few local instances of soil erosion and sedimentation into water, and should continue to cause few local issues.

Campsites: The overall number of campsites, and therefore the impacts from campsites, would be slightly reduced. While the number of hiker camps would remain the same, stock camps would no longer be used by commercial pack stock, and therefore the bare ground area from those sites would be reduced or eliminated over time. Because there are few campsites known to be causing water quality or erosion impacts in this geographic unit, the positive effect should be minor and local.

Cumulative Impacts

Cumulative impacts to soil and water resources are expected to be reduced under Alternative 5. The main reduction in impacts would be due to all closure of grazing. The reduction (or improvement) in cumulative impacts under Alternative 5 would be more than any other Alternative. In the Florence/Bear Geographic Unit, most of the negative effects to soil and water resources are in pastures and can be partially attributable to commercial pack stock use. Therefore, removal of that use could cause improved conditions. However, continuation of private pack stock use and hiker use could sustain most of the local effects from campsites and trails.

John Muir Southeast – Alternative 1

Analysis

Under Alternative 1, there is unlikely to be any changes from current soil and water resource conditions. There is little use in this area other than pass-through trips to Sequoia Kings Canyon National park and dunnage trips in the North Fork of Big Pine Creek and Cottonwood Lakes. There could be an increase of use into the South Fork of Big Pine Creek from current conditions because the trail would be opened to pack stock. However, this is likely to have only a local, slight increase in erosion and sedimentation into streams and mainly upstream of Willow Lake where the trail is not well armored. The area currently receives moderate hiker use and pack stock use of the trail would likely only cause minor increased trail width, trail incision, and sedimentation into surface water.

Despite the lack of substantial impacts currently, and the lack of overnight stock holding in the area, Alternative 1 could have more negative effects to soil and water resources from trails than

the other alternatives. Under the other alternatives, some or all of the trails would be closed to commercial pack stock use. The trails are generally in good condition and effects would not change much with removal of pack stock use. However, if pack stock use decreased on the trails, there would likely be less erosion and incision in the future because only hikers would be using the trails and they generally remove less soil from trails.

Cumulative Impacts

There are no observed cumulative impacts to soil and water resources from past and present actions, and there are not expected to be cumulative impacts under Alternative 1. Use of this area is by commercial pack stock users, recreational pack stock users, and hikers. Most of these users pass through the area to access the Sequoia-Kings Canyon National Park. Therefore, effects are mainly slight erosion of trails. Under Alternative 1, the uses are all expected to remain about the same, and therefore impacts should remain about the same and minimal overall.

John Muir Southeast – Alternative 2 – Modified

Analysis

There should be very few changes in the currently minor soil and hydrologic effects within this Geographic Unit. Use is currently mainly trail use to get from the Inyo National Forest to Sequoia Kings Canyon National Park, except in the North Fork of Big Pine Creek and in the Cottonwood Lakes area. Almost all-overnight use is spot/dunnage, and so there are very few large campsites or grazed meadows. This action would impose few changes on commercial pack stock use, other than closure of some trails. Therefore, the effects will not be discussed in detail.

The North Fork Big Pine Analysis Unit is one of only two Analysis Units in the John Muir Southeast Geographic Unit where spot/dunnage trips are supported by commercial pack stock. These trips generally drop off parties near lakes and the pack stock remains mainly on system trails. The system trails are generally stable and built to withstand heavy use, and are not eroding or contributing sedimentation into surface water. Campsites serviced by pack stock were sometimes larger than the many backpacker campsites in this area, but none were found to have major water quality or soil erosion effects.

Cumulative Impacts

Cumulative impact to this area are minor, and do not constitute Cumulative Watershed Effects. While many of the watersheds in this area have a major trail and some backpacker campsites, the use does not appear to be causing alterations to water quality, stream morphology, meadow hydrologic function, or other hydrologic or soil processes other than a few local areas without commercial pack stock use. Most of the major streams are diverted into the Los Angeles aqueduct outside of the wilderness area. These diversions have occurred since the 1920s and will continue into the near future. Alternative 2 – Modified does not affect water flow and therefore does not contribute to the flow effects downstream of the diversions.

John Muir Southeast – Alternative 2

Analysis

The direct, indirect and cumulative effects to soil and water resources should be the same as under Alternative 2 – Modified. The only difference in management is that the uppermost 0.4 miles of trail to Birch Lake in the Birch Analysis Unit would be closed to commercial stock. While this could prevent future increases in impacts to soil erosion from the trail, it should not make a difference relative to Alternative 1 because the trail is rarely used by commercial pack stock.

John Muir Southeast – Alternative 3

Analysis

The effects to soil and water resources should be the same under Alternative 3 as they would be under Alternative 2. The same system trails would be closed to commercial stock use, keeping the more erosive stock off the trails and therefore preventing increased erosion. No grazing would be allowed anywhere in both alternatives, and therefore, meadows should not show any different effects.

John Muir Southeast – Alternative 4

Analysis

The effects to soil and hydrologic resources in this geographic unit should be the same as under Alternative 2 – Modified within National Forest Land. The effects on Sequoia/Kings Canyon National Park could be substantial, although the degree of the effects is unknown.

At least three major trails would be closed to commercial pack stock under Alternative 4 that would be open under Alternative 2. These trails are the South Fork of Big Pine Creek, Taboose Pass Trail, and Sawmill Pass Trail. The South Fork of Big Pine Creek Trail is currently closed to pack stock, and therefore there would likely be no change to use or soil and hydrologic effects under Alternative 4. There could be less bare soil due to campsites and less trail erosion than under Alternative 2, however. The other trails, Taboose Pass and Sawmill Pass Trails, are well maintained due to their popularity for backpacker and commercial pack stock use. They do not currently have known effects to soil and hydrologic resources and with removal of pack stock, their condition should not change substantially.

Cumulative Impacts

Sequoia/Kings Canyon National Park would likely receive less commercial pack stock use accessing the park from the John Muir Southeast Area. Sawmill Pass and Taboose Pass, two major entry points into the National Park, would be closed to commercial pack stock. Although the commercial packers might move their use to another entry point, such as Kearsarge Pass, trailhead quotas would likely prevent much increase on other trails. While the effects on the trails themselves should be minimal, reducing the number of stock entering the National Park could reduce the amount of grazing. There could therefore be a reduction of bare soil, soil compaction, sod fragmentation, stream bank trampling, and other effects to meadows in the National Park. The degree of these reductions is unknown.

The closure of the South Fork Big Pine Creek, Taboose Pass, and Sawmill Pass Trails to pack stock should not affect cumulative watershed impacts. The trails would continue to be used relatively heavily by backpackers, keeping the trail free of vegetation and compacted. The removal of commercial pack stock use might prevent the trails from eroding and incising as quickly as they would with commercial pack stock use.

John Muir Southeast – Alternative 5

Analysis

There would likely be little difference to soil and hydrologic resource affects under Alternative 5 than under any other alternative. The only analysis units that regularly receive more than pass through use, the North Fork of Big Pine Creek and Cottonwood, could see a reduction in overall overnight use by campers. However, both areas are popular for backpacker use, and would likely remain so. The reduction in pack stock users would only reduce the use by a small percentage in these areas, and therefore there should be little difference. No analysis unit in John Muir Southeast regularly receives overnight commercial pack stock use. Therefore, there are no large stock holding sites or grazing areas. The reduction in bare and compacted soil due to campsites should be minimal.

Cumulative Impacts

Cumulative affects to soil and water resources are expected to be reduced under Alternative 5, although the differences would be slight and mainly concentrated along trails. The reduction in trails used by any pack stock suggests that the potential for future impacts should be reduced. However, continuation of private pack stock use and hiker use could sustain most of the local effects from campsites and trails.

John Muir Southwest – Alternative 1

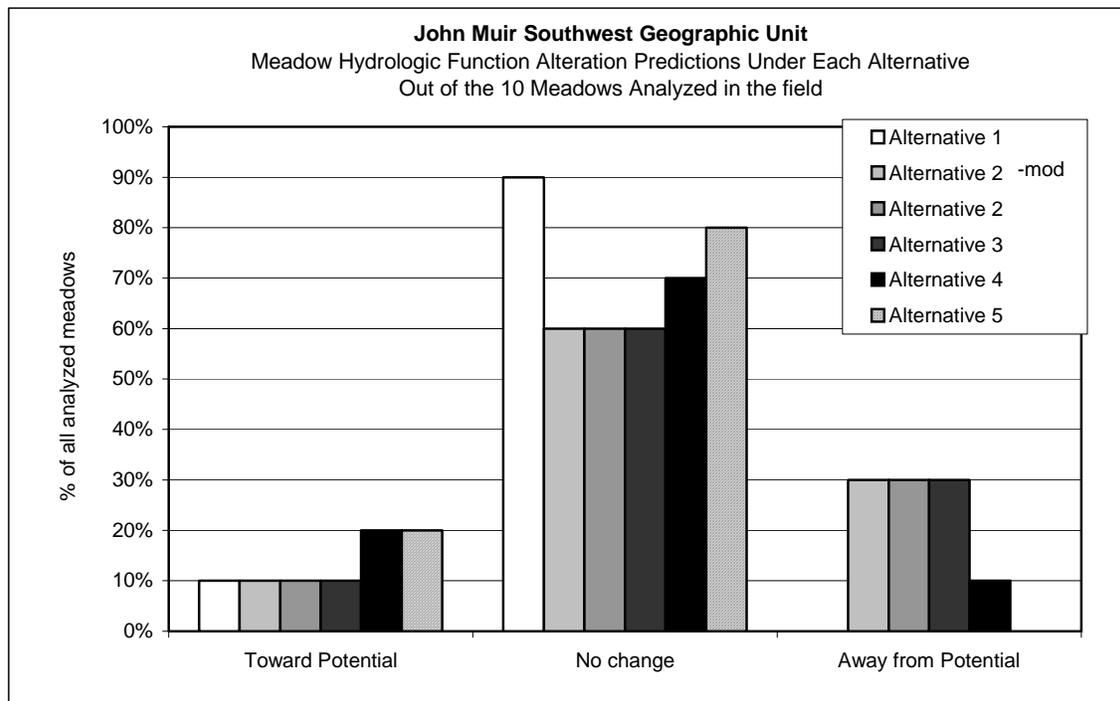
Analysis

There are likely to be few or no changes in effects to soil and water resource condition in the John Muir Southwest Geographic Unit. The area currently receives light commercial pack stock use, and is unlikely to begin receiving more. The trail and meadow impacts to soil and water resources are likely to remain, as they are today, dispersed but sometimes severe.

Meadows: Most meadows in John Muir Southwest are used sporadically by commercial pack stock, receiving grazing from one or two trips a year. Sod fragmentation, vegetation removal and stream bank trampling therefore can recover between grazing. In the future, as long as use remains about the same, meadows are likely to have little change in their generally good condition.

Meadow Hydrologic Function: Of the ten meadows analyzed for hydrologic function, only one is expected to have any change under Alternative 1 (Table 4.81). Further, there is only expected to be a difference in one meadow's hydrologic function between Alternative 1 and all other alternatives (Figure 4.19).

Figure 4.19 A comparison of estimated effects of all Alternatives to meadow hydrologic function. The chart shows the percent of the 10 meadows analyzed that are predicted to have trend toward potential, a trend away from potential, or no change in hydrologic function trend.



The one meadow that may have improved hydrologic function is Big Maxson Meadow, although the potential for change in the meadow is uncertain. In recent years, private pack stock has grazed the area, contributing to moderate hydrologic function alteration. If that use does not continue, the meadow would likely show improved hydrologic function through vegetation growth and reduction in compaction. However, that use could continue, and could perpetuate the meadow’s moderate hydrologic function alteration.

Table 4.81 Hydrologic Function Alteration Predictions for all meadows visited in the John Muir Southwest Geographic Unit. The number of meadows predicted to have each trend was estimated by the IDT, using the meadow’s characteristics such as soil moisture, stream bank stability, and meadow productivity. The predictions assume that the some meadows would not receive their allocated stock nights, if they are in an area not likely to received increased use. The prediction underestimates the worst possible effects, but is a more realistic estimation. The potential effects if all stock nights were used are included in the text.

Current Meadow Hydrologic Function Condition (# of meadows with that condition)	Trends By Number of Meadows					
	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No hydro alteration (6)						
Toward Potential	0	0	0	0	0	0
No change	6	5	5	5	6	6
Away from Potential	0	1	1	1	0	0
Slight hydro alteration (2)						

Current Meadow Hydrologic Function Condition (# of meadows with that condition)	Trends By Number of Meadows					
	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Toward Potential	0	0	0	0	1	1
No change	2	0	0	0	0	1
Away from Potential	0	2	2	2	1	0
Mod hydro alteration (2)						
Toward Potential	1	1	1	1	1	1
No change	1	1	1	1	1	1
Away from Potential	0	0	0	0	0	0
Severe hydro alteration (0)						
Toward Potential	0	0	0	0	0	0
No change	0	0	0	0	0	0
Away from Potential	0	0	0	0	0	0
All Meadows Analyzed (10)						
Toward Potential	1	1	1	1	2	2
No change	9	6	6	6	7	8
Away from Potential	0	3	3	3	1	0

Meadow Stream Functional Condition (PFC): The same ten meadows were analyzed for their stream functional condition as were analyzed for meadow hydrologic function. The same results are expected, with only Big Maxson Meadow projected to have recovery of stream functional condition under Alternative 1 (Figure 4.20, Table 4.82). Because most use in the meadow is from private pack stock, commercial pack stock management should not affect the rate or degree of meadow recovery.

Alternative 1 is likely to have the same effect to stream functional condition as the other alternatives in all but Big Maxson meadow.

Figure 4.20 A comparison of predicted changes to stream functional condition (PFC) among alternatives for the streams where PFC was analyzed in the John Muir Southwest Geographic Unit. Fifteen streams were analyzed for PFC, all within meadows or other grazed areas. This chart includes all streams analyzed, whether they are at proper functioning condition or whether they are currently functional at-risk.

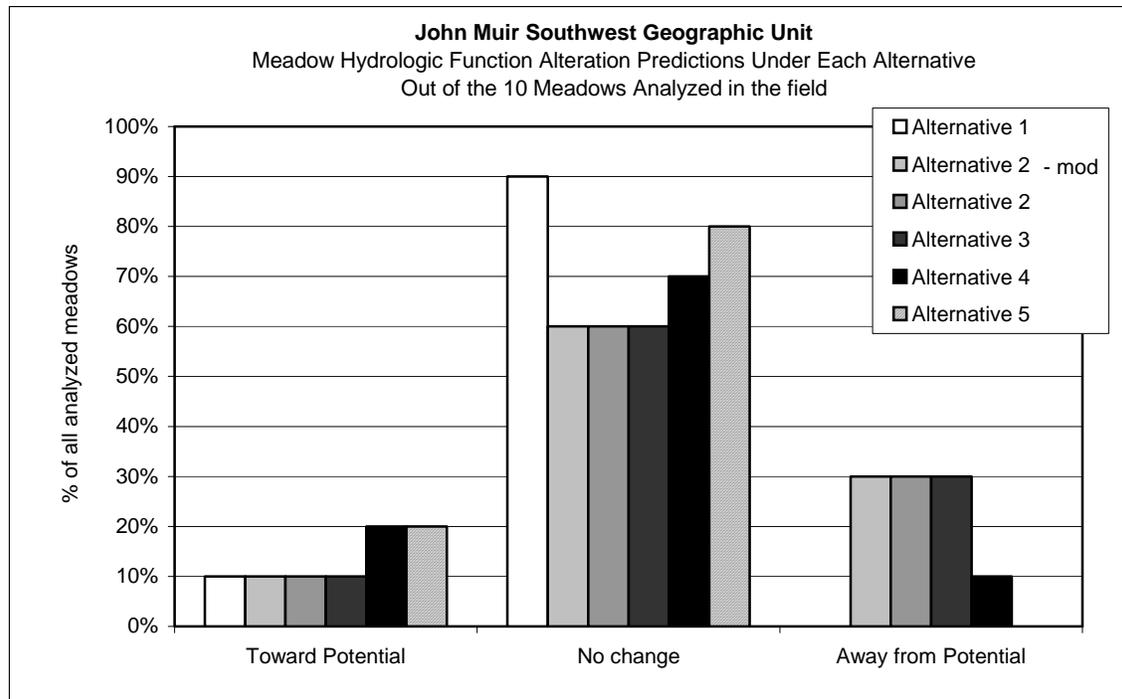


Table 4.82 Summary of all meadow stream functional condition predictions for the John Muir Southwest Geographic Unit under all alternatives. Stream functional condition was determined using the Proper Functioning Condition (PFC) protocol. The streams are separated by those that are currently properly functioning, those that are functional at-risk with an upward trend, those that are functional at-risk with a non-apparent trend, and those that are functional at-risk with a downward trend. The predictions are based on assumptions that grazing will continue about as it has in the past in most areas, except in meadows that are closed to grazing and those nearby meadows where grazing might move to.

Current stream functional condition rating (# with each rating)	Number of Meadows expected to have each trend					
	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Proper Functioning Condition (6)						
Toward potential	0	0	0	0	0	0
No change	6	6	6	6	6	6
Away from potential	0	0	0	0	0	0
Functional at-risk upward trend (2)						
Toward potential	1	1	1	1	1	2
No change	1	1	1	1	1	0
Away from potential	0	0	0	0	0	0

Current stream functional condition rating (# with each rating)	Number of Meadows expected to have each trend					
	Alternative 1	Alternative 2 – Modified	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Functional at-risk non apparent trend (2)						
Toward potential	0	0	0	0	0	0
No change	2	2	2	2	2	2
Away from potential	0	0	0	0	0	0
Functional at-risk downward trend (0)						
Toward potential	0	0	0	0	0	0
No change	0	0	0	0	0	0
Away from potential	0	0	0	0	0	0
Total John Muir Southwest (10)						
Toward potential	1	1	1	1	1	2
No change	9	9	9	9	9	8
Away from potential	0	0	0	0	0	0

Trails: Trails in the John Muir Southwest Geographic Unit are often directly adjacent to a stream and therefore have the potential to contribute fine sediment into the stream, locally altering water quality. This is unlikely to change under Alternative 1. In some areas, trails causing resource impacts would be repaired, but John Muir Southwest is not likely a high priority area for repair due to low use levels. Although some trails are incised and widened, and possibly contributing to slight sediment increases in local areas of streams, they are unlikely to be affecting the overall good water quality or soil productivity of this area.

Campsites: Campsites are currently not known to be causing excessive soil erosion or sedimentation into surface water. Because use should not change, it is unlikely that there will be any noticeable effect to soil and water resources from campsites under Alternative 1.

Cumulative Impacts

The past, present, and reasonably foreseeable future actions within the John Muir Southwest Geographic Unit are similar to the Ansel Adams and John Muir Wildernesses in general. The difference is that there is little commercial pack stock use in this area, and therefore few impacts can be related to commercial pack stock use. Continuation of low levels of commercial pack stock use should not change current condition and should not increase the potential for cumulative soil or water resource effects or cumulative watershed effects.

John Muir Southwest – Alternative 2 – Modified

Analysis

There should be little to no difference to soil and water resource impacts between Alternative 2 – Modified and Alternative 1 from grazing, trails or campsites. There is little commercial pack stock use in the area currently, and although there is allowance for increased use into the area

under Alternative 2, there is unlikely to be major increases in use. If use unexpectedly increased in the area, overall effects to soil and water resources would likely be too small to be noticed. The area has highly productive meadows and few areas affected now, and increased use would likely allow soil and water conditions to remain within standards.

Meadows: There is unlikely to be a difference between grazing effects to meadow hydrologic function or stream condition between Alternatives 1 and Alternative 2 – Modified in any location (Figure 4.19, Figure 4.20). However, if grazing is used to its full allocation, three meadows could have a trend away from potential hydrologic function where they were likely to remain in their same condition under Alternative 1.

Meadowbrook (bim5), Above Fleming Lake (fle21) and Above Lower Indian Lake (fle12) could all have substantially increased grazing relative to Alternative 1. Under current management, the meadows are grazed lightly or not at all and should show static hydrologic function and stream condition under Alternative 1. Under Alternative 2 – Modified, grazing would be allowed over 75 stock nights in all three meadows. It is possible that the hydrologic function and stream condition could move slightly away from their natural potential.

Trails: Under Alternative 2 – Modified, there are no substantial changes to trail management from current condition, and therefore the effects to soil and hydrologic resources should be the same as under Alternative 1.

Campsites: Campsites have minor and local impacts to water quality or soil productivity in this Geographic Unit, and that should remain the same under Alternative 2 – Modified. The difference between Alternative 2 – Modified and Alternative 1 is that stock holding sites would be designated under Alternative 2 – Modified. Therefore, the potential future increase in bare, compacted soil could be less under Alternative 2 – Modified.

Cumulative Impacts

The past, present and reasonably foreseeable future actions are the same as on the wilderness-wide scale, although this area has less extensive commercial pack stock use and other recreational use than most other geographic units.

Alternative 2 – Modified would allow for increased use in this area. It is unlikely that use would increase dramatically, however, and conditions should not change. Currently, there are local trail impacts to water quality where trails closely parallel streams. There are also a few meadows with what appear to be historical alteration of hydrologic function. If commercial pack stock use remains about the same as currently, there would likely be no increase in water and soil impacts. If use increases, there could be slightly increased meadow sod fragmentation, meadow stream bank trampling, and increases in bare soil due to increasing size of campsites as they are used more frequently.

There are currently no known cumulative watershed effects and there should be no increased potential for CWEs under Alternative 2 – Modified.

John Muir Southwest – Alternative 2

Analysis

There should be little to no difference to soil and water resource impacts between Alternative 2 and Alternative 2 – Modified from grazing, trails or campsites. Management should be about the same under these alternatives, except that there would be 14 fewer destinations available under Alternative 2.

Meadows: There is unlikely to be a difference between grazing effects to meadow hydrologic function or stream condition between Alternatives 2 and Alternative 2 – Modified. The grazing management is the same in all meadows, and therefore the effects should be the same.

Trails: Under Alternative 2, there are no substantial changes to trail management from current condition, and therefore the effects to soil and hydrologic resources should be the same as under Alternative 1.

Campsites: Campsites have minor and local impacts to water quality or soil productivity in this Geographic Unit, and that should remain the same under Alternative 2. The difference between Alternative 2 and Alternative 2 – Modified is that about 14 more stock holding sites would be designated. Therefore, there could be barer, compacted soil from campsites than under Alternative 2. The difference should be negligible on the geographic-unit scale.

Cumulative Impacts

The past, present and reasonably foreseeable future actions are the same as on the wilderness-wide scale, although this area has less extensive commercial pack stock use and other recreational use than most other geographic units.

Alternative 2 would allow for increased use in this area. It is unlikely that use would increase dramatically, however, and conditions should not change. Currently, there are local trail impacts to water quality where trails closely parallel streams. There are also a few meadows with what appear to be historical alteration of hydrologic function. If commercial pack stock use remains about the same as currently, there would likely be no increase in water and soil impacts. If use increases, there could be slightly increased meadow sod fragmentation, meadow stream bank trampling, and increases in bare soil due to increasing size of campsites as they are used more frequently.

There are currently no known cumulative watershed effects and there should be no increased potential for CWEs under Alternative 2.

John Muir Southwest – Alternative 3

Analysis

Effects to soil and water resources should be the same under Alternative 3 as they are under Alternative 2 – Modified. The grazing proposal is identical to Alternative 2 – Modified, and there is only one system trail that will be open to commercial pack stock use under Alternative 3 that would not be open under Alternative 2 – Modified. There is no reason for use to increase in this area unless client demand changes. Some increased use in the area would be allowed under Alternative 2 – Modified as well, and therefore there should not be any difference between the use and therefore the effects under Alternative 3.

John Muir Southwest – Alternative 4

Analysis

The effects to soil and water resources should be same as under Alternative 4 as under Alternative 2 – Modified. At least five destinations would be prohibited to pack stock use that are open under Alternatives 1 through 3, and one additional meadow would be prohibited to grazing. However, these destinations do not receive substantial use on a regular basis, and the meadow closed to grazing, the meadow Above Fleming Lake (Fleming Analysis Unit), has not had any grazing recently reported. Therefore, the changes in management should not actually change effects to soil and water resources on the ground.

Under Alternative 4, there would be a reduction in the potential for future soil and water resource impacts with the few destination closures and the one meadow closure. It is not expected that use in this area would rise dramatically, however, because of limited demand for use here. If use does increase, the meadow at Meadowbrook could have increased sod fragmentation in critical areas, but only if the stock are not managed to avoid critical areas. In the large meadow, it is likely that stock could be managed to avoid critical fen areas through use of electric fencing or other means.

Cumulative Impacts

Cumulative impacts are expected to remain the same under Alternative 4. Although there could be an increased amount of commercial pack stock grazing in this area, it is unlikely that there would be increased use due to low customer demand for trips here. The overall fewer number of trails approved for commercial pack stock use suggests the potential for a cumulative impact is unlikely when compared to the existing condition.

John Muir Southwest – Alternative 5

Analysis

There should be little difference to soil and water resource condition under Alternative 5 compared to any other alternative. There are low levels of commercial pack stock use and grazing in the area, and therefore removal of that use would not likely cause any but local change in condition. The main difference would be that the few meadows currently grazed could have slight reductions in sod fragmentation, stream bank trampling, and vegetation removal. The differences from current condition and the other alternatives would likely be immeasurable.

Cumulative Impacts

Cumulative affects to soil and water resources are expected to be reduced under Alternative 5, although the improvement would likely be minor at only a few locations. The small reduction in number of meadows grazed, trails used by any pack stock, and campsites used by stock holding parties suggests that impacts should be reduced from current levels. The reduction (or improvement) in cumulative impacts under Alternative 5 would be more than any other alternative. However, the low current commercial pack stock use suggests that the cumulative impacts would be only slightly improved from current conditions. Continuation of private pack stock use and hiker use could sustain most of the local effects from campsites and trails.

4.3 Biological Environment

4.3.1 Wildlife

Methodology

Context. The context of an impact considers whether the impact would be localized or widespread across the analysis area. This aspect concerns the scale over which the impacts would occur. For instance, an impact that reduces the capability of habitat over broad areas has the potential to adversely affect habitat connectivity and corridor maintenance at the landscape level. This could have a more profound effect on wildlife species/species group fitness and survivability that would be more likely to affect the species viability. In contrast, a more contained localized impact may be important locally but is relatively minor at a landscape level.

Intensity. The intensity of an impact considers whether the impact would be non-substantive, substantive, or significant. Minor impacts are effects that would be detectable but would not be expected to substantively affect habitat structure and function for a specific species/species group. The direct effects to the species/species group would not be substantive enough to change the species/species group ability to utilize available habitat, or affect the species/species group survivability in that habitat. Substantive impacts would modify habitat structure and function and would have an effect on the habitat suitability for an individual species/species group. A significant impact would have a substantial effect on the sustainability of a habitat for an individual species or group, and potentially significantly affect the species use of the habitat or its survivability in that habitat.

Duration. The duration of an impact considers whether impact would occur in the short-term or continue and/or persist over a longer term. A short-term impact would be temporary in duration (such as a human disturbance event that may not be repeated on a sustained basis) and could be associated with activities such as infrequent camping or trail use that may not regularly continue through time. A longer-term impact could have a continuous, persistent effect or consequence on wildlife habitats or populations; such as loss of wet meadow and wetland habitats, abandonment of habitats, or a decline in a sustained population through time.

Type of Impact. The type of impact considers whether the impact would be beneficial or adverse to biological resources. A beneficial impact would result if an action contributes to improved habitat suitability for a species/species group, or an improvement in individual animal or population fitness and survivability. An adverse impact would result in opposite effects.

Wilderness Scale

Introduction

The prediction of direct, indirect, and cumulative effects on Threatened, Endangered, Sensitive and Management Indicator wilderness wildlife species identified in Chapter 3 is a difficult prospect for a number of reasons. First, there is an overwhelming lack of research, administrative studies, surveys, and monitoring of most of these wildlife species and habitat conditions in the AA/JM Wildernesses. This includes a lack of peer-reviewed scientific studies that have examined the effects of recreational use, specifically the effects of commercial pack stock activities (such as meadow grazing, trail use, and camps) on wildlife populations and habitat.

Knight and Gutzwiller (1995) stated in their book “Wildlife and Recreationists” that “recreation activities disturb wildlife [are] well appreciated but poorly understood. Most popular forms of recreation in wildlands have yet to receive even one detailed study.” They further state that the understanding of effects of recreation on wildlife is rudimentary.

Gaines et al (2003) attempted to develop models to illustrate the cumulative effects of motorized and non-motorized linear recreation routes on wildlife habitats on the Okanogan and Wenatchee National Forests. Their work included a thorough review of all scientific studies on the effects of non-motorized trail use in wilderness on wildlife populations and wildlife habitats.. The conclusion of the modeling effort was that there were a few studies that looked at effects of non-motorized trail use. The authors stated: “Relatively reliable information was available for many focal species concerning the immediate spatial effect, or zone of influence of a particular road or trail associated factor. Less information was available relating to the intensity of human use.” They also concluded that because quantitative evaluation of cumulative effects was not possible owing to data limitations for many species, it was necessary to develop a qualitative ranking scheme.

The study noted information gaps in the scientific literature that hindered understanding wildlife and recreation trail interactions, including:

1. The lack of information on the interactions between wildlife and non-motorized trails for many wildlife species, especially for species with small home ranges and limited mobility.
2. The interactions between wildlife and the intensity of human use on recreation trails (such as trail density or number of hikers per unit time).
3. The interactions between wildlife habitat use and the spatial extent (such as the proportion of a species home range, or a watershed) of recreational activity.
4. The relation of recreation trail and wildlife interactions to the demography of a particular species of management interest.

The study results demonstrate the difficulty in attempting to analyze the effects of specific activities that occur on trail systems on wildlife populations, especially given that activities such as commercial pack stock operations are but one user group in a multitude of users in the wilderness using the same trails, destinations and camping areas. Commercial pack stock use has been estimated in this EIS to amount to approximately 11 to 13 percent of all users in the AA/JM Wildernesses. The timing and locations of use, including trail use and destinations, is highly variable from one year to the next based on client demand.

Similar problems are found in the assessment of pack stock grazing effects on wildlife populations and wildlife habitat. In 1999, researchers published “Sierra Nevada Ecosystems in the Presence of Livestock”, a scientific review of what is known about the impacts of livestock grazing on multiple resources including wildlife populations and wildlife habitats in the Sierra Nevada (Diaz et al.1999). The report completely lacked information concerning the specific effects of pack stock grazing on wildlife and wildlife habitat.

The assessment is useful in the extrapolation of its findings to pack stock grazing use; however, it must be recognized that pack stock will graze somewhat differently than cattle or sheep. For example, pack stock do not utilize riparian shrubs like cattle might, and there are substantially fewer number of pack stock at one time (usually a few to up to 25) in any given meadow. Pack

stock may only be present in a meadow for a few days per summer, or they may graze intermittently throughout the summer, as well as in highly variable use patterns from one year to the next, unlike livestock allotments. Controlled scientific studies that document the effects of commercial pack stock use on wildlife and wildlife habitats are absent.

The “Science Review” acknowledges that the available literature is replete with statements about the probable effects of grazing, many of them observational or anecdotal, but rarely is there controlled studies from which to accurately assess different levels of grazing. Most studies refer to heavy grazing without actual forage use quantification by cattle or sheep, and do not examine moderate grazing intensities that are proposed in this EIS. The “Review” notes:

Many studies have focused on documentation of the effects of abusive (or heavy) grazing on ecosystem structure and function. The scientific foundation for understanding the response to abusive grazing is clear: plant cover is destroyed, soil erodes, water quality is degraded, individual wildlife species and their habitats are destroyed, biodiversity declines, invasive plants take hold. Conversely, ample studies have shown removal of domestic animals generally results in increases in plant cover, biomass, and diversity to some point. Water quality, stream bank stability, wildlife and fish habitat improve. Again the changes in ecosystem recovery response vary by ecosystem. Arid and semi-arid systems are generally slow to respond while riparian systems and areas with sufficient water are the most resilient in general, and improve the fastest. These studies are sufficient if the goal is to remove livestock grazing. However, if the goal is to maintain use of the public lands in the Sierra Nevada, then many more studies quantifying effects at different grazing intensities, frequencies, and seasons of use must be conducted.

Studies on the effects of pack stock grazing in high mountain meadows are also needed. The “Science Review” concluded that based on the available literature that livestock grazing in the Sierra Nevada generally negatively impacts wildlife.

Some assumptions and limitations exist for this effects analysis related to the effects of commercial pack station operations and the trail system alternatives on wildlife species and wildlife habitats. System and user trail use, as well as use of campsites and destinations by wilderness users (including commercial pack stock operators and clients) can result in variable levels of displacement and avoidance by some species of wildlife of areas immediately adjacent to these human use areas. These types of impacts may occur at critical times important to the completion of essential life activities by wildlife such as breeding, nesting and fawning, young rearing, and foraging (Gaines et al. 2003). The magnitude and extent of the disturbance and avoidance effect is highly variable by species and individuals within a species, based on such factors as previous encounters, activity at the time of the encounter, condition of the animal, and time of year of the disturbance. Some species of wildlife can habituate to predictable patterns of human disturbance resulting in lessened impacts on the species. The scientific understanding of how such impacts affect wildlife populations, their viability, and habitat use is poorly understood (Gaines et al 2003, Knight and Gutzwiller 1995).

The trail system alternatives propose trail management levels, system and use trail determinations, and use criteria (such as not suitable for commercial stock). The effects of such actions on wildlife habitat and wildlife use of trail corridors are minor based on the trail proposal assumptions stated in the trails section of this EIS. No trails will be closed to all users, eliminated, or re-routed under any of the alternatives. The factors that affect wildlife habitat, such as human disturbance along the trail corridor and poor trail location through key wildlife habitats, will not change significantly under any alternative. The change in trail management

level desired condition and trail suitability for commercial stock are unlikely to substantially change trail resource condition ratings, and subsequently wildlife habitat, over the next 20 years or longer. Site specific trail proposals outside the scope of this analysis will likely continue to occur to modify trail locations to restore or enhance key wildlife habitat.

The effects of commercial pack stock grazing on riparian wildlife habitats are similar enough to cattle grazing effects described in the scientific literature under similar levels of forage utilization and timing to extrapolate effects from livestock grazing studies. Many wilderness meadow habitats have been adversely affected, with a smaller subset of these meadows exhibiting substantial losses of wetland and wet meadow habitats from historical overgrazing practices. Analyzing the effects of commercial pack stock grazing on wildlife habitats in these meadows is very difficult where hydrologic conditions are already substantially degraded and meadow recovery remains uncertain as a result of continued hydrologic instability.

Commercial pack stock grazing at moderate forage utilization levels of 30 and 40 percent use can impact some riparian-dependent and associated wilderness wildlife species and their habitats that are found under relatively pristine wilderness conditions. The site specific and overall wilderness grazing impacts affect habitat suitability; modify some species numbers, individual vigor and survival ability; and alter use patterns of habitat. There is no research or monitoring evidence at this time, however, to suggest that this grazing is leading to a loss of viability for any wildlife species within the planning area. The effect is more of an unknown qualitative change in the habitat suitability from grazing induced changes in habitat structure, and direct animal disturbance interactions.

Alternative 2 through 4 display stock night capacity guidelines for individual meadows. Alternative 1 implements range readiness standards with no utilization standards until future action analyses appropriate utilization levels based on 2001 Wilderness Plan direction. Actual grazing use would be highly variable under implementation of any of these alternatives, and is likely to be considerably less than capacity in many meadows based on analysis of reported stock nights grazed from 2001 through 2003. The actual use reported is difficult to interpret in many meadows because use has been reported as a total for a watershed, or group of meadows, and not a single meadow. As a result there is a dichotomy in the analysis between the effects that would occur if available stock nights were fully utilized to meet the allowable stock nights and utilization levels, versus what is more likely to occur. Many meadows may not receive any use in some years. The highly popular destinations such as the Silver Divide, Mono Creek, and the Thousand Island, Rush, and Alger Creeks areas are more likely to receive sustained annual grazing use. Consequently, it is difficult to model the effects of actual grazing use effects on meadow wildlife habitat.

The discussion below focuses on Threatened, Endangered, Sensitive, and Management Indicator Species at the Wilderness Scale. The wildlife Geographic Scale section will further analyze differences of the proposed alternatives beyond the Wilderness Scale analysis to identify specific localized areas for the Yosemite toad and the Management Indicator Species and species groups where the effects by alternative are known to be substantive. Cumulative effects are described at the Wilderness Scale. Alternative 5 is sufficiently described at the Wilderness Scale for all wildlife species.

Summary of Alternatives 1-5 Impacts

Wildlife Biological Evaluation/Assessment determinations common to all alternatives:

Threatened and Endangered Species: Implementation of any Alternatives would not affect the bald eagle and Paiute cutthroat trout or their habitat found within the analysis area.

Implementation of Alternatives 1 through 4 may affect but would not adversely affect the Sierra Nevada bighorn sheep. Alternative 5 would not affect the Sierra Nevada bighorn sheep or its habitat.

Forest Service Region 5 Sensitive Species: Implementation of Alternatives 1 through 4 may affect individuals of the following species but would not contribute to a trend toward federal listing of any of these species, or lead to a loss of their viability in the planning (analysis) area: Yosemite toad, mountain yellow-legged frog, willow flycatcher, great gray owl, American marten, Pacific fisher, California wolverine, Sierra Nevada red fox, California spotted owl, Townsends big-eared bat, and the pallid bat. Implementation of Alternative 5 would not affect any of these species.

Management Indicator Species or Species Group: Implementation of any Alternative would not result in the loss of viability of any other MIS (i.e., Not on the federal threatened, endangered or proposed species list or Forest Service Region 5 sensitive species list) found within the planning (analysis) area.

No other federally listed threatened, endangered, proposed, or Forest Service Region 5 sensitive species or their habitat would be affected by implementation of any of the alternatives.

Effects Summary by Alternative

Wildlife – Alternative 1

The majority of 267 Yosemite toad occupied breeding meadows within the AA/JM Wildernesses would likely be unaffected by commercial pack stock use if grazing patterns continue as reported and observed from 2001 through 2004. Eighty-seven of the 267 occupied breeding meadows would be more likely to have commercial pack stock grazing overlap where impacts to Yosemite toad breeding habitats may occur.

Actual grazing use overlap and subsequent impacts would be highly variable based on past use with many meadows likely to receive very light to no use, and therefore a high probability of non-substantive impacts to toad breeding habitat. A small percentage of the 87 occupied breeding meadows (likely < 10 percent) would likely have substantive trampling and chiseling impacts from commercial pack stock grazing in Yosemite toad breeding sites. The 20 percent ground disturbance standard would be implemented to limit the amount of disturbance in critical breeding areas such as stream banks and lakes and ponds where toads may be found. Impacts in Yosemite toad breeding sites could substantively increase if meadows are grazed at maximum forage utilization levels allowed in the John Muir, Ansel Adams and Dinkey lakes Wilderness Plan.

Gradual implementation of range unsuitable meadow determinations as reasonably foreseeable action per Wilderness Plan direction may reduce the total number of Yosemite toad occupied breeding meadows where grazing impacts would likely occur.

Thirteen meadows identified as suitable unoccupied willow flycatcher habitat would be approved for grazing. Habitat structural characteristics could be impacted if meadows are grazed to maximum allowable forage utilization levels.

The alternative allows for the highest level of potential dispersed impacts to MIS mule deer, yellow warbler, and meadow and meadow edge bird species and their habitats since it has the least restrictive management control over campsite use, destination impacts such as access and social trails, grazing impacts, and approved system and use trails. All meadows are open to commercial pack stock grazing. Two hundred forty six meadows analyzed are likely to have some level of commercial pack stock grazing use where MIS habitat impacts are most likely to occur. Four meadows would be closed to grazing. Sixty one meadows with hydrologic functioning problems that are impacting MIS wildlife habitat conditions would continue to be open for grazing where grazing has the potential to exacerbate the problems, or slow restoration rates. Habitat structural characteristics could be impacted if meadows are grazed to maximum allowable forage utilization levels

Mountain yellow-legged frog stream habitat could be potentially impacted at two meadows approved for commercial pack stock grazing.

There would be some potential for a reduced level of human disturbance to MIS wildlife species and habitats on approximately 7 miles of system trail closed to commercial stock as a result of resource concerns, and 102 miles on 94 use trails where commercial pack stock would be prohibited. There may be some localized minor level of riparian habitat improvement on these trails, if sections with resource impacts begin to re-vegetate, and narrow in width such as where trails course through meadows, and at stream and spring crossing areas.

Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of impacted areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas.

Wildlife – Alternative 2 - Modified

Alternative 2 – Modified manages for an increased level of protection for Yosemite toad meadow breeding habitats since grazing would be managed to avoid Yosemite toad occupied breeding habitats. Fifty two meadows approved for commercial packer stock grazing overlap with Yosemite toad breeding areas. Thirty four meadows that are approved for grazing in Alternative 1 are either unsuitable (28) for grazing or rested from grazing (6) in this alternative and would have full protection for the breeding habitats. One hundred ninety seven occupied Yosemite toad breeding meadows outside of grazing zones would be fully protected since grazing would be prohibited. Suitable/unsuitable determinations would be implemented immediately.

The alternative allows for some level of control of potential dispersed impacts to MIS mule deer, yellow warbler, and meadow and meadow edge bird species and their habitats since it designates overnight stock holding camps, implements destination quotas that would limit destination impacts such as access and social trails, grazing impacts. All meadows outside of grazing zones are closed to commercial pack stock grazing. One hundred forty three meadows analyzed are likely to have some level of commercial pack stock grazing use where MIS habitat impacts are most likely to occur. A subset of 110 meadows would be closed to grazing as a result of unsuitable for grazing determinations. Thirty four meadows with hydrologic functioning

problems that are impacting MIS wildlife habitat conditions would continue to be open for grazing where grazing has the potential to exacerbate the problems, or slow restoration rates.

Thirteen meadows identified as suitable unoccupied willow flycatcher habitat would be approved for grazing. Habitat structural characteristics could be impacted if meadows are grazed to maximum allowable use levels.

Mountain yellow-legged frog stream habitat could be potentially impacted at one meadow approved for commercial pack stock grazing.

There would be some potential for a reduced level of human disturbance to MIS wildlife species and habitats on 73 miles of system trail not suitable for commercial stock, and 80 miles on 82 use trails where commercial pack stock would be prohibited. There may be some localized minor level of riparian habitat improvement on these trails, if impacted sections narrow in width such as where trails course through meadows, and at stream and spring crossing areas.

Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of impacted areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas.

Wildlife – Alternative 2

Alternative 2 manages for an increased level of protection for occupied Yosemite toad meadow breeding habitats. Fifty-six meadows approved for commercial packer stock grazing overlap with Yosemite toad breeding areas. Thirty meadows that are approved for grazing in Alternative 1 are unsuitable for grazing in this alternative and would have full protection for the breeding habitats. A 5 percent critical area maximum allowable disturbance standard would be implemented in all other Yosemite toad breeding habitat areas where commercial pack stock grazing would be approved to minimize trampling and chiseling effects to the breeding habitats, and minimize the potential for stock trampling of metamorph toads. Suitable/unsuitable determinations would be implemented immediately.

The alternative allows for some level of control of potential dispersed impacts to MIS mule deer, yellow warbler, and meadow and meadow edge bird species and their habitats since it designates overnight stock holding camps, implements destination quotas that would limit destination impacts such as access and social trails, grazing impacts. All meadows outside of grazing zones are closed to commercial pack stock grazing. One hundred thirty nine meadows analyzed are likely to have some level of commercial pack stock grazing use where MIS habitat impacts are most likely to occur. A subset of 108 meadows would be closed to grazing as a result of unsuitable for grazing determinations. Forty one meadows with hydrologic functioning problems that are impacting MIS wildlife habitat conditions would continue to be open for grazing where grazing has the potential to exacerbate the problems, or slow restoration rates.

Thirteen meadows identified as suitable unoccupied willow flycatcher habitat would be approved for grazing. Habitat structural characteristics could be impacted if meadows are grazed to maximum allowable use levels.

Mountain yellow-legged frog stream habitat could be potentially impacted at one meadow approved for commercial pack stock grazing.

There would be some potential for a reduced level of human disturbance to MIS wildlife species and habitats on 73 miles of system trail not suitable for commercial stock, and 80 miles on 82

use trails where commercial pack stock would be prohibited. There may be some localized minor level of riparian habitat improvement on these trails, if impacted sections narrow in width such as where trails course through meadows, and at stream and spring crossing areas.

Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of impacted areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas.

Wildlife – Alternative 3

Alternative 3 manages for an increased level of protection for Yosemite toad meadow breeding habitats. Fifty-three meadows approved for commercial packer stock grazing overlap with Yosemite toad breeding areas. Thirty three meadows that are approved for grazing in Alternative 1 are either unsuitable (32) for grazing or rested from grazing (1) in this alternative and would have full protection for the breeding habitats. A 5 percent critical area maximum allowable disturbance standard would be implemented in all other Yosemite toad breeding habitat areas where commercial pack stock grazing would be approved to minimize trampling and chiseling effects to the breeding habitats, and minimize the potential for stock trampling of metamorph toads. Suitable/unsuitable determinations would be implemented immediately.

The alternative allows for some level of control of potential dispersed impacts to MIS mule deer, yellow warbler, and meadow and meadow edge bird species and their habitats since it designates overnight stock holding camps, implements destination quotas that would limit destination impacts such as access and social trails, grazing impacts. All meadows outside of grazing zones are closed to commercial pack stock grazing. One hundred forty three meadows analyzed are likely to have some level of commercial pack stock grazing use where MIS habitat impacts are most likely to occur. A subset of 110 meadows would be closed to grazing as a result of unsuitable for grazing determinations. Thirty four meadows with hydrologic functioning problems that are impacting MIS wildlife habitat conditions would continue to be open for grazing where grazing has the potential to exacerbate the problems, or slow restoration rates.

Thirteen meadows identified as suitable unoccupied willow flycatcher habitat would be approved for grazing. Habitat structural characteristics could be impacted if meadows are grazed to maximum allowable use levels.

Mountain yellow-legged frog stream habitat could be potentially impacted at one meadow approved for commercial pack stock grazing.

There would be some potential for a reduced level of human disturbance to MIS wildlife species and habitats on 63 miles of system trail not suitable for commercial stock, and 87 miles on 87 use trails where commercial pack stock would be prohibited. There may be some localized minor level of riparian habitat improvement on these trails, if impacted sections narrow in width such as where trails course through meadows, and at stream and spring crossing areas.

Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of impacted areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas.

Wildlife – Alternative 4

Alternative 4 manages for an increased level of protection for Yosemite toad meadow breeding habitats. Fifty-six meadows approved for commercial packer stock grazing overlap with Yosemite toad breeding areas. Thirty meadows that are approved for grazing in Alternative 1 are unsuitable for grazing in this alternative and would have full protection for the breeding habitats. A 5 percent critical area maximum allowable disturbance standard would be implemented in all other Yosemite toad breeding habitat areas where commercial pack stock grazing would be approved to minimize trampling and chiseling effects to the breeding habitats, and minimize the potential for stock trampling of metamorph toads. Suitable/unsuitable determinations would be implemented immediately.

The alternative allows for some level of control of potential dispersed impacts to MIS mule deer, yellow warbler, and meadow and meadow edge bird species and their habitats since it designates overnight stock holding camps, implements destination quotas that would limit destination impacts such as access and social trails, grazing impacts. All meadows outside of grazing zones are closed to commercial pack stock grazing. One hundred twenty meadows analyzed are likely to have some level of commercial pack stock grazing use where MIS habitat impacts are most likely to occur. A subset of 138 meadows would be closed to grazing at an unknown future date as a result of unsuitable for grazing determinations. Twenty seven meadows with hydrologic functioning problems that are impacting MIS wildlife habitat conditions would continue to be open for grazing where grazing has the potential to exacerbate the problems, or slow restoration rates.

Thirteen meadows identified as suitable unoccupied willow flycatcher habitat would be approved for grazing. Habitat structural characteristics could be impacted if meadows are grazed to maximum allowable use levels.

Mountain yellow-legged frog stream habitat would not be impacted since all three meadows would be closed to grazing.

There would be some potential for a reduced level of human disturbance to MIS wildlife species and habitats on 173 miles of system trail not suitable for commercial stock, and 165 miles on 153 use trails where commercial pack stock would be prohibited. There may be some localized minor level of riparian habitat improvement on these trails, if impacted sections narrow in width such as where trails course through meadows, and at stream and spring crossing areas.

Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of impacted areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas.

Wildlife – Alternative 5

There would be no commercial pack stock grazing that would overlap with Yosemite toad occupied breeding habitats, or willow Flycatcher and great gray owl meadow suitable unoccupied habitats. Elimination of human and pack stock disturbance on trails, camps, and grazing areas associated with commercial pack stock operations would improve MIS mule deer, yellow warbler, meadow and meadow edge bird guild species habitats, as well as use of these habitats by these species.

Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of impacted areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas

Threatened and Endangered Species

Sierra Nevada Bighorn Sheep – Alternatives 1 through 4

Analysis

No substantive difference exists in effects to the Sierra Nevada bighorn sheep or its habitat with implementation of any of these alternatives. Pack stock, including llamas and burros (unlike domestic sheep and goats), cannot transmit disease to bighorn sheep and therefore do not pose a threat to the species. The continuation of light commercial pack stock use on trail systems and destinations on the Inyo National Forest in key bighorn habitats within the Mt. Langley, Mt. Williamson, Mt. Baxter, Wheeler Ridge, and Mt. Gibbs herd ranges would result in infrequent, benign encounters where bighorn observe from high alpine habitats the commercial pack stock operations. These encounters are most likely at thoroughfare mountain passes, and limited lower elevation destinations on the Inyo National Forest such as at Upper Cottonwood Basin-New Army Pass, Shepherd Pass, Sawmill Pass, Kearsarge Pass, Morgan Pass area, Upper Tamarack Basin below Wheeler Ridge, and Mono Pass. No effect would take place to bighorn sheep in the Baxter Pass area since the trail has not been used in recent years by commercial pack stock operators, and all alternatives would designate this system trail not suitable for commercial stock.

Camp and destination use by commercial pack stock operations would be unlikely to have any substantive effects to bighorn sheep that would cause sheep to modify or abandon habitat use areas. Camps and destination use generally occur at lower elevation forested areas outside of bighorn sheep herd habitat use areas. Commercial pack stock operators do occasionally drop clients off in locations such as Upper Cottonwood Basin or Upper Tamarack Basin where clients may hike into bighorn range to reach peaks. This type of activity would not occur within the California Bighorn Sheep Zoological Area since a Forest Order closure is in place to restrict all camping and off-trail hiking to areas outside key sheep habitat use areas. Commercial pack service to mountaineers and peak hikers is a very small part of the overall pack stock clientele and usually occurs in areas outside of key Sierra Nevada bighorn sheep high elevation habitats. Implementation of any of the alternative trail transportation system and management level designations, and commercial pack stock system and use trail suitability determinations would have no adverse effects on the Sierra Nevada bighorn sheep since trails have not been determined to be adversely affecting the species use of available key habitat areas in any of the herd ranges.

The Biological Assessment prepared for this EIS has determined that implementing alternatives 1 through 4 may affect, but will not likely adversely affect, the Sierra Nevada bighorn sheep. A previous informal consultation with the Ventura Field Office of the U.S. Fish and Wildlife Service was conducted by the Inyo National Forest in January, 2001 as part of Section 7 requirements of the Endangered Species Act. The consultation was conducted for the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses Management Plan EIS Record of Decision. It included an analysis of commercial pack stock operations as part of the general wilderness use that could overlap with Sierra Nevada bighorn sheep habitats. It was similar to this analysis in

many respects since it addressed trail use, camping, and destination use for all wilderness user groups. The U.S. Fish and Wildlife Service concurred with the same determination as this analysis, namely that it may affect but will not likely adversely affect the Sierra Nevada bighorn sheep. There is no critical habitat designated for this species, therefore, the implementation of these alternatives will not affect any critical habitat.

Cumulative Impacts

The species was originally listed in 2000 as endangered by the U. S. Fish and Wildlife Service because of the dramatic population decline in the late 1990s attributable to predation by mountain lions, failure of sheep to utilize low elevation favorable winter range habitat related to mountain lion presence, and the threat of large-scale mortality that could occur if domestic sheep transmitted disease to a bighorn population. The inability of existing regulatory mechanisms to deal with the issues of lion predation and disease transmission was also noted as a major reason for the listing of the species. The minor disturbance effects of commercial pack stock operations within or adjacent to Sierra Nevada bighorn sheep habitat would be insignificant to the cumulative effects operating on this species and its habitat.

Key cumulative affecters on the species that have been reduced since the species was listed as endangered in 2000 are predation of sheep by mountain lions, and the threat of disease transmission to bighorn sheep by domestic sheep. The population has increased substantially since listing to over 300 animals in response to the control of mountain lion predation and the return of bighorn sheep to low elevation winter ranges. The domestic sheep disease transmission issue has been substantially ameliorated by closure of domestic sheep allotments adjacent to bighorn habitats. Inyo National Forest Orders prohibit domestic goats within suitable bighorn habitat to prevent possible disease transmission, and dogs must be kept under immediate verbal or physical control at all times by their owners to prevent potential harassment to bighorns. The human use restrictions put into place in the Mt. Williamson and Mt. Baxter California Bighorn Sheep Zoological Areas created in 1977 continue to be in force by Forest Order. In addition, transplant of bighorn sheep to supplement existing marginal populations continues to improve the overall distribution of sheep and viability prospects.

Non-commercial pack stock recreation, backpackers, mountain climbers, and hikers will continue to go into or near bighorn habitat. These activities will continue to have minor effects on bighorn sheep from disturbance encounters that result in bighorn flight responses and the associated minor changes in bighorn use of habitat, especially with off-trail hikers and peak climbers that come into direct contact with bighorn.

Sierra Nevada Bighorn Sheep – Alternative 5

Analysis

The endangered Sierra Nevada bighorn sheep and its habitat will be largely unaffected by cessation of all commercial pack stock activities since the vast majority of the summer range habitat of the species is outside of the commercial use areas of operation. Commercial pack stock operations represent only 3 to 5 percent of all users in the key bighorn habitat areas in Sawmill, Shepherd, Kearsarge, Cottonwood, and Tamarack Analysis Units with much of this commercial pack stock use in the first 3 areas traveling to destinations in Sequoia-Kings Canyon National Park. As a result, commercial pack stock use is not considered a substantive affecter of bighorn

sheep habitat or the species use of the habitat. In addition, bighorn have the ability to habituate to non-threatening, predictable uses of adjacent areas of human recreation use, particularly when use does not overlap with critical habitat areas such as lambing habitat (Wehausen 2000).

The U. S. Fish and Wildlife Service listing proposed rule of January 3, 2000 (USDI Fish and Wildlife Service 2000) identified recreation as a minor affector of the species that did not contribute to the listing of the species. Recreational use within bighorn range, including commercial pack stock operations, was not considered a contributor to population decline of the species that warranted the listing of the species as endangered. The elimination of low existing use that occurs by commercial pack stock along trails in the upper Sawmill, Shepherd Pass, Morgan Pass, Upper Tamarack Basin, Mono Pass, and New Army Pass-Upper Cottonwood Basin areas where sheep may encounter limited overlap of their range with pack stock operations would likely have no effect on the way bighorn currently use the habitat. The determination of the Biological Assessment prepared for this EIS is that implementation of this alternative would not affect the Sierra Nevada bighorn sheep or its habitat.

Cumulative Impacts

The cessation of all commercial pack stock use within bighorn habitat will constitute no substantive change in the cumulative effects identified for Alternatives 1 through 4 of land uses and environmental factors affecting the bighorn sheep.

Paiute Cutthroat Trout – All Alternatives

Analysis and Cumulative Impacts

The Biological Assessment prepared for this EIS has determined that implementation of any of the alternatives would not affect the Paiute cutthroat trout (PCT). There is no critical habitat designated for this species therefore the implementation of these alternatives would not affect any critical habitat.

Commercial pack stock use is currently very limited on two trails that might access the PCT populations. There are no designated stock camps or pack stock grazing areas within 1 mile of either PCT populations being proposed under any Alternative. No actions are being proposed that would indirectly affect the species through reductions in the quality of habitat.

Implementation of the any of the alternative trail transportation system and management level designations, and commercial pack stock system and use trail suitability determinations would have no effect on the Paiute cutthroat trout since trails have not been determined to be adversely affecting the use of this species' occupied habitat.

Bald Eagle – All Alternatives

Analysis and Cumulative Impacts

The Biological Assessment has determined that implementation of any alternative would not affect the bald eagle since commercial pack stock operations do not substantively overlap with any known bald eagle nest territories or key foraging habitats. Known nest sites are found outside of wilderness. There is always the possibility that additional bald eagle nests may occur in wilderness forests around the major reservoirs, but none are known at this time.

Wilderness use around these reservoirs by commercial pack stock operations includes system trail use and minor amounts of grazing in meadows habitats. The one nest outside but adjacent to the wilderness is at Edison Reservoir, which is within viewing distance of the system trail that commercial pack stock operators use to access wilderness. No evidence exists that system trail use, by any user group, is having any adverse effect on nesting territory use by bald eagles. Implementation of any of the alternative trail transportation system and management level designations, and commercial pack stock system and use trail suitability determinations would have no effect on the bald eagle since trails have not been determined to be adversely affecting bald eagle use of available habitat.

Cumulative effects of timber harvesting, recreation use, and contaminants in the food chain (such as DDT insecticide residue) would likely continue to act on the species outside of wilderness, although there has been a significant reduction of these affecters since the listing of the species. As a result, the species has recovered to the point where the U. S. Fish and Wildlife Service has published in the July 6, 1999 Federal Register (USDI Fish and Wildlife Service 1999) a proposal to remove the eagle from the Endangered Species List. Implementation of any of the alternatives would not affect the bald eagle. There is no critical habitat designated for this species, therefore the implementation of any alternative would not affect any critical habitat.

Forest Service Sensitive Species

Yosemite toad

The Biological Evaluation has determined that implementation of Alternatives 1 through 4 may affect individual Yosemite toads but would not likely contribute to a trend toward federal listing or loss of viability of the species. Implementation of Alternative 5 would not affect Yosemite toads.

There is a degree of uncertainty associated with the determination for Alternative 1, however, since it does not immediately implement forage utilization grazing standards, or trampling and chiseling standards in meadows per direction in the 2004 SNFPA Record of Decision. Implementation of these standards has been identified as a reasonably foreseeable action with no associated time-table. Alternative 1 also does not implement a 5 percent disturbance standard in critical areas such as Yosemite toad breeding habitats.

The John Muir, Ansel Adams and Dinkey Lakes Wilderness Plan of 2001 adopted management direction for the Yosemite toad that was part of the 2001 Sierra Nevada Forest Plan Amendment Record of Decision. That direction excluded livestock, including pack stock, from standing water and saturated soils in wet meadows and associated streams and springs occupied by the Yosemite toad during the breeding and rearing season. Since then the 2004 FSEIS Record of Decision has modified that direction including the removal of the applicability of that direction to pack stock grazing. It deferred the development of management direction for pack stock grazing to site specific analyses such as this EIS. The effects analysis for Alternative 1 has a higher level of potential impact to the breeding areas than all other alternatives since it does not incorporate specific protective measures for Yosemite toad habitats. As a result, it has a higher degree of uncertainty as to what the potential impacts may be over the short and long-term to Yosemite toads and their habitat, given the complete lack of research on the effects of grazing on this species and its habitat.

The implementation of a regional adaptive management study to assess the effects of grazing on Yosemite toads and their habitat is set to begin in 2005 and will help to validate the determination for Alternatives 1 through 4. Study results will not be available for several years. Anecdotal and observational evidence indicates Yosemite toads continue to breed and occupy a few hundred meadows throughout the Sierra Nevada that are grazed by cattle and/or pack stock. Implementation of a 5 percent critical area disturbance standard under Alternatives 2 through 4 in grazed meadows would provide a higher degree of protection to minimize pack stock use and subsequent effects in Yosemite toad breeding areas of meadows.

Yosemite toad – Alternative 1

Analysis

No published research exists on the effects of wilderness land uses on Yosemite toads and their habitat. Much of the assessment of the effects of pack stock grazing in Yosemite toad habitat is based on subjective analysis of anecdotal observations, unpublished data, personal communications from a researcher, and extrapolation and inference from published studies on the effects of livestock grazing on riparian habitats in the Sierra Nevada and other landscapes.

A monitoring study summarized in the Biological Evaluation in the Planning Record (Inyo National Forest, unpublished report on file 2004) conducted in the summer of 2004 as part of this analysis attempted to assess the extent and magnitude of impacts of pack stock grazing on a sample of occupied Yosemite toad breeding habitats in the Ansel Adams and John Muir Wildernesses. The principal study objective was to determine the extent of pack stock use that directly overlapped with Yosemite toad breeding habitats. It was not designed to assess the effects of the use overlap on Yosemite toads and their habitat, though subjective evaluation of the effects is part of this analysis.

The effects of recreation such as hiking and camping, and trails in toad habitat are similarly extrapolated from limited field observations and studies on the effects of these activities to riparian meadows.

Grazing would likely continue to occur in at least 34 (13 percent) meadows out of 267 meadows in the AA/JM Wildernesses tallied by geographic unit in Table 4.83 where Yosemite toads breed based on reported grazing use from 2001 through 2003. An additional 53 (20 percent) other meadows with toad breeding populations were identified by commercial packers as meadows they may graze, but have not reported grazing use.

It is probable that the majority of the 34 meadows where use is traditionally reported would have light overlapping trampling and chiseling and grazing impacts at Yosemite toad breeding sites, with a smaller subset where impacts would be more substantive. This subset would likely be in the Upper Fish Creek area and the Thousand Island/Rush Creek areas. The other 53 meadows would likely have light to no overlapping impacts in most years. The two categories amount to 87 (33 percent) meadows out of 267 meadows in the AA/JM Wildernesses that are known breeding sites for Yosemite toads.

Upper Graveyard, Gra11; Grassy, Sil22; Martin's, Mcg4, Round, Mcg8; and Baldwin-Scheelore, Mcg10 meadows are in the group of 34 meadows where some level of grazing may occur. They have historical and current severe hydrologic functioning and sedimentation problems that are compromising the stability of the wet meadow portions where toads breed. Commercial pack

stock grazing may contribute to the perpetuation of the problem in the first two meadows; while poor trail conditions are severely affecting Baldwin-Scheelore, Round, and Martins meadows. In the first meadow, massive sediment deposition from the old mining road (now system trail) erosion gullies is covering over portions of the toad breeding pools. Martins meadow has a severe headcut in the lower meadow at the trail crossing that is eroding out this portion of the meadow and depositing sediment in the next meadow down (Round Meadow Mcg8) and also covering over a portion of the Yosemite toad breeding pool. Martin's Meadow is currently ungrazed. The severe trail impacts in these two meadows could be compounded by pack stock trampling and grazing impacts at the breeding sites if grazing were to occur at moderate forage utilization levels.

Other meadows where light to moderate grazing and/or trail impacts were observed in one or more years from all monitoring efforts from 2001 through 2004 in toad habitats include Second Meadow above Martin's Mcg9 (stock trailing), Peter Pande Tarn Sil7,(grazing), Red Slate Meadow, Sil24 (trail), and Crater Meadow, Ccd1 (trail).

The effect of grazing, and trail use, and potential overlapping pack stock use on the persistence of toad populations in any of the meadows is unknown. Effects may be minor in the majority of cases and would result in reduced habitat suitability and less than optimal habitat conditions. The effect may be more problematic in meadows such as Martins, Round, Baldwin-Scheelore and Grassy where loss of meadow hydrologic functioning and excessive sedimentation is threatening the long-term persistence of suitable breeding sites. The lack of research in this area of toad ecology makes it difficult to predict more. Long-term habitat monitoring, toad presence-absence data, and population demographic monitoring in grazed and ungrazed meadows would be needed.

Grazing is likely to be highly variable from year to year and there is a possibility of higher levels of impact from one year to the next, especially since the majority of the 267 meadows with toad populations are potentially available for some level of pack stock grazing under Alternative 1. Upper Rush, Thousand Island, McGee Creek, Upper Fish Creek, and Silver Divide meadows are most likely to continue to have overlapping impacts of pack stock grazing and trailing in Yosemite toad breeding sites.

McGee Creek, Convict Creek, Pine Creek and Crater Creek on the Inyo National Forest are designated Critical Aquatic Refuges (CARs) for the Yosemite toad. Forest Plan management direction for CARs may further restrict grazing use in the future in these refuges. Adaptive management efforts would likely continue under Alternative 1 based on additional monitoring efforts. Actions may be implemented to minimize impacts to specific toad breeding sites of concern through the annual operating plan process. The fact that approximately 66 percent of the breeding meadows have not been identified for grazing and are not likely to see commercial pack stock use and another 20 percent have been identified with no grazing use observed from 2001 through 2004 provides a high degree of confidence that breeding populations would persist and maintain areas of relatively undisturbed habitats well distributed across the AA/JM Wilderness landscapes. This likely allows for suitable population connectivity and the ability of the animals to disperse and supplement, or re-colonize areas where toad populations may be subject to adverse effects of disturbance events.

Table 4.83: Distribution of known occupied Yosemite toad breeding meadows in the Ansel Adams and John Muir Wildernesses and overlap with identified grazing areas (grazing observed/reported + requested) in Alternative 1 by geographic unit

Geo Unit	Breeding Meadows with observed grazing or reported grazing use	Other Breeding Meadows requested for grazing (No reported use)	Not requested	Total Breeding Meadows
AA East	13	2	19	34
AA West	1	2	17	20
Fish Creek/Convict/McGee	11	10	23	44
Mono Creek/Rock Creeks		9	12	21
Florence/Bear	4	10	41	55
John Muir Southwest	3	7	57	67
Bishop Humphreys	2	13	11	26
Totals	34	53	180	267

Alternative 1 does not immediately implement forage utilization grazing, or trampling and chiseling standards and could result in trampling of an unknown number of individual toads, particularly newly metamorphosed young throughout the summer months from early July through early September. This is likely to occur wherever pack stock use of trails and grazing overlaps with Yosemite toad breeding pool habitats in meadows. The most likely locations where this would occur is in the 34 meadows where grazing has been reported on a fairly regular basis.

Research is needed to examine the magnitude and significance of this probable effect. Metamorph toads are about one centimeter (3/8 inch), dark black in color, blend in with the color of the mudflat and are very poor hoppers immediately after metamorphosis from the tadpole stage. They congregate in the mudflats oftentimes on the perimeter of the breeding pool where it adjoins the moist/wet meadow interface. In these situations they may be highly vulnerable to trampling where pack stock graze the pool edges and walk through the shallow moist mudflat vegetated zones. Trampled metamorphs would be near impossible to see since they would likely be pushed into the mud without a trace.

Field observations from 2001 through 2004 only documented one dead trampled metamorph on the system trail above Honeymoon Lake in Pine Creek in 2002 where pack stock had moved through a drying breeding pool, as well as five metamorphs trampled by hikers in a trail tread in Granite Park in Upper Pine Creek in 2003. The trail was relocated above Honeymoon Lake to remove the trail overlap with the first breeding site.

It may be that incidental trampling of metamorphs (likely the most vulnerable life stage) by pack stock or hikers, while undesirable, has a minor effect on Yosemite toad population dynamics and maintenance. There is significant mortality of tadpoles, for instance, because of natural premature drying of pools before metamorphosis occurs. An adaptive management livestock grazing study to investigate the effects of grazing on the Yosemite toad is scheduled to begin at the

Regional level on multiple forests in 2005, and will hopefully provide further insight into the effects of this type of impact.



Wildlife photo #1 Photo on left of pack stock trampling of mudflat breeding pool zone where tadpoles occur in shallow pool margins and metamorphs develop and congregate after metamorphosis. Metamorph on right

Direct modification of the breeding site structural habitat characteristics would also likely occur; such as annual removal of vegetative cover used by all age classes of toads, and multiple year cumulative vegetative cover reductions where pack stock chisels have sliced through the vegetative sod of sedge, rush and mosses to expose bare ground.



The above photo shows a heavily trampled and chiseled Yosemite toad breeding pool habitat (foreground and middleground impact area) from pack stock use of a wet meadow. Undisturbed breeding pool area at very top center and right of photo shows contrast of what foreground pool should look like in an untrampled and unchiseled state.

These chisel areas of vegetative sod disruption have varying rates of re-vegetation and it may likely be numerous years for some chiseled areas to return to a pre-chiseled vegetative state if the chisels are punched through shallow, weakly rooted spikerushes, grasses, and mosses. This type of effect has been poorly studied but has been partly validated by the work of Cole et al. (2004) where their study noted declines in vegetative cover and productivity, changes in species composition, and increases in bare soil with repeated annual pack stock grazing over five years in the tufted hairgrass vegetation type in Yosemite National Park.

At current levels of grazing reported from 2001 through 2003 these effects are probably light enough at the landscape level and in most grazing areas, and infrequent enough to allow for breeding site maintenance and minimal toad trampling mortality events that might affect population dynamics. The implementation of Wilderness Plan range readiness delayed on dates for grazing may help to delay grazing until after metamorph dispersal away from the breeding areas has occurred in some meadows. However, field observations have documented considerable variation in metamorphosis dates and dispersal patterns making such prediction impossible with the current state of knowledge.

Most Yosemite toad breeding area microsites within an overall range-ready meadow do not reach range readiness criteria throughout the summer months, leaving them vulnerable to wet sod trampling and chiseling breeding pool habitat impacts (See above photo). In addition, range readiness dates can be adjusted from one year to the next, adding another variable to the assessment. Local problem areas of concern under this alternative may be managed through the pack station annual operating plan to develop management strategies to steer stock away from breeding pools where excessive trampling impacts are observed.

If all 86 Yosemite toad meadows tallied in Table 4.83 are grazed to moderate forage use standards as defined by the 2001 Wilderness Plan, including the wet meadow sections of the meadow where toad breeding sites are found, impacts may increase substantially since Alternative 1 does not require that pack stock be managed to avoid Yosemite toad breeding sites. This scenario is unlikely based on current grazing use levels and patterns. Impacts to long-term maintenance of Yosemite toad breeding sites and toad numbers in these meadows are unknown. Enough field evidence exists to reasonably hypothesize that breeding sites may be maintained under light to moderate grazing levels and continue to be occupied over the long-term by Yosemite toads because high numbers of existing sites overlap with commercial livestock allotments outside of Wilderness as well as the meadows grazed by commercial pack stock.

Furthermore, trampling and entrapment of toads may occur when pack stock collapse rodent burrows with their hooves where Yosemite toads are utilizing the burrows for underground cover. This potential effect remains uninvestigated and is extremely difficult to assess. Metamorph toads congregate in rodent burrows as the summer advances. They have been observed emerging from these burrows in early late spring where they used them as hibernacula through the winter months. Sherman (1980) found that Yosemite toad metamorphs often hibernate in burrows immediately adjacent to the breeding pools from which they emerged in the summer.

Implementation of the Alternative 1 trail transportation system, trail management levels, and system and user trails suitability determinations would likely continue the existing level of effects to Yosemite toad breeding areas in meadows listed in Table 4.84. Additional Yosemite toad breeding meadow areas may exist within the two Wildernesses and would be addressed as

inventory work and incidental monitoring identifies them, and any resource issues associated with wilderness uses. Other breeding area meadows may have trail problems (such as excessive sediment delivery from the trail, water diversion, trail incising, and parallel trailing); however, the problems have not been observed to directly affect breeding habitats. Annual trail maintenance projects, special trail improvement project opportunities, and the Capital Investment Program have been utilized to correct two of the trail areas at Martin's Meadow and the meadow above Honeymoon Lake (listed in Table 4.84), which have directly-affected breeding habitats. A limited number of projects would likely continue in the future.

Table 4.84. Observed trail problem overlap areas with Yosemite toad breeding sites

Geo Unit	Analysis Unit	Meadow Name and Number	Problem	Risk
AA East	Crater Creek	Lower Crater (Ccd1)	PCT trail headcut in trail crossing of meadow stream	Headcut at lower end of meadow puts meadow at risk to erosion
		Upper Crater Meadow (Ccd2)	System trail within 20 feet of breeding pool	Sediment spillage into breeding pool area
Fish Creek/Convict/McGee	McGee	Baldwin Scheelore (Mcg10)	Massive washout of system trail into meadow	Sediment covering breeding areas
		Round Meadow (Mcg8)	Upstream headcut erosion from system trail at Martin's Meadow delivering sediment into meadow	Sediment partially covering breeding pool
		Martin's Meadow (Mcg4)	System trail erosion at lower Meadow and system trail through breeding pool	System trail has been re-routed in 2004 out of breeding area but trail erosion at lower end is affecting Round Meadow
		Second Meadow above Martin's (Mcg9)	System trail is within 5 feet of breeding pool	Pack stock veer of trail and trail through breeding areas, sediment delivery into breeding pool
	Upper Fish Creek	Red Slate Meadow (Ufc3)	System trail causing erosion near breeding pool habitat	Meadow erosion will eliminate some portion of breeding habitat
Mono Creek/Rock Creek	Little Lakes Valley	Above Long Lake (Llv16)	User trail passes along edge of breeding pool	Minor impact on habitat, metamorph trampling potential
Bishop Humphreys	Pine Creek	Upper Pine Lake Outlet (Pin2)	System trail passes along edge of breeding area, poor trail design	Pack stock veer of trail and trail through breeding areas, metamorph trampling potential
		Italy Pass Trail	System trail passes	Observed metamorph

Geo Unit	Analysis Unit	Meadow Name and Number	Problem	Risk
		Meadows2 (Grp3)	along edge of breeding area	trampling from hikers
		West Of Honeymoon Lake (Pin4)	System trail passes along edge of breeding area	Observed metamorph trampling, trail re-routed in 2002 to fix problem
	Piute	Between Piute and Lock Leven (Piu1)	System trail passes along edge of breeding area	Potential for sediment delivery into breeding pool, water diversion and metamorph trampling potential
		Ponds east of Piute Pass (Piu4)	Old eroded multiple system trails above breeding pools	Potential for sediment delivery into breeding pool, water diversion



Baldwin Scheelore
Yosemite toad breeding habitat meadow where trail erosion (foreground) has deposited large sediment flow into breeding pools (middleground)

No substantive impacts have been observed in Yosemite toad breeding areas from commercial pack stock camps and destination use. The continuation of these existing uses is unlikely to have substantive adverse effects to Yosemite toad breeding habitats. There is always the possibility of inadvertent mortality to toads from pack stock clients stepping on them, particularly the metamorph age class, as they walk through meadows. This type of impact can occur from all wilderness user groups and is probably very low since most hikers avoid the wetter areas of meadows where Yosemite toad breeding pools are located.

Cumulative Impacts

Commercial livestock grazing on the Sierra, Stanislaus, Plumas and Eldorado National Forests, in and out of wilderness, as well as commercial and recreational pack stock grazing on these forests and in Yosemite and Kings Canyon National Parks may be affecting an unknown number of Yosemite toad breeding populations and habitat as described above. The extent and magnitude of effects are unknown at this time and remain largely uninvestigated. The 2004 SNFPA standards and guidelines for Yosemite toad management in other livestock grazing areas, such as commercial cattle allotments on the Sierra National Forest and other National Forests, are likely to promote long-term conservation of the species and its habitat and possibly decrease the cumulative grazing impacts described in the U. S. Fish and Wildlife Service 12-Month Finding for a Petition to List the Yosemite Toad (USFWS 2002).

Under Alternative 1, a subset of Yosemite toad breeding meadows identified in Alternatives 2 through 4 as unsuitable for grazing may be closed as a reasonably foreseeable future action as suitability determinations are implemented per direction in the Wilderness Plan. Alternative 1 may also implement as a reasonably foreseeable action SNFPA forage utilization grazing standards, and trampling and chiseling standards identified in the 2001 Ansel Adams, John Muir, and Dinkey Lakes Wildernesses Management Plan.

There is an unknown level of recreational pack stock grazing that also occurs and would likely continue in the AA/JM Wildernesses. The level of use is likely very limited and would have a very minor effect in Yosemite toad habitats since field observations by several survey crews and this Wilderness EIS interdisciplinary Team did not detect this type of grazing use from 2000 through 2004 overlapping in Yosemite toad habitats.

Other factors identified in the USFWS 12-month finding, such as UV radiation, disease, and air pollution and pesticide drift into the wilderness, remain poorly investigated as to their effects on the Yosemite toad. The species and its habitat are also affected at an unknown level when breeding population habitats overlap high use recreation areas close to roads (such as at Tioga Pass) where heavy human use and dog use occur in and along the margins of the breeding sites. There is potential in such areas for toads to be trampled or disturbed, as well as for vegetative cover at the breeding sites and breeding pool mudflats structure to be modified from trampling and chiseling impacts. Also, a limited amount of toad mortality has been observed to occur in such areas from capture of toads by people for bait or other purposes. A long-term research study at Tioga Pass meadow may have inadvertently contributed to the decline of the species there from unintentional stress-induced mortality and disease spread. The cumulative effects on species viability at the landscape level are unknown.

High elevation dams in and outside wilderness areas such as Gem Lake, Waugh Lake, Tioga Lake and Saddlebag Lake may have inundated suitable Yosemite toad breeding habitats, reducing habitat and marginalizing population connectivity and dispersal corridors.

Yosemite toad breeding meadows have a long history of overlap with heavy livestock grazing events of the early and mid 1900s. Numerous meadows still show the evidence of such events such as stream incision, main-stream and lateral side channel headcuts, and loss of wet meadow and wetland habitats. Some toad breeding sites may likely have been lost when stream incision events occurred. Poor trail and road locations and alignments have resulted in similar meadow degrading events as is evidenced today at Baldwin-Scheelore and Martin's Meadows in McGee Creek. The old mining road and the system trail have discharged large amounts of sediment into

the adjacent wet meadow Yosemite toad breeding pool areas and adversely affected the meadow hydrologic functioning.

Surveys mandated under the Sierra Nevada Forest Plan Amendment Record of Decision continue to find new populations of Yosemite toads in the Sierra Nevada and confirm current occupancy at many mid to high elevation historical locations. The Final Supplemental EIS for the Sierra Nevada Forest Plan Amendment (USDA Forest Service 2004) noted that 292 sites are known throughout the toads' historic range, 229 of which have been confirmed occupied since 1990. The number has increased substantially since the January 2004 publication of that document based on the results of the 2004 surveys.

On the Sierra National Forest inventory surveys in 2002, 2003, and 2004 approximately 313 (+/- 9) sites have been identified as occupied with Yosemite toad, 194 of which are within the AA/JM Wildernesses analysis area. Populations of Yosemite toad have been found as far south as Garlic Meadow near Monarch Wilderness at least 260 miles south of the original distribution described for the species at Kaiser Pass Meadow.

The AA/JM Wilderness, as of this writing, has 267 meadows where toads have been found breeding from 2001 through 2004. One hundred and ninety four of these sites are found on the Sierra National Forest. The Inyo National Forest has the remaining 73 breeding meadow sites in the AA/JM Wildernesses. Eight sites on the Inyo are outside of wilderness and two others are inside the Hoover Wilderness on the Forest.

The 2004 Final SEIS notes that it is impossible to fully assess the extent and magnitude of any decline in Yosemite toad populations in the Sierra Nevada because of the small amount of baseline data pertaining to the number and size of historic populations. Three separate monitoring studies noted that over 50 percent of locations visited in the mid 1990s showed toads were absent from historically occupied sites, particularly at the lower elevations of the toads range. These results indicate that there are substantially more populations of the Yosemite toad than what were considered even a year ago. This trend may likely continue as survey efforts continue and prompts questions as to just how prevalent the decline may be.

Numerous years of monitoring and research are needed to develop a full picture of the status of the Yosemite toad population throughout its range. The Sierra Nevada mountains are a changing landscape in just the last 100 years. The influence of long-term climate change in the Sierra and subsequent reduced snow packs and summer water flows may have a profound effect on the biogeography of the species. Toads may disappear from meadows that experience more rapid drying through the summer and associated reduction in available ephemeral pools where toads can breed. This factor by itself may have implications on the maintenance of lower elevation populations and habitat.

Yosemite toad – Alternative 2 - Modified

Alternative 2 - Modified would likely substantively reduce any potential for commercial pack stock trampling, chiseling, and grazing impacts in occupied Yosemite toad breeding habitats within a subset of 36 meadows (listed in Chapter 2, Table 2.30 and tallied in Table 4.85) that have been determined to be suitable for grazing by commercial pack stock.

Table. 4.85 Number of meadows in the AA/JM Wildernesses in Table 2.4 with occupied Yosemite toad breeding habitat by alternative and grazing suitability

Alternative	Suitable for Grazing	Unsuitable/Prohibited	Rest from Grazing
1	All meadows except Mudd Lake	1 Mudd Lake (Pioneer Basin Grazing Closure)	
2	40/16*	30	0
Modified - 2	36/16*	28	6
3	37/16*	32	1
4	30/16*	39	1

*These 16 meadows are in the John Muir SW Geographic Area. They have not been field analyzed but are available for commercial pack stock grazing within the grazing zones.

Minor effects would potentially occur to breeding pool habitat structure, and/or the vegetative cover zone surrounding the pool where Yosemite toad metamorphs congregate after metamorphosis within the 36 meadows determined to be suitable because stock could drift into the breeding areas on occasion, even under close management. The potential for trampling mortality of the metamorphs would be substantively reduced. There is always the relatively low probability that a Yosemite toad metamorph or other life stage could still be trampled within the suitable grazed meadow outside of the breeding habitat area as well, similar to Alternative 1.

Some level of vegetative improvement in meadow condition around breeding sites is likely at Upper Deer Creek, NW Thousand Island behind the Moraine, Alger Creek Terraces, Grassy, Peter Pande Tarn, Red Slate, Upper Graveyard, and NW Delta of Thousand Island Lake Meadows with implementation of Alternative 2 – Modified.

Commercial pack stock use would be managed to avoid Yosemite toad breeding habitats within these meadows. Only four of these meadows have had recent substantive grazing use that has overlapped with Yosemite toad breeding areas from the period of 2001 through 2003. Twenty eight meadows would be managed as unsuitable for grazing, and six meadows would be rested from grazing. These meadows, along with another 197 meadows with occupied Yosemite toad breeding habitats in the AA/JM Wildernesses, would not be affected by commercial pack stock grazing operations since grazing would not occur. The six rested meadows may be redesignated suitable for grazing at some future date when resource conditions have met recovery objectives. At that time grazing would be managed to avoid the critical breeding areas for Yosemite toads. Table 4.86 lists the occupied Yosemite toad breeding meadows by alternative where grazing proposals differ between Alternatives 2 -Modified through 4.

Table 4.86: Yosemite toad breeding meadows from Table 2.4 Alternatives 2 – Modified, 2, 3 and 4 determined to be unsuitable for grazing, prohibited from grazing, or rested from grazing by alternative

Geo unit	Analysis Unit	Meadow Name	Alt 2- Modified/Alt2/Alt3/Alt4 Determinations #=Stock Nights, U = unsuitable, P = Prohibited, R = Rest from grazing	Observed Impacts on Toad Habitat
Ansel Adams East	Crater Creek	Lower Crater ccd1	U/U/U/U	Headcuts with potential to adversely affect meadow hydrology
		Upper Crater ccd2	P/P/P/P	Headcuts adversely affecting meadow hydrology
		Deer Creek Meadows ccd15	U/U/U/U	Headcuts adversely affecting meadow hydrology
		Upper Deer Creek ccd18a	U/U/U/U	Downward trend due to headcuts and incised stream
	Thousand Island	NW Thousand Island behind Moraine thi11	U/U/U/U	Light pack stock impacts
		NW Delta Thousand Island lakes thi12	R/106/U/U	Light pack stock impacts
		West end Thousand Island lake thi16	U/U/U/U	Light pack stock impacts
	Upper Rush	Donahue Camp Creek Meadows uru8	P/P/P/P	None
		Rodgers uru5	128/128/128/P	Moderate pack stock impacts
	Rush Creek	Upper Alger Creek Meadow rus15	U/U/U/U	Light pack stock impacts
		Alger Creek Terraces rus14	U/U/U/U	Light, headcut in spring channel
AA West	Cargyle	Stairway South car2	U/U/U/U	None
Fish Creek/Convict/McGee	Convict	Wit-so-no-pah con2	U/U/U/U	
		Cloverleaf con6	U/U/U/U	
		Genevieve Meadow con7	U/U/U/U	
		Edith con8	U/U/U/U	Light pack stock impacts

Geo unit	Analysis Unit	Meadow Name	Alt 2- Modified/Alt2/Alt3/Alt4 Determinations #=Stock Nights, U = unsuitable, P = Prohibited, R = Rest from grazing	Observed Impacts on Toad Habitat
		East of Cloverleaf con9	U/U/U/U	
	McGee	Martins Meadow mcg4	R/25/P/P	Moderate trail impacts through breeding pool (fixed in 2004) Active headcut impacting meadow habitat
		Second Meadow above Martins mcg9	U/U/U/U	Trailing impacts through breeding habitat
		Round Meadow mcg8	U/U/U/U	Light pack stock impacts
		Grass mcg2	U/U/U/U	
		Baldwin Scheelore mcg10	P/12/P/P	No use observed
	Silver Divide	Squaw Lake Meadow sil10	U/U/U/U	None
		Papoose sil12	U/U/U/U	None
		Between Lone Indian and Grassy sil13	R/P/P/P	None
		Grassy sil22	R/P/P/P	Heavy, incised channel, headcuts, moderate pack stock impacts
		Peter Pande sil24	U/U/U/U	None
		Peter Pande Tarn sil7	U/U/U/U	Moderate pack stock impacts
		Chief Lake sil19	9/9/9/P	
	Upper Fish Creek	Red Slate Meadow ufc3	U/U/U/U	Moderate impacts from trail crossing near breeding pool
Bishop Humphreys	French Canyon	French Bench above 10,760 feet fre17	U/U/U/U	None
		West of Pine Creek Pass fre4	U/U/U/U	None
		Golden Trout Lake to Summit Lake gla1	U/U/U/U	Minor pack stock trailing impacts to breeding area below Summit

Geo unit	Analysis Unit	Meadow Name	Alt 2- Modified/Alt2/Alt3/Alt4 Determinations #=Stock Nights, U = unsuitable, P = Prohibited, R = Rest from grazing	Observed Impacts on Toad Habitat
				Lake
		Golden Trout Lake North gla11	U/U/U/U	None
		Summit Lake Meadow gla14	U/U/U/U	None
		North of Summit Lake gla4	U/U/U/U	Light trampling impacts
		Sierra Camp to Packsaddle gla7	U/U/U/U	Light trampling impacts
	Pine Creek	Upper Pine Lake Inlet pin11	U/U/U/U	Moderate trampling impacts from poor trail location
Mono Creek/Rock Creek	Long Lakes Valley	Above Long Lake llv16	U/U/U/U	None
		Camp Meadow pio1	U/U/U/U	None
	Graveyard	Upper Graveyard gra11	R/127/P/P	unknown
Florence/Bear	Seldon	Marie Lake Meadow sel6	U/U/U/U	None

The effects of implementation of Alternative 2 - Modified destination use regulating system for commercial pack stock operations would likely have no substantive effects on Yosemite toads and their breeding habitats, similar to Alternative 1. No commercial pack stock impacts have been observed in Yosemite toad habitats as a result of commercial pack stock use of campsite destinations, stock holding areas, and drop points for dunnage or spot camps. Commercial pack stock use of destinations would likely shift somewhat under Alternative 2 – Modified since destination quotas would limit the number of trips to these areas, and users may seek other destinations as quotas are filled. Some meadows that have Yosemite toad breeding populations may experience higher levels of associated grazing and others less if destination use patterns shift; however, there should be no substantive change in effects to Yosemite toad habitats.

Implementation of Alternative 2 – Modified trail transportation system, and trail management levels would not substantively change the existing trail effects to Yosemite toad breeding habitats (identified in Table 4.84 in Alternative 1) since the management level designation simply conveys a trail class and trail suitability and does not implement specific actions to re-route or repair problem trail areas. The disapproval of user trails to commercial stock would not have substantive effects to Yosemite toad habitats. The NSCS system trail designations in Pioneer Basin, Upper Pine Creek (Granite Park), and Baldwin-Scheelore may have localized benefits to meadows in a few locations where trails come close to Yosemite toad breeding habitats. In certain situations, such as at Baldwin-Scheelore, there may be a decreased risk of

trail degradation that would result in a higher degree of protection than Alternative 1 for Yosemite toad breeding areas and other meadow use areas.

Cumulative Impacts

The implementation of critical area protection at Yosemite toad breeding sites within grazed meadows, as well as the stock night guidelines, would improve the long-term management at Yosemite toad breeding meadows. Unsuitable for grazing meadow determinations would also remove any potential impacts to the Yosemite toad breeding sites in those meadows. These actions, along with the identification and re-location of system and use trails that have the potential to adversely affect the long-term maintenance of toad breeding sites, contribute to positive conservation measures in the management of the species. Otherwise, cumulative effects would continue to operate on the species as in Alternative 1.

Yosemite toad – Alternatives 2 and 3

Analysis

Alternative 2 and Alternative 3 have the potential for similar reductions in commercial pack stock grazing effects to Yosemite toad breeding areas as in Alternative 2 – Modified. Alternatives 2 and 3 would provide this protection with the implementation of unsuitable for grazing meadow determinations and a maximum 5 percent disturbance standard in all critical Yosemite toad breeding areas within meadows suitable for commercial pack stock grazing.

The allowance of up to 5 percent disturbance in critical areas within 40 meadows in Alternative 2 and 37 meadows under Alternative 3 identified as suitable for commercial pack stock grazing in Table 2.30 where Yosemite toads breed will likely result in some minor level of trampling and chiseling impacts in Yosemite toad breeding pool habitats and the adjacent meadow perimeter where Yosemite toad young congregate. Only eight of the meadows suitable for continued grazing have shown grazing use during the period of 2001 through 2003 amounting to forage use levels from light to moderate. The most consistently grazed meadows are in the Thousand Island, Rush and Upper Rush Analysis Units. Observations in light use areas suggest a minor annual incremental loss of vegetative cover in some of the pools and meadow pool perimeters. Implementation of the 5 percent standard would likely maintain breeding pool habitats without adverse effects to the hydrologic character of these pools.

The effects of implementation of Alternatives 2 or 3 destination use regulating systems for commercial pack stock operations areas would likely have no substantive effect on Yosemite toad habitats and impacts to the species in comparison to Alternative 1. No commercial pack stock impacts have been observed in Yosemite toad habitats as a result of commercial pack stock use of campsite destinations. Commercial pack stock use would likely shift under the different alternatives where trailhead quotas are applied versus destination quotas, as well as designated overnight stock holding camps. Grazing would likely shift in locations as a result. Some meadows that have Yosemite toad breeding populations may experience higher levels of grazing use and others less use if destination use patterns shift.

Implementation of Alternative 2 trail management actions differs slightly in potential effects from Alternative 2 – Modified since Pioneer Basin Trail and the Baldwin-Scheelore Trail would be open to commercial stock. This would increase the potential for stock use to contribute to the

already unstable trail areas that route near Yosemite toad breeding pools. Alternative 3 would allow only the Pioneer Basin trail to be open to commercial pack stock.

Cumulative Impacts

The implementation of critical area use standards at Yosemite toad breeding sites, as well as the stock night guidelines would improve the long-term management at Yosemite toad breeding meadows. Unsuitable for grazing meadow determinations would also remove any potential impacts to the Yosemite toad breeding sites in those meadows. These actions, along with the identification and re-location of system and use trails that have the potential to adversely affect the long-term maintenance of toad breeding sites, contribute to positive conservation measures in the management of the species. Otherwise, cumulative effects would continue to operate on the species as in Alternative 1.

Yosemite toad – Alternative 4

Analysis

The effects would be similar to Alternative 2 – Modified, except that two additional meadows would become unsuitable for commercial pack stock grazing. The potential for commercial pack stock trampling effects in the breeding pools at Rodgers Lakes Meadows (Uru5), and Chief Lake Meadow (Sil9) would be eliminated.

A traditional packer camp would be moved at Round Meadow in McGee Creek that is within 50 feet of a toad breeding site. The camp re-location would likely remove the probability of clients walking through the meadow where the metamorph toads are emerging from the breeding pools. This may provide some slight additional long-term protection for the breeding site from potential trampling impacts to the vegetative cover or the toads since clients would not be as likely to walk into the meadow at this particular location. This is the only site observed where a camp is in such close proximity to the breeding site.

Alternative 4 use levels and controls is noted to limit the area and extent of future commercial pack stock operations, and there would be a 20 percent overall reduction in service day wilderness use by commercial pack stock operations. These controls, as well as designated camps and designated drop sites, probably would not change potential impacts to Yosemite toad breeding sites unless there was a corresponding reduction of commercial pack stock grazing at a breeding site that cannot be determined at this time.

The Fish Creek area may see improved wilderness character in areas that overlap with Yosemite toad breeding areas at Tully Lake, Red and White Lake and Peter Pande Lake areas. Tully Lake Meadow (Ufc4) does show grazing use would be allowed so it is not clear how the improved wilderness character would affect the potential grazing that may occur there. Many of the Yosemite toad breeding meadows in Fish Creek and adjacent Silver Divide have been identified as unsuitable under this alternative and Alternatives 2-Modified, 2, and 3 that already provide protection regardless of pack stock operation use patterns.

The suitability for grazing determinations and the maximum 5 percent allowable disturbance at all Yosemite toad breeding critical areas are the main determinants of impacts to these meadows. Many of these meadows are along system trails where the alternative is not likely to substantially change use patterns.

Implementation of Alternative 4 trail transportation system and trail management levels would not likely have substantive effects over Alternatives 2 – Modified, 2, and 3 other than what is described above. Some Yosemite toad breeding meadows may have a higher level of protection where commercial pack stock operation use is lowered and system NSCS and use trail closures are implemented. This change on the landscape could only be confirmed through a field monitoring program. The effect is not thought to be substantive. These shifts across the landscape are difficult to assess since so many variables come into play in the way commercial pack stock operations would choose to adjust their use, as well as how even under lowered use stock would still be allowed to graze in suitable meadow areas, and utilize forage to maximum allowable standards.

Cumulative Impacts

Cumulative effects are similar to Alternative 2 and 3.

Yosemite toad – Alternative 5

Analysis

The elimination of commercial pack stock use would remove any potential for further impacts to Yosemite toad breeding meadows from this user group. Grazing use would cease in the 87 meadows that have Yosemite toad breeding areas and have been identified by commercial pack stations as desirable or currently used for pack stock grazing and would be fully protected. Yosemite toad breeding site areas within meadows where grazing, trampling, and chiseling impacts have been observed would rehabilitate to undisturbed conditions. Table 4.83 shows the breakdown of breeding meadows by geographic unit.

Cumulative Impacts

The elimination of all commercial pack stock operations would have a long-term beneficial effect on the Yosemite toad breeding habitats, and likely the species as well. However, the extent and magnitude of this effect is unknown in terms of how it would actually affect toad use of breeding meadows and population dynamics and viability. The most significant improvement would be the maintenance of breeding sites, including pool morphology and vegetative cover, in a relatively undisturbed state in meadows that have been traditionally grazed, or trailed through by commercial pack stock. The probability of trampling impacts and other factors, such as rodent burrow collapse associated with pack stock, would cease. There would also likely be less potential for sediment from trails to enter the breeding sites in meadows since trail width would likely decrease, trails would increase in stability with less maintenance requirements, and widened spring and stream channels, and associated headcuts and trampling and chiseling impacts would decrease. Some level of impacts would continue from recreational pack stock use and hiker and backpacker use of these areas; however, it would likely be very small in comparison, unless this user group increased as commercial operations ceased.

These actions, along with the identification and re-location of system and use trails that have the potential to adversely affect the long-term maintenance of toad breeding sites, contribute to positive conservation measures in the management of the species. All other cumulative effects would continue to operate on the species as in Alternative 1.

Mountain yellow-legged frog – Alternative 1

Analysis and Cumulative Impacts

The Biological Evaluation has determined that implementation of Alternatives 1 through 4 may affect individual mountain yellow-legged frogs but would not likely contribute to a trend toward federal listing or loss of viability of the species. Implementation of Alternative 5 would not affect the frog.

The continuation of the existing commercial pack stock use areas under Alternative 1 including destinations, camps, and grazing sites would likely have very minor effects on the existing mountain yellow-legged frog populations and habitats. Three specific areas are likely to continue to have localized habitat impacts under this alternative that are not desirable, but are also probably not substantially affecting the species' use of the areas.

Donahue Camp (Uru8) crossing in Upper Rush Creek would likely continue to have a localized 100 foot stream bank collapse where stock cross over to the camp, until the stock crossing is re-located. Frog habitat is being impacted to some degree at this crossing since the undercut stream banks the frogs use for cover have been collapsing as a result of the crossing erosion point. The main system trail the stock use to access this area also routes directly along a frog pond; however, no adverse effects have been observed.

One mountain yellow-legged frog was observed in a grazed meadow at North of Mono Rock Meadow (For1) in the upper Mono Creek watershed. The spring channel the frog was in had areas of pack stock trampling and chiseling impacts that would likely continue under this alternative unless specific mitigation measures were employed through the annual operations instructions. The population of frogs in this meadow needs further assessment to determine exactly where frog use overlaps with stock use.

Commercial pack stock grazing would also continue along the west meadows of Thousand Island Lake (Thi16) where mountain yellow-legged frogs have been observed using small inlet stream habitat. There are localized areas of widened stream channel and stream bank collapse where stock cross the streams and graze that would likely continue under this alternative unless specific mitigation is developed in the annual operations plan. The effect on mountain yellow-legged frog use of the meadow habitats is unknown but may be undesirable from a management viewpoint. However, the effects may not be substantive enough to adversely affect continued frog use of the meadow habitat.

The continuation of pack stock grazing at Rodgers Lakes Meadows (Uru5) in Upper Rush Creek is unlikely to have substantive adverse effects to the frog population that uses the ponds. The outlet stream habitat may be subject to trampling and chiseling effects from pack stock grazing. Pack stock have only been grazing the area for a few years. Monitoring of this stream habitat would need to be conducted with implementation of Alternative 1 to validate that it is not resulting in unacceptable impacts to the frogs' habitat. This would be part of an adaptive management strategy. Implementation of forage utilization standards, and trampling and chiseling disturbance standards identified in the 2001 Ansel Adams, John Muir and Dinkey Lakes Wildernesses Management Plan may be implemented as a reasonably foreseeable action. These standards would provide additional mitigation to limit areas of stream bank trampling and chiseling impacts from pack stock in mountain yellow-legged frog habitat.

The commercial pack stock user trail from Emerald Lakes to Garnet Lake passes along the margin of a mountain yellow-legged frog pond at Meadow Thi14. This alternative would allow continued use of the trail by commercial pack stock. There is likely a minor amount of sediment and runoff that enter the frog pond habitat. The adverse affects of this type of use on the frog population is unknown; however, moving the trail away from the pond area would be more desirable from a management standpoint. This type of action may be implemented as part of a long-term trail improvement project as funding becomes available. Backpackers and recreational pack stock users may also use the trail but the dominant use would continue to be from commercial pack stock.

No other specific grazing, trail, destination and pack stock camp adverse effects to mountain yellow-legged frog habitats or populations have been identified. The vast majority of the known populations described in Chapter 3 are unaffected by commercial pack stock operations.

Currently, commercial pack station operators and fishermen are promoting and advocating high lake fish populations to provide fishing opportunities for clients and themselves. The perpetuation of fish populations is an important factor affecting the viability and distribution of mountain yellow-legged frog populations range-wide in the High Sierra including Yosemite and Sequoia-Kings National Parks. The decision to perpetuate fish populations in high lakes and subsequent impacts to frog populations and viability are largely within the jurisdiction of the California Department of Fish and Game. The Department is currently reviewing the high lakes fish stocking program, developing watershed plans to implement management changes over the long-term, and conducting site specific fish removals and frog re-introductions to assist in the recovery of the species.

Implementation of the trail transportation system and management level designations, and commercial pack stock system and use trail suitability determinations other than what has already been stated above would have no adverse effects on the mountain yellow-legged frog since no other trails are known to be affecting the species use of occupied habitats.

The impact of disease, pesticide drift into high lakes, UV radiation, and pollution effects such as acid rain continue to be long-term management concerns range-wide in the recovery of the species in the AA/JM Wildernesses. Research continues in an attempt to understand how these effectors are impacting the viability of the mountain yellow-legged frog population.

Mountain yellow-legged frog – Alternatives 2 – Modified, 2, 3, and 4

Analysis and Cumulative Impacts

The elimination of grazing at the Meadow North of Mono Rock (For1) as a result of the unsuitable determination would likely have a beneficial effect to the spring channel habitat the mountain yellow-legged frog was observed using since trampling and chiseling impacts would cease. The elimination of commercial pack stock grazing along the southwest end of Thousand Island Lake would likely eliminate any disturbance to stream banks the frogs utilize and provide a higher level of protective maintenance for the stream habitats. The elimination of grazing at Rodgers Lakes Meadows under Alternative 4 probably would not change the mountain yellow-legged frog habitat to any extent since the frogs occupy pond habitat in that meadow that does not appear to be affected by current grazing use. Also, eliminating grazing could improve habitat if surveys showed the frogs using stream outlet channel habitat, but that is currently unknown.

All other habitats are not expected to experience substantive changes from implementation of the proposed trail alternatives or use regulating mechanisms. Cumulative effects would be nearly the same as Alternative 1, except for the lower impacts associated with these alternatives.

Mountain yellow-legged frog – Alternative 5

Analysis and Cumulative Impacts

The Donahue Camp pack stock crossing in Upper Rush Creek would likely rehabilitate over the long-term as commercial stock use ceases. This should improve mountain yellow-legged frog habitat along the stream reach below the crossing. Otherwise, the cessation of all commercial pack stock use in the AA/JM Wildernesses would not substantively change the effects described under Alternatives 2 through 4. Most yellow-legged frog populations are associated with lakes or meadows where commercial pack stock do not go.

Willow flycatcher

The Biological Evaluation prepared for this EIS has determined that implementation of Alternatives 1 through 4 may affect individual willow flycatcher but would not contribute to a trend toward federal listing for this species, or loss of viability within the planning area. Implementation of Alternative 5 would not affect the willow flycatcher.

Willow flycatcher – Alternative 1

Analysis

Commercial pack stock grazing in all suitable unoccupied willow flycatcher meadow habitats in Chapter 3, Tables 3.24 and 3.25, and meadows likely to be used in Table 4.87, would likely result in some level of annual reduction of herbaceous cover, and productivity that over the long-term has the potential to lower overall meadow productivity, basal vegetative cover, basal litter cover, relative graminoid cover, increase bare soil, and alter meadow species composition according to a study conducted by Cole et al. (2003) in montane brewers reedgrass, and tufted hairgrass plant communities. The magnitude of this effect would be highly variable since no grazing standards would exist under this alternative except for range readiness. These plant communities can be common components of the willow flycatcher suitable habitat meadows identified in Table 4.87. There is likely to be some effect on willow shrubs from stem breakage as pack stock push into willows to graze available forage at the base of the shrubs and in the interspaces. This could reduce shrub foliage cover and have some decrease in habitat suitability. The effects on meadow herbaceous species composition, density and productivity, and willow foliage reduction from stem breakage have not been studied sufficiently in the Sierra habitats to determine how they may affect the potential occupancy and use of suitable willow flycatcher meadows.

Vegetative productivity losses along stream bank riparian areas in particular could affect the stability of streams over time, with increased risk of headcut development, stream incision, and stream widening if meadows are grazed at moderately high utilization levels. One hypothesis advanced in the Sierra Nevada Forest Plan Amendment EIS effects analysis (USDA Forest Service 2001) for livestock grazing in willow flycatcher habitat is the potential to lose riparian habitat that can adversely affect insect production, the key food base of the willow flycatcher.

There is an uncertainty and a risk to the maintenance of high quality suitable willow flycatcher habitat based on the impacts described above when meadows are grazed at maximum allowable forage utilization levels during the summer months of July and August; however, it is unknown how this change could affect potential willow flycatcher occupancy.

The Willow Flycatcher Conservation Assessment (Green et al. 2003) noted the difficulty in assessing grazing impacts such as might occur under this alternative and stated that the influence of managed grazing on willow flycatcher status in high quality, good ecological condition habitat was unknown at this time. The most critical management concern is the effect of grazing implementation on the maintenance of wet meadow and wetland habitat components that provide the most suitable willow flycatcher foraging habitats.

Poison, Hellhole, Jackass, Double and Blayney Meadows listed in 4.87 under the Florence/Bear GU do not exhibit substantive loss of these habitats, nor do the willow communities appear to be adversely affected based on a Sierra NF Grazing Suitability Assessment dated December 14, 2004 (unpublished report on file). They are the most likely to be grazed near full utilization levels under Alternative 1 since they are used as lower elevation stock holding pastures.

Management of the willow flycatcher habitat in Lower and Upper Blayney Meadows is complicated by the fact that the lower meadow is approximately 50 percent private inholdings, and the upper meadow is 80 percent private land where grazing management is not under Wilderness Plan standards. Jackass Meadow is 90 percent in non-wilderness and will be analyzed further as part of a separate non-wilderness analysis process.

Chetwood, Detachment, Knoblock, and Graveyard meadows in AA West GU are degraded meadows where historical stream channel incision and the loss of the perched meadow water table may have resulted in loss of suitable willow flycatcher habitat. No records are available to assess willow flycatcher habitat historical condition. Pack stock grazing will be allowed in these meadows. The meadows have not had any substantive pack stock grazing in them for several years so it is difficult to evaluate at this time how grazing would affect any potential meadow recovery. The first three meadows are predicted to have a slight upward trend in meadow hydrologic condition with implementation of this alternative. Graveyard Meadow is not predicted to have any recovery since cattle apparently continue to graze it at levels that may hinder any recovery.

Implementation of Alternative 1 would allow the maintenance of suitable willow stand structure for willow flycatcher nesting in portions of the meadows away from where pack stock trail and graze. Observations during the course of the wilderness field analysis trips from 2001 through 2004 suggest that pack stock grazed meadows tend to retain substantial areas of robust willow communities since pack stock forage on herbaceous species and not willow.

It may be necessary under an adaptive management strategy through the annual operating plan to manage stock away from key willow meadows such as those below 8,000 feet. Field assessments will need to be made to identify these stands, any effects that may be occurring if the meadows are actually grazed, and mitigation measures needed to manage pack stock away from willow stands if stand characteristics are being unacceptably impacted. There is insufficient research data at this time to suggest that even the willow stands in grazed areas will not continue to provide suitable nesting habitat. However, if willow flycatcher were to select such stands there is an increased risk of inadvertent nest destruction and/or egg or young being dislodged from a nest

where pack stock move through willow clumps and birds have placed their nests in the outer, lower crowns of the shrubs. This is a very low probability event in any case.

Pack stock use of meadows may attract brown-headed cowbirds to the meadow where they can parasitize willow flycatcher nests. This usually results in failure of the willow flycatchers to produce fledgling young (Green et al 2003). The cowbird attraction to meadows is linked to the presence of cattle in an area or a nearby pack station where loose grain is present to feed cowbirds (Green et al. 2003). The only meadows likely to experience cowbird influx are those such as Jackass, Double, Blayney, Hellhole, Poison, and Graveyard that have pack stations or pack stock holding facilities within 4 to 6 miles according to cowbird dispersal distances from these facilities as cited by Verner and Rothstein (1985).

Fifty three meadows listed in Tables 3.24 and 3.25 (Chapter 3) that are not listed in Table 4.87 were not requested for grazing by commercial pack stations and have no history of reported use from 2001 through 2003. These meadows could be potentially grazed under Alternative 1 to allowable forage utilization standards, however it is unlikely they would be utilized based on recent destination use analyses and grazing patterns. The majority of these meadows are in the Ansel Adams West and John Muir Southwest Geographic Units where commercial pack stock operations are at very low use numbers. There would likely be no effect to suitable willow flycatcher habitats from commercial pack stock use in these meadows based on the assumption of very light to no grazing use in these meadows. If in the unlikely event the meadows were grazed by commercial pack stock at moderately high use levels on a regular basis then the effects stated above would be likely. In that event, additional assessment including willow flycatcher surveys may be warranted.

Graveyard Meadow, Second Crossing and Cascade Valley have been determined to be unsuitable for grazing. The latter two meadows have been closed for a number of years and would remain closed. The closure of Graveyard meadow would be implemented at some future date as part of the implementation of the 2001 Wilderness Plan direction to determine and implement grazing suitability determinations. Very light commercial pack stock grazing may likely continue until the closure is implemented. This should not adversely affect willow flycatcher habitat.

Table 4.87 shows the meadows from Chapter 3, Tables 3.24 and 3.25 where commercial pack stock grazing would likely continue to occur under Alternative 1. There is no column for forage utilization/stock nights under Alternative 1 since (other than range readiness criteria) there are no commercial pack stock forage grazing utilization standards currently in place in the AA/JM Wildernesses.

Table 4.87. Proposed allowable commercial pack stock grazing in suitable unoccupied Willow flycatcher habitat in Alternative 1 through 4.

Geo Unit	Analysis Unit	Meadow Name (Elevation)	Mdw ID#	Proposed Forage Utilization Stock Nights* (Alt 1*-4)		
				Alt2	Alt 2 Mod and Alt3	Alt4
Meadows 8,000 feet and lower						
AA West	Cargyle	77 Corral (7971)	Car12	22	22	22
	Junction	Rattlesnake Lake Meadow (5574)	Jun12	25	25	25
Fish Creek/Convict/McGee	Cascade Valley	Island Crossing/Fox Meadow (6328)	Cas6	12	12	12
Florence/Bear	East Florence	Double Meadow (7831)	Eaf2	400	1251	400
		Jackass Meadow (7193)	Eaf1	400	10 percent of 2025	400
	Sallie Keyes	Lower Blayney (7619)	Sak17	60	544	60
	Hooper	Poison (6783)	Hoo1	200	320	320
		Hell Hole (6797)	Hoo2	200	442	200
Meadows above 8,000 feet to 9,000 feet						
AA West	Cora	Chetwood Cabin ** (8256)	Cor4	83	83	0
		Knoblock ** (8498)	Cor15	96	96	0
		Detachment** (8499)	Cor6	64	64	0
Mono Creek/Rock Creek	Second Recess	Mono Creek at Second Recess	Sec15	323 for Mono Creek entire zone	Same as 2	Same as 2
	Graveyard	Graveyard** (8865)	Gra9	0	Same as 2	Same as 2

* Alternative 1 is not listed since there are no existing forage utilization standards. Stock night estimates in the other Alternatives except for sak17, hoo1 and 2, and eaf1 and 2 correspond to forage utilization rates of 30 percent for meadows in fair ecological condition meadows, and 40 percent for meadows in good ecological condition per 2001 Ansel Adams, John Muir, and Dinkey Lakes Wildernesses Management Plan grazing standards and guidelines..

**Indicates meadow has substantial historical hydrologic degradation and probable loss of some portion of its wet meadow habitats available for use by willow flycatcher.

Pack stock camps, destinations, and social and access trails contribute to habitat disturbance effects in some of these meadow habitats. In these destination areas, some impacts would continue to occur, including: localized areas of willow stem breakage, localized stream bank impact areas where channel widening occurs, and lower productivity of herbaceous meadow

vegetation from trampling by humans and stock. These types of effects are considered to be of low significance in the majority of meadows identified in Chapter 3, Tables 3.24 and 3.25 since the vast majority of these meadows are not destinations where camps or associated sock holding and grazing areas occur. System and user created trails may pass along the meadow perimeter or through some meadows, particularly the lower elevation meadows, where commercial pack stock operations are only passing through the area en route to other destinations. Adverse effects would not likely occur from continuation of these activities since they have not been observed to substantially impact the willow portions of these meadows and subsequently the willow flycatcher structural habitat component.

Implementation of Alternative 1 trail transportation system and management level designation, and commercial pack stock system and use trail suitability determinations would continue the existing low impacts to willow stands where trails course through or adjacent to them in suitable willow flycatcher habitats in the meadows identified in Chapter 3, Tables 3.24 and 3.25. The extent of these localized impacts is thought to be minor, and not considered a major affecter of the potential for willow flycatcher to occupy the habitats.

The Sierra Nevada Forest Plan Amendment would require willow flycatcher surveys for implementation of this alternative in Jackass and Hellhole Meadows since these meadows are within the 5 mile radius from a known occupied habitat meadow. Surveys may also be warranted at some future date in habitats in wilderness below 8,000 feet where the most suitable habitat, along with the highest probability of detection, might occur. These surveys would be warranted if detections of willow flycatchers increased with confirmed nesting in occupied willow flycatcher habitats and emphasis habitats outside of wilderness within a 5 mile radius of the occupied sites.

Cumulative Impacts

A thorough discussion of cumulative effects on willow flycatcher habitats in the Sierra Nevada, including the Sierra and Inyo National Forests and the AA/JM Wildernesses, can be found in the Sierra Nevada Forest Plan Amendment affected environment and effects analysis for the 2001 Environmental Impact Statement (USDA Forest Service 2001). The principal effects noted, such as grazing, and water diversions and dams, have been present and continue to this day at dramatically reduced levels in the AA/JM Wildernesses.

Willow flycatcher populations have been in decline across the Sierra Nevada, initially as a result of habitat loss, as well as the range extension of the nest parasite, the brown-headed cowbird. The current regional willow flycatcher population demographic trend is uncertain at this time (USDA Forest Service 2004). When other data is examined, including preliminary nest-site re-occupancy data and the Central Sierra nest success and fecundity rates information, it appears the population may have been declining over the last two decades (USDA Forest Service 2004). The willow flycatcher population today may be at such low numbers that the species may have trouble maintaining long-term viability in spite of protective habitat management actions. The Forest Service has identified the species as having the highest probability of extirpation from the Sierra Nevada of any land bird (USDA Forest Service 2001).

The majority of highly suitable nesting willow flycatcher habitat lies outside the AA/JM wildernesses below 8,000 feet in elevation. The suitable unoccupied nesting habitat adjacent to the wilderness boundaries may be subject to impacts from commercial livestock grazing

operations in Forest Service grazing allotments, along with private and Forest Service pack station corrals and pastures. These land uses may be affecting suitable willow flycatcher habitats and may contribute to the cumulative effects operating on the species.

Areas outside wilderness with livestock, such as allotments and holding facilities, that attract brown-headed cowbirds to feed continue to create a hub from which cowbirds can parasitize willow flycatcher nests. Suitable wilderness nesting habitat is identified above that is within cowbird range. Developed campgrounds, picnic areas, and summer homes, as well as nearby subdivisions and rural communities create similar feeding opportunities for cowbirds, and may contribute to entry of cowbirds into the lower elevations of the wilderness adjacent to these areas. In addition, recreation areas that may be suitable willow flycatcher nesting habitat draw people to recreate in or near the willows to fish, hike, and enjoy the day. Inadvertently, human presence may disturb the breeding and young rearing activities of the birds as well as attract nest predators such as jays, ravens, or mammalian predators. Habitat loss can also occur from rural sprawl and community development, meadow drainage and fill, willow eradication, and home construction in meadows.

All of these factors may be contributing to the decline of willow flycatchers from habitat degradation, loss, and fragmentation, as well as small population isolation, and ultimately may prevent recruitment into other suitable areas such as in wilderness.

The existing and future contribution of commercial pack stock operations and the trail plan to cumulative effects is considered minor at this time since Inyo and Sierra Forest Plans standards and guidelines are in place to adaptively manage suitable habitats to maintain willow and wet meadow habitats. Implementation of Alternative 1 with grazing standards and adaptive management monitoring should maintain favorable structural habitat characteristics for willow flycatcher occupation and prevent nest disturbance should a nesting pair be located.

Willow flycatcher – Alternative 2

Analysis

Effects from commercial pack stock grazing under Alternative 2 to suitable unoccupied willow flycatcher meadows listed in Table 4.87 are likely to be similar to Alternative 1 meadows that were requested for grazing and determined to be suitable, except where critical areas of the meadow may be established under Alternatives 2 and managed for a 5 percent maximum allowable disturbance standard. These areas would be identified as part of the Operating Plan so it is not possible at this time to determine where they would be established or what percent of the meadow they would occupy and how that might affect suitable willow flycatcher habitat. The 53 suitable unoccupied meadows not requested for grazing would not be grazed under Alternative 2. These meadow habitats would not be subject to the grazing effects on suitable unoccupied willow flycatcher habitats approved for grazing areas under Alternative 1.

The commercial pack stock use regulating system would have the same effects as Alternative 1 since actual camp and destination use is unlikely to substantively change in suitable unoccupied willow flycatcher habitats shown in Chapter 3, Tables 3.24 and 3.25. The proposed trail plan would have the same effects as in Alternative 1.

Cumulative Impacts

Same as Alternative 1

Willow flycatcher – Alternative 2 – Modified, and 3**Analysis**

Under these two alternatives commercial pack stock grazing allowable use levels would be substantially higher than Alternative 2 in Double, Jackass, Poison, Hellhole, and Lower Blayney. This could result in increased potential adverse effects to suitable willow flycatcher habitats. Commercial pack stock would be more likely under higher allowable use levels to graze in, and trail through, the dispersed willow clumps and potentially break and trample willow stems that would decrease the horizontal willow foliage cover as well as lower willow stem density. This could make the suitable unoccupied habitats somewhat less suitable over time since willow shrub cover would be reduced. Like Alternative 2, it would be difficult to predict exactly how much of this effect would occur and where without multi-year monitoring.

Cumulative Impacts

Same as Alternative 1

Willow flycatcher – Alternative 4**Analysis**

Under this alternative, suitable unoccupied willow flycatcher habitat in Chetwood Cabin, Detachment, and Knoblock Meadows would receive full protection over the other alternatives since no grazing would be allowed in these meadows. Some willow stands would likely slightly improve in density and crown foliage volume since there would be no potential for stock trailing through willow stands where stem breakage might occur. This alternative would also allow for maximum vegetative and hydrologic functioning recovery potential, though it is recognized that these meadows may not show substantive recovery for many decades.

Allowable grazing use levels would be the same as Alternative 2 for Jackass, Lower Blayney, Posion, and Hell Hole Meadows and therefore the effects would be the same.

Rattlesnake Lake, 77 Corral, and Island Crossing/Fox Meadows would be grazed at light stocking rates that are not likely to adversely affect willow habitats in these meadows.

In addition 53 other suitable unoccupied meadows not requested for grazing would not be grazed under Alternative 4. These meadow habitats would not be subject to the grazing effects on suitable unoccupied willow flycatcher habitats approved for grazing areas under Alternative 1.

The commercial pack stock use regulating system would have the same effects as Alternatives 1 through 3 since actual camp and destination use is unlikely to substantively change in suitable unoccupied willow flycatcher habitats shown in Chapter 3, Tables 3.24 and 3.25. The proposed trail plan would have the same effects as in Alternative 1.

Cumulative Impacts

The discontinuation of grazing in the meadows identified above would contribute to a decrease in cumulative effects on willow flycatcher habitats in the Sierra Nevada overall and may improve some structural habitat characteristics at these meadows. It is unknown whether this would make any substantive difference in the probability of willow flycatcher occupancy of suitable habitat in wilderness particularly because of the continued low willow flycatcher occupancy and use status of non-wilderness highly suitable habitats.

Willow flycatcher – Alternative 5

Analysis

Implementation of Alternative 5 would provide full protection for all suitable willow flycatcher habitat meadows listed in Chapter 3, Tables 3.24 and 3.25. No potential for adverse effects to suitable willow flycatcher would exist. The proposed trail plan would have no effect on suitable willow flycatcher habitats or changes in potential for occupancy of those meadows noted above.

Cumulative Impacts

The elimination of commercial pack stock grazing in all suitable unoccupied willow flycatcher meadows listed in Chapter 3, Tables 3.24 and 3.25 would remove any potential effects of this activity to the willow shrub components and herbaceous wet meadows areas that comprise the important structural features of suitable willow flycatcher habitat. Meadows that currently have hydrologic functioning problems would likely recover at somewhat faster rates without commercial pack stock grazing.

The elimination of all commercial pack stock use of camps, destinations, and trails in the AA/JM Wildernesses is unlikely to appreciably change the cumulative effects on willow flycatcher habitats since there is very little destination use associated with the meadows shown in Chapter 3, Tables 3.24 and 3.25. Suitable habitats where trail systems and camps course in and adjacent to these meadows would still be subject to human disturbance from the remaining wilderness user groups. There may be some minor, localized, and insignificant level of suitable habitat improvement where commercial pack stock use of trails has resulted in a widened treadway through riparian areas that would likely narrow in width once commercial stock use ceases.

Northern Goshawk

The Biological Evaluation prepared for this EIS has determined that implementation of Alternatives 1 through 4 may affect individual goshawk but would not contribute to a trend toward federal listing for this species, or loss of viability within the planning area. Implementation of Alternative 5 would not affect the goshawk.

Northern Goshawk – Alternative 1

Analysis

The direct and indirect effects of commercial pack stock operations that represent 11 to 13 percent of overall use in the wilderness cannot be easily separated out from the total human disturbance presence and low levels of habitat modification effects that may affect goshawk use of suitable habitats for nesting and foraging. If all commercial pack stock operations were ceased

there would still be a substantial continuous human disturbance presence from day hikers, backpackers, and recreational stock users during the goshawk nesting and young rearing period from June through August along the same popular trails, camps, and destinations.

There would continue to be localized areas of habitat impact with implementation of Alternative 1 around trails, camps, and stock holding areas; however, the overall suitable habitat would be unlikely to be substantively affected to the point where goshawk could not find suitable nesting areas within a territory.

Individual goshawk have demonstrated varying levels of tolerance to adjacent human presence, such as around camps and trails. On the Inyo National Forest nests are occasionally constructed along trails to take advantage of open flight-paths to the nest. These nests are often abandoned if young have not hatched once human recreation presence begins in June (USDA Forest Service 2001). If young are present, goshawk will become highly territorial and display aggressive flight attacks toward recreationists who come within close proximity to the nest. This can result in recreationists further harassing, and occasionally attempting to chase, goshawk out of the area and in rare worst case scenarios, attempt to harm the birds. There are no records in the AA/JM Wildernesses of recreationists including commercial pack station operators or clients attempting to harm goshawk.

Pack station wranglers could possibly guide clients to known nests to view goshawk in a non-threatening manner. This type of event can be benign or lead to birds leaving the nest area temporarily, and possibly temporarily abandoning young. Goshawk, like other raptors, may adapt to tolerate low levels of this type of activity, especially once young are present in the nest. Hargis et al. (1991) examined several goshawk territories around Mammoth Lakes California outside of wilderness in areas of commercial timber harvest and dispersed recreation. They found that small scale human developments had no apparent effect on home range configuration or reproductive success of the goshawk territories studied. In addition, the goshawk territories they studied where these conclusions were made were bordered by coniferous forests that provided goshawk the potential to avoid or escape human disturbance. The study conclusion may shed light in how goshawk may respond to camps and destination uses in wilderness in suitable habitats. There are similarly substantial undisturbed areas of adjacent habitat around trail corridors, camps, and destinations in wilderness where goshawk have the ability to avoid human disturbance areas within their territories

In the case of the Davis Lake nest territory, there are historical records of the birds successfully nesting and fledging young amidst nearby human disturbance, including system and user trail use, recreational and commercial pack stock camps, and stock holding areas. The territory has been inactive for several years now and intensive territory searches in 2003 and 2004 have failed to detect goshawk presence or signs of nest maintenance. There could be a number of reasons why goshawk are not currently occupying the territory; including the death of one of the birds from unknown causes, or the shift of the birds' use of the territory to an unknown location away from the areas searched. The particular factor that causes nest sites to become unoccupied is extremely difficult to determine. A nest territory closure to recreation users could be implemented through the Sierra Nevada Forest Plan Amendment direction when an active territory is discovered. A biological evaluation would be conducted at the site specific level to determine an appropriate buffer zone to reduce human disturbance levels. The closure could be implemented through the annual pack station permit operating plan.

There are nest territories that have been monitored for years on the Inyo National Forest where goshawk successfully nest and fledge young adjacent to high human use trails, roads, and campgrounds that are as close as 100 yards from the nest tree. The birds continue to occupy the territories without closure buffers year after year and produce young at levels similar to nest territories more distant from human use areas.

Table 3.26, Chapter 3 displays the suitable habitat acreages by geographic unit. This table demonstrates that for six of the eight geographic units, there is considerable suitable habitat available where goshawk can shift nest locations in response to human use patterns on the landscape, such as commercial pack operations, and still have a high probability of maintaining a successful nest territory. Goshawk nest territories vary considerably to over 5,000 acres per pair (USDA Forest Service 2001). Goshawk typically have more than one nest in a territory and shift nest use around from one year to the next year, especially in territories with substantial human disturbance. Goshawk have shown an ability to successfully nest and rear young in these situations on the Inyo National Forest.

Adjacent non-wilderness suitable habitat acres are available in the remaining three units (Bishop-Humphreys and John Muir Southeast) where goshawk can find enough suitable habitat to maintain territories.

Direct structural habitat impacts with implementation of Alternative 1 associated with trails and camps used by commercial pack stock operations may be locally high around a camp but are likely minor when considered over the entire suitable habitat areas shown in Table 3.26. Impacts are generally minor losses of understory vegetation, ground compaction, and loss of woody debris that packers use for campfires, all of which can have minor effects on goshawk prey abundance such as Douglas squirrels. Such effects are probably of minor consequence to the maintenance of goshawk territories that may be present.

Cumulative Impacts

Cumulative effects in the two wilderness areas have already been mentioned above in terms of the effects of all recreational activities and how they can influence goshawk use of suitable habitat, as well as the ability of goshawk to successfully rear young. An intensive research study would be needed to fully assess such effects that would require considerable effort and funding to locate nests and design a study to fully understand how goshawk are responding to recreational uses of wilderness.

Wilderness is probably the lowest priority area for such an intensive analysis since habitat modification is low. Also, overall recreational pressure is substantially lower relative to non-wilderness habitats where goshawk can encounter significantly higher levels of human disturbance and habitat modification events. Such affectors outside wilderness include campgrounds, road networks, high use recreation areas around lakes and streams that overlap highly suitable nesting habitats, resorts, pack stations, developments associated with Mammoth Mountain, and rural developments along the Inyo and Sierra National Forest boundaries.

The implementation of the Sierra Nevada Forest Plan Amendment designation of Protected Activity Centers for active nest sites as well as management standards and guidelines are designed to reduce the cumulative effects on the species within Forest Service lands. These standard and guidelines apply to wilderness areas as well.

Also, some level of falconry take of young goshawk from nests occurs in wilderness as well as non-wilderness. The Sierra Nevada Forest Plan Amendment analysis for goshawk in the Sierra Nevada noted that the legal harvest of goshawk for falconry is low in the Sierra and does not impact the population (USDA Forest Service 2001).

Northern Goshawk – Alternative 2 – Modified

Analysis and Cumulative Impacts

The effects of implementation of this alternative may provide some overall improvement in suitable goshawk habitat since overnight stock use will be restricted to designated camps that may restrict human disturbance to a smaller area within suitable habitat. This is speculative in many ways, since clients would still be able to day hike from the camps into suitable habitat, and other user groups would continue to use the areas for camping and destinations.

The continuation of commercial pack stock use around the unoccupied south Davis Lake nest site area and the potential for direct and indirect effects would be the same as Alternative 1. The one nest along the system trail would continue to experience a high level of human disturbance and it is likely goshawk would not use it as long as the system trail remains in that location. Similarly, under this alternative, the maintenance of the two trails to Grass Lake at the North Fork of Bishop Creek would continue to maintain a high level of human disturbance in this territory. The Davis Lake territory has considerable suitable habitat for birds to potentially nest away from the heavy human disturbance areas. The North Fork territory has substantially less undisturbed habitat so any additional disturbance could be problematic for long-term maintenance of this territory. The Sierra NF goshawk territories identified in Chapter 3 would be unaffected by this alternative.

Alternative 2 – Modified can implement the same nest territory closure to recreation users as Alternative 1 under the Sierra Nevada Forest Plan Amendment direction when an active territory is discovered.

The disapproval of the south user trail by commercial stock under Alternative 2 – Modified would maintain a lower level of human disturbance through this section of the territory. The main system trail to Lamarck Lakes that bisects the territory would continue to cumulatively experience a high level of human traffic from all user groups under both alternatives, and maintain a high level of human disturbance within the trail corridor portion of the territory. The goshawk appears to have selected the least disturbed areas within the available suitable habitat in the territory in which to place their nest.

The other aspects of the trail transportation system, trail management levels, system and user trail suitability determinations for commercial pack stock, and use regulating systems of this alternative are not likely to cause any measurable changes in the quality of goshawk habitat. This is because human disturbance potential would likely remain at similar levels throughout the wildernesses as Alternative 1. There may be a slight reduction in overall human disturbance effects with designated overnight stock holding camps, the NSCS system trail designation, and commercial pack stock use prohibitions over Alternative 1. The North Fork of Bishop Creek territory is an example of a territory unlikely to have any substantive changes in cumulative effects since it would continue to experience high levels of disturbance effects with the non-wilderness campground, non-wilderness day use, and wilderness day hiker and backpacker

popularity of the area and trail system. The Davis Lake site would also likely still maintain a high level of human traffic through the nest territory around the south lakeshore.

Northern Goshawk – Alternatives 2 and 3

Analysis and Cumulative Impacts

The effects of implementation of these alternatives may provide some overall improvement in suitable goshawk habitat since overnight stock use will be restricted to designated camps and may restrict human disturbance to a smaller area within suitable habitat. This is speculative in many ways, since clients would still be able to day hike from the camps into suitable habitat, and other user groups would continue to use the areas for camping and destinations.

The implementation of the buffer closure around the south Davis Lake nest site area to commercial pack stock use may improve the nest site potential for goshawk to re-occupy the area if the birds are still present in the territory. The one nest along the system trail would continue to experience a high level of human disturbance and goshawk likely would not use it as long as the system trail remains in that location. Similarly, the maintenance of the two trails to Grass Lake at the North Fork of Bishop Creek under both alternatives would continue to maintain a high level of human disturbance in this territory. The south user trail upgrade into the system under Alternative 3 would encourage additional human use in that part of the territory and somewhat decrease habitat suitability. The Davis Lake territory has considerable suitable habitat for birds to potentially nest away from the heavy human disturbance areas. The North Fork territory has substantially less undisturbed habitat, so any additional disturbance could be problematic for long-term maintenance of this territory.

Alternatives 2 and 3 can implement the same nest territory closure to recreation users as Alternative 1 under the Sierra Nevada Forest Plan Amendment direction when an active territory is discovered.

The disapproval of the south user trail by commercial stock under Alternative 2 would maintain a lower level of human disturbance through this section of the territory. The main system trail to Lamarck Lakes that bisects the territory would continue to experience a cumulative high level of human traffic from all user groups under both alternatives, and maintain a high level of human disturbance within the trail corridor portion of the territory. The goshawk appears to have selected the least disturbed areas within the available suitable habitat in the territory in which to place their nest.

The other aspects of the trail transportation system, trail management levels and system and user trail suitability determinations for commercial pack stock, as well as use regulating systems of the 2 alternatives are not likely to cause any measurable changes in the quality of goshawk habitat. This is because human disturbance potential would likely remain at similar levels throughout the wildernesses as Alternative 1. There may be a slight reduction in overall human disturbance effects with designated overnight stock holding camps, the NSCS system trail designation, and commercial pack stock use prohibitions over Alternative 1. The North Fork of Bishop Creek territory is an example of a territory unlikely to have any substantive changes in cumulative effects since it would continue to experience high levels of disturbance effects with the non-wilderness campground, non-wilderness day use, and wilderness day hiker and backpacker popularity of the area and trail system. The Davis Lake site would also likely still maintain a high level of human traffic through the nest territory around the south lakeshore.

Northern Goshawk – Alternative 4

Analysis and Cumulative Impacts

Implementation of Alternative 4 may provide for a higher level of goshawk habitat suitability than Alternatives 2 and 3 with the reduction of overall commercial pack stock use areas, and designated drop camps in addition to stock holding camps, as well as the substantially increased number of not recommended for commercial stock system trail designations, and use trail prohibitions. Goshawk would still be subject to human disturbance in many of these areas from other user groups as described for Alternatives 2 and 3. Alternative 4 may increase commercial pack stock use in other suitable habitats such as Tamarack Basin suitable goshawk habitat as commercial pack stock operators shift use to adapt to new use regulations.

The designation of Alternative 4 trail management levels would not likely affect goshawk habitat in any substantive way. No trails would be closed or re-located with implementation; therefore, human disturbance patterns through suitable habitat would remain the same. The changes in trail width or trail structures under the various classes would not impact the suitability of goshawk in any substantive way since it is unlikely to change actual use on that trail by user groups.

Alternative 4 can implement the same nest territory closure to recreation users as Alternatives 1 through 3 under the Sierra Nevada Forest Plan Amendment direction when an active territory is discovered.

Northern Goshawk – Alternative 5

Analysis and Cumulative Impacts

The removal of all commercial pack stock use in the AA/JM Wildernesses would likely result in some improved habitat conditions and reduce the potential for human disturbance at all traditional commercial packer camps found below 10,000 feet in old growth and mature lodgepole, lodgepole-hemlock, mixed conifer, and pine-associated forests. Use would be largely discontinued, but sites could always be occupied by other user groups. Therefore, it is unknown how many of the sites would truly have reduced human disturbance and improved habitat conditions from re-vegetation of the site.

The elimination of packer campfires in these zones would allow for increased downed woody material for use by goshawk prey for variable zones around each camp.

A reduction in cumulative effects would occur in the wilderness areas within suitable goshawk habitat since there would likely be less human traffic and disturbance. In addition, less structural habitat modification would occur as a result of the reduction in campfires and disturbed camp zones and perimeters.

The vast majority of human use of trails and camps would likely continue in wilderness from other user groups, so the magnitude and extent of this lowered cumulative effect would be difficult to predict. Use would very likely increase by day hikers and backpackers if commercial pack stock use were discontinued in an area like Davis Lake. Under a shift like this, goshawk might still experience human disturbance levels and habitat modifications that would maintain similar cumulative effects as Alternatives 1 through 4.

Great Gray Owl

The Biological Evaluation prepared for this EIS has determined that implementation of Alternatives 1 through 4 may affect individual great gray owls but would not contribute to a trend toward federal listing for this species, or loss of viability within the planning area. Implementation of Alternative 5 would not affect the great gray owl.

Great Gray Owl – Alternatives 1 through 4

Analysis

Table 4.88 displays the suitable acres of great gray owl habitat identified within the AA/JM Wildernesses, and the proposed grazing management by alternative. Suitable habitat acres up to 8,200 feet elevation were determined from GIS analysis of satellite imagery.

Table 4.88. Great gray owl suitable meadow foraging habitat adjacent to suitable nesting habitat, relationship to identified grazing zones, reported grazing from 2001 through 2003, and allowable pack stock grazing levels by alternative.

Geo Unit	Analysis Unit	Meadow area with Suitable Habitat	Grazing Zone	Reported stock nights 2001/2002/2003* Proposed Use by Alternative (percent) forage use/stocknights(SN)**
AA East	Minaret	Johnston Meadow, Min 11	Minaret Creek	0/20/0* (Alt 1 no standard) (193 SN alt 2) (no grazing alt 2 mod, alt 3 and 4)**
AA West	Cargyle	77 Corral, Corral, Cargyle, Car 8, 10, 12	Cargyle Stairway	18/0/22 (Alt 1 no standard) (50SN alts 2-4)
	Junction	Junction Bluffs, Rattle snake Lake Jun 5, 6, 12, 13	Rattlesnake Lake	(Alt 1 no standard) (25SN alts 2-4)
	Arch	Bear Meadow, Arc 16, 18, 19, 20	none	0 (0)
	Onion Springs	Lower Twin Ons 8, 13	none	0 (0)
	Cold Creek	Coc 2, 3	None/Adjacent Graveyard Grazing Zone 1 mi northeast	0 (0)
Florence/Bear	East Florence/Sallie Keyes	Double, Lower and Upper Blayney Eaf 2, Sak 17, 18	Shooting Star Blayney	700-1000 2001 through 2003 mostly in Double (alt 1 no standard),(alt 2, 60SN) (alt 2 mod, alt 3, 1800SN) (Alt 4 no grazing)

Geo Unit	Analysis Unit	Meadow area with Suitable Habitat	Grazing Zone	Reported stock nights 2001/2002/2003* Proposed Use by Alternative (percent) forage use/stocknights(SN)**
		Jackass, eaf1 Hellhole, hoo2 Poison, hoo1	Jackass Meadow (only 10 percent in Wilderness)	400/200/200 estimated for all 3 meadows all within the same habitat area Jackass (alt 1 no standard),(alt 2, 400SN) (alt 2 mod, alt 3, 20 percent of 2025SN) (Alt 400SN) Hellhole (alt 1 no standard),(alt 2, 200SN) (alt 2 mod, alt 3, 442SN) (Alt 4 200SN) Poison (alt 1 no standard),(alt 2, 200SN) (alt 2 mod, alt 3, 320SN) (Alt 4 320SN)
JMSW	Finger	Fin 9,13, 14, 15,16, 17, 18, 19	none	0 (0)
	Spanish	Spa 6	none	0 (0)
	Rodgers	Crown, Rod 5, 6, 31	none	0 (0)

Under Alternative 1, no direct effects would occur to nesting great gray owls from commercial pack stock use since there are no known nest sites in the AA/JM Wildernesses. The continuation of commercial pack stock grazing use similar to recent use levels in the meadows identified in Table 4.88 may result in variable levels of reduction in vole prey species density on an annual basis. This level probably does not amount to a substantive reduction in vole density; however, increased reduction of voles could occur if meadows are grazed to higher forage utilization levels.

Implementation of range readiness dates would mitigate adverse effects to owl foraging success that could influence nesting and rearing of young. The majority of pack stock grazing would occur after July 15, after owls have fledged young, and it would likely be well into August before pack stock forage utilization levels cropped vegetation low enough to substantially influence vole prey density. Great gray owls can also forage for pocket gophers that are widely distributed and occur on non-meadow types as well.

Alternative 1 does not implement forage utilization standards in the near-term; therefore, prediction is difficult as to what effects would actually occur to vole prey density. Grazing levels that will occur is unknown, other than what grazing numbers have been reported in the past. There is a higher probability under this alternative of higher forage utilization events by commercial pack stock due to the lack of utilization standards. According to Beck and Winter (2000), the taller grass and sedge stubble height (especially greater than five inches) allows for sufficient cover to provide for vole occupancy of meadow habitat. The species numbers decline as residual vegetative stubble heights are reduced. The meadows where decline could be a concern would be Double, Blayne, Hellhole, Poison and Jackass meadows since they are more traditionally used on an annual basis as commercial pack stock grazing areas. The other meadows have received infrequent and light grazing.

Alternative 2 – Modified, 2, 3, and 4 would have similar effects to great gray owls in Cargyle, Junction and Shooting Star Meadows during the nesting season, since they would implement the same range readiness dates as Alternative 1. The alternatives also implement moderate utilization levels for these meadows. Potentially, a similar reduction of vole prey density would occur in Alternatives 2 Modified, and 3, which would allow for substantively higher forage utilization levels in Jackass, Double, Poison, Hellhole and Blayney Meadows. This may even further affect vole prey density. Johnston Meadow would be rested or closed to commercial pack stock grazing under Alternatives 2 Modified, 3, and 4 that would allow for higher quality prey habitat for use by great gray owls.

Use of the existing trail system in Alternatives 1 through 4 by commercial pack stock where trails course through or along the perimeter forested zones around the meadows in suitable habitat (Table 4.88) may cause great gray owls to be displaced from these habitats. Owls may avoid using the immediate trail corridor areas while the trails are in use and may utilize habitats further away from the trail corridor, or be flushed from perches around the meadow for some period of time.

The system trails, such as around Blayney and Johnston Meadows, are main high-use thoroughfares that are used by all wilderness user groups. Commercial pack stock operations are a relatively small contributor to human disturbance activities in and around these low elevation meadows. The majority of trail use by other user groups would continue to maintain a significant disturbance potential that may have some effect on owl occupancy of suitable habitat, even if all commercial pack stock trail use ceased under Alternative 5. Whether great gray owls are being affected by this use is unknown.

The proposed trail alternatives do not substantively change the potential for great gray owl occupancy of the habitats identified in Table 4.88 since the proposed actions are to designate a trail transportation system, management levels, and NSCS system trail and user trail suitability determinations. The alternatives do not consider trail location and potential relocation scenarios to favor great gray owl use of surrounding meadow habitats. Protocol surveys should be initiated, if practical, when future sightings do occur. Trail relocation and grazing management modification may be desirable future proposals after monitoring indicates such actions would be necessary to avoid adverse effects to the species.

Direct effects to forested nesting habitats from all commercial pack stock alternatives are localized areas of forest denudation around camps, including social trails and access trails.

Cumulative Impacts

Under Alternatives 1 through 4, the presence of a trail network through and around forested meadow perimeters (listed in Table 4.88) would maintain a substantial conduit for human disturbance within suitable great gray owl nesting habitat. Trail system use and associated off-trail hiking by all wilderness users around meadows can lower habitat suitability, especially since the majority of great gray owl use of suitable habitat occurs within 900 feet of meadow perimeters according to Winter (1986).

Excessive forage utilization by all classes of livestock in and out of wilderness can have substantial effects on meadow habitat, and subsequently great gray owl prey species abundance, and can potentially affect owl foraging success and influence nesting success and productivity. Loss of forested habitats from the logging of old growth mixed conifer forests, and degradation

of meadow habitats are listed as the principal factors for the reduction of suitable great gray owl habitat in the Sierra Nevada (USDA Forest Service 2002). Implementation of Sierra Nevada Forest Plan Amendment survey requirements allows for implementation of a protective management strategy when a reliable sighting of a great gray owl occurs and once an occupied territory is confirmed. This strategy would include standards and guidelines for grazing management and the development of Protected Activity Centers around all great gray owl occupied habitats to maintain habitat and limit human disturbance in known territories.

Great Gray Owl – Alternative 5

Analysis and Cumulative Impacts

Elimination of all commercial pack stock use activities within suitable great gray owl habitats shown in Table 4.88 would provide for improved meadow habitat conditions to support vole populations and Great gray owl foraging habitat at traditional grazing areas such as at Jackass, Poison, Hellhole, Blayne and Double Meadows. The implementation of a trail transportation system, and trail management levels would not have a measurable change in great gray owl habitat suitability since no trails would be closed or relocated. The elimination of the commercial pack stock use component may provide for lower human disturbance levels along the trail system if great gray owls are using the meadows adjacent to the system. A similar reduction in human disturbance associated with the elimination of commercial pack stock use would occur at destinations such as at Grassy Meadow and Jackson Meadow, two high use destination areas. Whether the cessation of use would affect any use of the available habitat by great gray owls in these areas is unknown.

Cumulative effects would likely decline because of the elimination of commercial pack stock use on the trail system and at destinations, including the elimination of all grazing with implementation of Alternative 5. Traditional camp areas and associated social and access trails may re-vegetate with localized improvement in vegetative cover and reduced human disturbance potential at these sites. How such reductions in human disturbance and grazing impacts would influence great gray owl occupancy and use of suitable habitats is unknown. All other wilderness users would continue to use the trail system and destinations within suitable great gray owl habitat.

Wide-Ranging Carnivores – Alternatives 1 through 4

The Biological Evaluation prepared for this EIS has determined that implementation of Alternatives 1 through 4 may affect individual Pacific fisher, wolverine, Sierra Nevada red fox, and American marten, but would not contribute to a trend toward federal listing for any of these species, or loss of viability within the planning/analysis area.

Fisher

Analysis

Commercial pack stock operations within the AA/JM wildernesses are outside the range of known fisher populations in the Southern Sierra. The species may be present on the Sierra National Forest side of the Wildernesses, predominantly in lower elevation coniferous forest habitats where brief human disturbance encounters with commercial pack stock operations could

occur. Suitable habitat has been listed as generally below 8,000 feet in elevation (USFS 2001), but can include higher elevation forest habitats into the subalpine. There is a very low probability of insignificant human disturbance encounters in these forested habitats along trails, and camps. Commercial pack stock operation effects to suitable habitat are insignificant and include collection of firewood around camps, which may reduce habitat suitability for fisher prey species.

Implementation of any of the alternative trail transportation system and management level designations, and commercial pack stock system and use trail suitability determinations would have insignificant effects to the species and its habitat. Trails create small habitat fragmentation corridors that also provide access pathways where human disturbance encounters may occur, along with insignificant habitat reductions for the species and its prey.

Cumulative Impacts

Commercial pack station operations and wilderness trails probably do not contribute significantly to cumulative factors adversely affecting fisher populations because of the minor range overlap of the species with wilderness, and the low impacts of these operations on late successional forest habitats. The distinct population segment of the fisher in its West Coast Range (that includes the Sierra Nevada population) is a candidate for federal listing (USFWS 2004) because of significant Sierran population declines and the isolation of the southern Sierra population from the northern population. Fisher populations and their habitat have historically been affected by timber harvesting of mature and old growth forests. Fuels reduction projects may affect the structural habitat characteristics of suitable habitat outside of wilderness. Legal trapping in the early part of the twentieth century and continued mortality from inadvertent traps set for other animals has significantly reduced fisher populations and are thought to be a hindrance to their population recovery (USFWS 2004). In addition, the Federal Register proposed rule to list the species under the Endangered Species Act also lists the loss and fragmentation of fisher habitat from roads, urban development, recreation, and stand replacing fire. The Sierra Nevada Forest Plan Amendment has a Fisher Conservation Strategy designed to maintain and recover the westside Sierra population by maintaining the southern Sierra population habitat, providing suitable habitat linkages between the northern and southern populations, protecting all den sites, and the providing suitable habitat to allow for possible fisher reintroductions.

Wolverine

Analysis

The status of wolverine and how human recreational activities may influence its presence and persistence in the AA/JM Wildernesses is unknown. No verifiable sightings have occurred in many years (USFS 2001). If the species is present, there is a very low probability of a human disturbance encounter with commercial pack stock operations, since wolverine appear to avoid areas of human occupation. Human disturbance encounters can have negative effects on this species when they do occur, to the point where wolverine may avoid areas of continuous human use (USFS 1994). The wilderness provides the lowest probability areas where such encounters are likely to have significant impacts to the species because large areas of suitable habitat allow wolverine to escape.

Implementation of any of the wilderness trail transportation system alternatives, trail management levels, and system and use trail suitability determinations would continue to maintain human travel corridors that provide areas of potential human disturbance to the wolverine. How the trail system may affect wolverine viability is unknown, since there is no known population of the species to monitor, and no data exists to support such an analysis for the AA/JM Wildernesses.

Cumulative Impacts

Ruggerio et al (1994) concluded in the publication “The Scientific Basis for Conserving Forest Carnivores” that the wolverine population in the Sierra ecoprovince might be isolated from other wolverine populations. They suggest the species may maintain its viability in the short-term; however, their long-term persistence is in doubt without dispersal corridors to connect with other populations. The rapid and continued development of low elevation habitats outside of the AA/JM Wildernesses continues to fragment and isolate habitat patches that the wolverine could use as connectivity corridors with known populations to the north. The species viability and long-term persistence becomes more problematic as development continues.

Sierra Nevada Red Fox

Analysis

The Sierra Nevada Forest Plan Amendment states that the current distribution and population status of the Sierra Nevada red fox is uncertain (USFS 2001). There have been no sightings of the fox in many years in the two wildernesses; therefore, analyzing the effects of these alternatives is difficult.

Sierra Nevada red fox, like the wolverine, seem to be intolerant of human presence; consequently, encounters with commercial pack stock operations would potentially cause a disturbance (USFS 2001). Pack stock grazing in meadows where forage utilization levels approach 30 to 40 percent may decrease some meadow-dependent prey species abundance, such as voles. This is unlikely to have any significant effect on red fox presence in the analysis area. Numerous ungrazed, or lightly grazed, meadows are present in the wilderness areas that support prey species, including an abundance of forested habitat prey species (such as rabbits and small mammals).

The effects of implementation of any of the wilderness trail system alternatives are the same as for the fisher.

Cumulative Impacts

The cumulative effect of recreational use in the AA/JM Wildernesses on this species is unknown. Outside wilderness areas, human encroachment of fox habitat through winter and summer motorized vehicle use, non-motorized recreation, rural sprawl, and developments such as ski areas all adversely affect potential use of an area by Sierra Nevada red fox (USFS 2001). Heavy livestock grazing is also noted as a potential adverse effector of prey species abundance in non-wilderness meadow habitats.

Marten

Analysis

Commercial pack stock operations are likely to have localized direct and indirect effects on marten around trail corridors, camps, and destinations in montane-forested habitats. The effects are considered of minor consequence to the overall marten population in the two wilderness areas since there is abundant high-quality habitat. Marten may avoid areas around camps where commercial pack stock operations are present; however, the species can range over large areas to find suitable foraging habitats and rest sites. There will likely be some minor, insignificant reduction in prey availability and marten rest sites because of the removal of downed woody material for collection of firewood around camps where fires are allowed.

Implementation of any of the alternative trail transportation system and management level designations, and commercial pack stock system and use trail suitability determinations would have insignificant effects to the species and its habitat. Trails create small habitat fragmentation corridors that also provide access pathways where human disturbance encounters may occur, along with insignificant habitat reductions for the species and its prey.

Cumulative Impacts

Marten use of habitats within the AA/JM Wildernesses is likely affected by the cumulative effect of all recreational activities. The continuous presence of all recreation users in Category 3, and to a lesser degree Category 2, areas of wilderness could lead to marten avoidance, or reduced use of those areas. The collection of firewood and the denudation of camp areas, along with user and social trails in popular destinations, reduce habitat for small mammal and bird prey species and decrease rest site cover habitats for marten. The influence of these impacts on marten populations is unknown; however, the impacts are not thought to be significant enough to threaten marten population viability because vast areas of high quality suitable habitat are available.

Cumulative effects outside of wilderness that adversely affect marten use of habitats include the continued use and development of the Mammoth Ski Area, rural sprawl, resort use and development, and campgrounds in forested habitats. Summer and winter recreation activities, such as hiking, and camping, off-road vehicles, stock trail rides, snowmobiling and cross country skiing, affect marten seasonal use of habitats. Forest thinning projects and fuel reduction treatments reduce dense forested conditions that marten favor and reduce the habitat for marten prey species. Marten are also occasionally reported killed from motor vehicles, entrapment in structures, and trap-sets put out to catch other species.

Wide-Ranging Carnivores –Alternative 5

Analysis

Cessation of all commercial pack stock operations in the AA/JM Wildernesses would obviously reduce the human disturbance potential from encounters with marten in particular and to a much lesser degree other species. Some improvement of foraging and resting habitats would occur since traditional packer camps, social trails, and grazed meadows would be vacated and vegetation would recover over time. This improvement would be confounded by the continued

use of trails, destinations, and camps by all other recreation groups that comprise the largest percentage of use in the AA/JM Wildernesses.

Cumulative Impacts

The contribution of commercial pack stock operations to the overall disturbance and habitat effects stated for Alternatives 1 through 4 would be eliminated; however, how this change would affect the populations of wide-ranging carnivores and habitat use patterns in wilderness areas is unknown. The implementation of the trail plan would not have a measurable change in wide-ranging carnivore habitat suitability since no trails would be closed or relocated. Cumulative effects would not measurably change since all other wilderness users would continue to use the trail system and destinations within suitable habitat.

California Spotted Owl –All Alternatives

Analysis

The Biological Evaluation prepared for this EIS has determined that implementation of Alternatives 1 through 4 may affect individual California spotted owls but would not contribute to a trend toward federal listing for any of these birds, or loss of viability within the planning/analysis area. Implementation of Alternative 5 would have no effect on the species.

Implementation of any of the action alternatives would have minor effects, if any, on the spotted owl. The species is nocturnal and roosts in trees during the day in dense mature and old growth mixed conifer and red fir forests where it is unlikely to be disturbed by passing pack stock or to experience any substantial improvement without pack stock on trails and around camps. There is very little overlap of commercial pack stock operations with late successional forested habitats where the spotted owl may exist in the two wilderness areas. These habitats are in the lower elevation portions of the AA/JM Wildernesses, below the destinations commercial pack stock operations utilize.

Cumulative Impacts

Overall, human activities inside and adjacent to the two wilderness areas may have minor effects on spotted owl use of habitats for nesting and foraging; however, no data exists on which to assess this further. The disturbance potential is not thought to be a significant affector that has contributed to the decline in spotted owl populations in the Sierra Nevada. The predominant factors affecting this species have been, and continue to be: the conversion of late successional forests to younger stand conditions that eliminate nesting and foraging habitats, forest fuel reduction projects that eliminate or drastically reduce structural habitat features (such as multi-layered forest canopies), and large amounts of downed woody material and snags needed for prey base populations.

Catastrophic large landscape wildfires have also modified, and potentially eliminated, a number of spotted owl territories in recent years. The Sierra Nevada Forest Plan Amendment FSEIS (USDA Forest Service 2004) states that eighteen Protected Activity Centers (PACs) designated to protect and manage spotted owl nest territories could be considered lost due to the amount of habitat that was burned and no longer meeting habitat suitability criteria. It also notes an annual average of 4.5 PACs have been lost or severely modified by wildfires since 1998. Natural and

human-caused landscape fires will likely continue to substantially modify spotted owl habitats and possibly cause localized population changes.

Peregrine Falcon – All Alternatives

Analysis and Cumulative Impacts

The Biological Evaluation prepared for this EIS has determined that implementation of any of the alternatives would not affect the peregrine falcon or result in a loss of viability for the species within the planning/analysis area.

The only recreational activity occurring in wilderness areas that could affect the peregrine falcon is rock climbing, which is typically not associated with commercial pack station operations or client activities except where client's supplies are ferried to base camps for mountaineering. The implementation of any of the trail system alternatives would also not affect this species since trails have not been identified as issues around the known falcon aeries.

Under any of the alternatives, known aeries are protected by a limited operating period that closes the area around the aeries to rock climbing while nesting activities are taking place. Implementation of any alternative does not promote, nor hinder, the existing level of wilderness rock climbing. Implementation of any of the alternative trail transportation system and management level designations, and commercial pack stock system and use trail suitability determinations would have no effect on the peregrine falcon since trails have not been determined to be adversely affecting the species' use of available habitat.

Peregrine falcon nest site disturbance from increasing human recreational use near aeries can have a cumulative effect in wilderness if left unmanaged; however, the Sierra has limited operating period restrictions in place to protect important nesting habitats.

Pallid and Townsends Big-Eared Bat – All Alternatives

Analysis and Cumulative Impacts

The Biological Evaluation prepared for this EIS has determined that implementation of any alternative would have no effect on the pallid bat or the Townsends big-eared bat, nor would they contribute to a trend toward federal listing for any of these species, or loss of viability within the planning/analysis area. There would be no direct, indirect or cumulative effects on key roosting and hibernation habitats present in the two wilderness areas. There may be changes in insect prey abundance in grazed riparian meadows; however, there is no evidence to suggest these changes are having any substantive effect on use of these habitats by these bat species.

Cumulative effects on these species are largely from loss of hibernation and maternity habitats these bats have established in human made structures (such as abandoned mines and buildings) that subsequently are closed or torn down, and recreational activities that disturb bat use of natural caves. Riparian habitat loss and modification has adversely affected foraging habitats for this species outside of wilderness. There also appears to be potential effects from pesticides that reduce insect prey densities and availability.

Management Indicator Species

MIS Mule Deer, Yellow Warbler, and Riparian Meadow, and Meadow Edge Bird Species – Alternative 1

Analysis

Commercial pack stock meadow grazing

Table 4.89 displays the relative changes in the number of meadows where grazing would be allowed versus closed by alternative of the subset of meadows analyzed during field meadow evaluations from 2001 through 2004. It also shows the relative changes of open and closed meadows by alternative for meadows that have hydrologic functioning problems. The numbers can be used as an index to allow comparison of the alternatives as to which alternatives provide for the best wilderness MIS riparian, meadow edge bird species, and mule deer meadow habitat potentials and restoration capability, especially where meadows have stream functioning at risk problems or other meadow hydrology problems that can have adverse effects on meadow habitats.

The assumption is that ungrazed meadows provide the best wilderness MIS wildlife habitat conditions. These meadows provide improved nesting cover for ground and shrub nesting birds, fawning cover for mule deer, and overall foraging habitats. They also have the least amount of avoidance and disturbance impacts to MIS species associated with commercial pack stock use of the meadows and human related management activities. Ungrazed meadows are more likely to have a more rapid MIS habitat recovery rate potential where hydrologic functioning problems exist that could be adversely affecting wildlife habitat components such as vegetative productivity and composition, as well as special aquatic habitats such as springs, seeps, vernal pools, and marshes identified in the Riparian Conservation Area goals and objectives of the Sierra Nevada Forest Plan Amendment.

Approximately 131 meadows under Alternative 1, out of approximately 1503 meadows mapped in the AA/JM Wildernesses that have had reported grazing from 2001 through 2003, are the most likely to continue to experience highly variable levels of grazing use up to maximum allowable forage utilization standards and ground disturbance standards. Another 253 meadows requested for grazing that have not had reported use from 2001 through 2003 may be grazed at highly variable levels, most likely light to very light utilization levels. This alternative would allow commercial pack stock grazing to occur in all wilderness meadows (unlike Alternatives 2 through 4) since all meadows are open for grazing, except for four meadows where grazing closures exist in Cascade Valley and Pioneer Basin. Some additional meadows under Alternative 1 may be closed at some point in the future because of unsuitable for grazing determination analyses directed by the Ansel Adams, John Muir, and Dinkey Lakes Wilderness Management Plan (USDA Forest Service 2001).

One hundred and eight meadows under Alternative 1 determined to be unsuitable for grazing during the interdisciplinary wilderness grazing field assessments would continue to remain open until a grazing closure process is implemented. In addition, Alternative 1 permits grazing in a subset of 59 meadows where stream hydrologic functioning problems are occurring, a condition that may be adversely affecting wildlife habitat. A 20 percent maximum allowable disturbance standard within the meadow and critical area habitats, such as fens and wetlands, would allow

for a higher level of trampling and chiseling disturbance impacts to habitats than Alternatives 2 through 4 where a maximum 5 percent allowable disturbance standard would be implemented.

Table 4.89 Number of analyzed meadows approved for commercial pack stock grazing and determined to be unsuitable and closed to grazing with functioning at risk stream hydrology (PFC) assessment by alternative

	Number of meadows approved for grazing	Number of Meadows determined to be unsuitable	Number of Meadows open/closed for grazing with functional at risk hydrology downward trend	Number of Meadows open/closed for grazing with functional at risk hydrology no apparent trend	Number of Meadows open/closed for grazing with functional at risk hydrology upward trend	Total number of Meadows open/closed for grazing with all functional at risk hydrology categories
Alternative 1	246	4	16/1	29/0	16/0	61/1
Alternative 2	139	108	6/11	24/5	11/5	41/21
Alternative 2 - Modified	143	110	2/15	23/6	9/7	34/28
Alternative 3	143	110	1/16	24/5	9/7	34/28
Alternative 4	120	138	0/17	20/9	7/9	27/35

The following generalized effects discussion for MIS birds and mule deer applies to all meadow habitats potentially open to grazing. The pack stock grazing period from July 15th onward, depending on range readiness dates from one year to the next, overlaps with the nesting and young rearing period of meadow and meadow edge bird species. This grazing also overlaps with an important period when many songbird species arrive at meadows after nesting and fledging young to forage prior to migration from the Sierra. Riparian meadow habitats become important foraging habitats for songbirds during this period. Samson (1980) noted that only a few species of birds nest in mountain meadows, while up to five times as many feed there.

Grazing impact on birds is variable and depends on where a species feeds or nests and when grazing takes place (Skovlin 1984). Implementation of Alternative 1 would likely cause some level of displacement and avoidance effects to riparian meadow and meadow edge songbird species' use of available habitat. The songbird species most likely to experience localized direct effects are primarily ground and low shrub nesters that utilize the ungrazed cover to place their nests. Direct effects of grazing on habitat structural characteristics include a reduction in nesting cover, and a reduction in available food sources (such as seeds and possibly some species of insects living in ungrazed vegetation).

Skovlin (1984) stated that grazing could result in trampling of bird nests, reduced cover, and removal of bird food: such as insects, seeds, or fruits. The reduced cover volume increases the potential for exposure of nests to weather and predation events, increasing the potential for egg and nestling mortality. In addition, adult parent birds may be flushed from the nest as stock move into the meadow and graze near a nest. This could result in temporary displacement of the adults from the nest that could increase the probability of predation, nest parasitism by brown-headed cowbirds, or exposure to weather and temperature impacts to the eggs and young. Ground

nesting birds such as the dark-eyed junco and white-crowned sparrow may likely be the most affected since they place their nests in grass clumps and low shrub cover, such as low willow clumps.

Kaufmann and Kreuger (1984) noted that grazing effects on songbird species are neither uniform or easily defined, principally because grazing varies so much in its local intensity and because of the general difficulties in unraveling cause-effect relationships. They cited a study by Mosconi and Hutto (1982) that found no significant difference in total breeding bird densities between heavily grazed and lightly grazed riparian communities. There were, however, significant differences in bird species composition and foraging guilds. They noted the majority of the bird species significantly affected included flycatcher, ground-foraging, or foliage gleaning insectivore guilds. Grazed riparian communities were preferred by birds of insect foraging guilds, while ungrazed riparian habitats were preferred by birds of the herbivorous graminoid foraging guilds.

Dobkin et al. (1998) found that avian species richness and relative abundances were greater on ungrazed exclosure plots inside a grazed meadow complex. The ungrazed exclosure plots were dominated by wetland and riparian bird species; whereas the open grazed riparian meadow areas were dominated by upland (non-riparian) bird species. Their interpretation of the results was that the ungrazed areas provided improved hydrologic conditions that favored wetland and riparian bird species. DeSante (1995) stated that apparently, the major deleterious effects of grazing on montane meadows are the decreased amount of herbaceous vegetation in the meadow. His opinion was that many of the land bird species that utilize the meadows feed on insects that are either located directly on the herbaceous growth, or that depend on the vegetative production for food. The implication was that cropping and trampling of the herbaceous layer by pack stock grazing resulted in lowered insect production and availability for songbird food. His status report of Sierra Nevada birds noted that montane meadows might be the single most critical habitat in mid-summer for many species, such as the Nashville and orange-crowned warblers and many forest nesting birds, which come to the meadow to feed after breeding and fledging of young. The meadows serve as critical molting and pre-migratory staging areas for the young birds, and adults to a lesser extent.

The yellow warbler and its habitat may experience a low level of disturbance from pack stock grazing in a subset of meadows with tall willow stands occurring mostly below 9,500 feet. The meadows listed in the willow flycatcher analysis section would be highly suitable examples of yellow warbler habitats. The species has been observed to nest as high as 9,937 feet in elevation on the east side of the Sierra Nevada at North Lake in the North Fork of Bishop Creek outside the wilderness boundary (Sacha Heath personal communication, Point Reyes Bird Observatory 2005). Pack stock grazing that occurs in wet meadows with as little as a half an acre of dense tall willow patches can overlap with this species' use of meadows for nesting. There is a chance pack stock could bump a nest in the outer branches of a willow shrub as stock move through willow clump areas of a meadow in search of forage and as a result knock eggs, young, or the nest out of the shrub. Yellow warblers usually place their nest in shrubs from 3 to 8 feet above the ground (USDI Fish and Wildlife Service 1982). This type of impact may likely be a very rare incidence if current light forage utilization levels continue in most meadows where grazing is likely to occur. The probability would increase the closer forage utilization levels approach the maximum allowable use levels since stock would be more likely to graze herbaceous vegetation around the edges and inside willow clumps.

The impacts described above may affect riparian meadow and meadow edge species population numbers at some unknown level but it is unlikely the impacts are substantive enough to adversely affect the viability of these MIS bird species. Meadow habitats are widespread throughout the AA/JM Wildernesses where grazing impacts are light to non-existent, as evidenced by the fact that only 131 meadows out of 1503 have experienced commercial pack stock grazing. The subset of meadows in more heavily used wilderness Recreation Category 3, and to a lesser extent Recreation Category 2, areas are where these impacts are most likely to occur. Under the highly unlikely scenario of full implementation of Alternative 1's maximum allowable forage utilization and ground disturbance standards, there would likely be an increase in the level of these habitat impacts, as well as human and livestock disturbance impacts on meadow and meadow edge MIS bird species.

Implementation of range readiness dates from mid-July through mid-August (depending on elevation) may help to slightly mitigate these impacts in grazed meadows since some birds species may complete nesting by the time grazing begins. However, the above effects are more likely to occur if grazing begins earlier with more overlap with the nesting season because of annual modifications in the range readiness dates that allow for an earlier turn-on date.

There may be some level of brown-headed cowbird parasitism of meadow songbird nesting species in lower elevation wilderness meadows that are within approximately 6 miles of pack stations, livestock allotments, and pack stock pastures (Verner and Rothstein 1986). These effects are most likely to occur in wilderness west side meadows such as Hellhole, Poison, Double, Jackass, Blayney Meadows, and on the eastside at Parker Lake, Lower McGee Canyon, and the middle fork of San Joaquin River lower elevation meadows. It is unlikely such parasitism would have significant effects on any songbird species population in the Ansel Adams and John Muir Wildernesses. Verner and Rothstein (1986) stated that nest parasitism would probably not threaten the total population of any host species in the Sierra Nevada, with the possible exception of the willow flycatcher. However, it has already been noted that this species is an unlikely resident nester in the AA/JM Wildernesses.

Mule deer home ranges may increase in areas where pack stock graze a meadow, particularly in areas where pack stock are found more frequently throughout the summer. The effects are likely more pronounced in late July and August at the height of the packing season and in Recreation Category 3 wilderness recreation zones where commercial pack stock operators traditionally set up overnight camps and grazing is likely to be at heavier forage use levels. These areas are a small subset of the 131 meadows where grazing has been reported and they comprise a relatively low number of meadows in the AA/JM Wildernesses.

Mule deer does with fawns in particular would likely avoid some meadows and move to areas where there is lower human and stock disturbance. The effects described above are inferred from a study by Loft et al. (1993) in the Sierra Nevada that found that meadow habitat comprised a greater proportion of a deer home range in the absence of cattle grazing. Deer home ranges increased in size as cattle grazing levels increased. In another study, Loft et al. (1993) noted that deer spent more time feeding and less time resting with increased cattle stocking rates, particularly in late summer, but deer did not display this behavior in ungrazed meadows. The working hypothesis was that cattle competed with deer for herbaceous forage. It is logical to extrapolate these study results to commercial pack stock grazing where similar levels of forage utilization occur, since both cattle and pack stock graze similar herbaceous vegetative components of a meadow.

Cole et al. (2004) studied pack stock grazing effects to vegetation in Yosemite National Park and determined that repeated pack stock grazing over five years increased bare soil, and led to decreased vegetative vigor and productivity that occurred at utilization levels between 15 and 69 percent. The study predicted between 20 and 25 percent productivity declines in moist Brewer's reedgrass and tufted hairgrass meadows at 45 percent forage utilization rates. These meadow types are common types within wilderness meadows. Forty-five percent utilization is close to the 30 to 40 percent use that is allowed under the 2001 Wilderness Plan direction for maximum utilization rates for pack stock grazing. It is unknown how vegetative productivity and species composition changes would affect food availability for deer and MIS riparian and meadow edge birds.

The most obvious observed effects to wildlife habitat structure from pack stock grazing in wetlands, wet and moist meadows, and springs and seeps that are likely to continue under Alternative 1 would be direct removal of vegetation cover from grazing, and mechanical cover and forage losses from vegetation trampling and sod chiseling effects that reduce the productivity and density of this vegetation. This results in variable levels of cover and forage reduction for the MIS species above.

The mechanical effects can be particularly evident in areas of higher forage utilization zones in a meadow, especially in portions of the meadow that are not range ready for all or some part of the grazing season and are usually interspersed with the areas considered to be range ready. Most high country meadows have a highly variable matrix of range ready and non-range ready components. Effects in the non-range ready areas are particularly pronounced where the naturally continuously vegetated and relatively smooth gradient sod is broken up into mud or water pool punches and chisels interspersed with flat or raised areas of remaining vegetated sod (hummocks). The mud holes and chisels that are created appear to remain for years in some areas that are repeatedly grazed on a yearly basis, and appear to recover and re-vegetate at varying rates. They may re-vegetate sparsely over time to lower seral meadow species such as alpine aster or remain un-vegetated as hummocks develop from repeated pack stock use on a yearly basis. These habitat effects are typically seen in meadows that are grazed regularly from year to year at higher stock night numbers that approach moderate forage utilization levels. Headcuts in spring channels and springheads are often observed as well from repeated chiseling of the bank sod (Inyo National Forest wilderness meadow survey records).

These impacts modify MIS wildlife habitat in ways that remain largely un-researched with unknown effects on these wildlife populations. They can directly affect habitat quality and quantity for these riparian dependent and associated wildlife species that utilize the meadows for breeding and nesting, hiding and escape cover, young rearing, and foraging. In the heavier grazed meadows, the effects can be inconsistent with the Sierra Nevada Forest Plan Amendment Aquatic Management Strategy goals and desired conditions, especially RCO #4 direction to ensure management activities enhance or maintain the physical and biological characteristics associated with aquatic and riparian dependent species, and RCO #5 direction to preserve, restore, or enhance special aquatic features such as meadows, lakes, ponds, bogs, fens, and wetlands. Mechanical effects usually occur regardless of proper forage grazing utilization standards since they largely occur in non-range ready areas. The functional at-risk meadows and unsuitable meadow columns for Alternative 1 in Table 4.89 would most likely indicate meadows where RCO inconsistency would be at issue with approved grazing use.

Commercial Pack Stock Destination, Camp and Trail Use Effects

Commercial pack stock use of all trails, including access trails to camps, has been observed to directly impact stream bank, spring and seep habitats, particularly at trail crossings or where stock are led to watering areas. The impacts observed include undercut bank loss and widened shallow stream channel areas, conversion of portions of the moss-sedge-rush spring and seeps areas to mud, riparian sod loss and fragmentation, and a reduced density and vigor of late seral wet and moist meadow vegetation. Lower seral stage vegetation may occupy the areas adjacent to these disturbed areas as a result of trampling and water table disruption. This loss directly effects habitat quality and quantity for MIS species that utilize the meadows for breeding and nesting, hiding and escape cover, young rearing, and foraging. These effects can also occur with backpacker and hiker use of the same trails in meadows and can be substantial where use levels are high, such as in Category 3 use areas.

There is also a direct disturbance to riparian MIS wildlife from use of trails, camps, and destinations by commercial pack stock. Disturbance events where wildlife are displaced or avoid habitats can result in adverse physiological effects associated with fight or flight reactions. These species are also more vulnerable to predation events because they are moving more often, which increases their visibility to predators in the area. The fitness of these species can decrease as a result of displacement events away from key habitats, or where their daily activities are disrupted such as breeding, egg laying, young rearing, feeding or resting and concealment. These events can range from temporary or permanent displacement of the wildlife species away from a key habitat riparian area such as where a doe and her fawn are forced to flee the area temporarily, to a more dramatic effect of animals failing to nest successfully in the immediate trail or camp area.

Miller et al. (1998) found that the composition and abundance of birds were negatively altered adjacent to trails in both grassland and forest ecosystems. Some habitat specialist bird species were found to be absent, or in lower densities than compared to areas where no trails were located, and common habitat generalists (such as robins) were more abundant along trail corridors. Grassland birds were significantly less likely to nest along trails. This relationship is likely to hold true for open meadows that are structurally similar to grasslands. Both forest and grassland birds were more likely to experience nest predation events near trails.

They found this zone of effect to be as much as 75 meters (246 feet) around the trail corridor. The results are an extreme case of disturbance since the study was located on a very heavy use trail within an urban county environment in Colorado. Such effects in wilderness are likely to be substantially reduced, according to the authors, but do serve to demonstrate the influence a heavy use trail such as a main system trail can have on nesting songbirds.

The direct effects of commercial pack stock trail and camp use on wildlife habitat can be inferred from the following studies and reviews. Cole (1989) summarized the effects of pack stock use on trails. He cited a study by Weaver and Dale (1978) that concluded trails produced by 1000 horse passes were 2 to 3 times as wide and 1.5 to 7 times as deep as trails produced by 1000 hiker passes. One-half the vegetative cover was lost after 1000 hiker passes and 600 hiker passes in grassland and after 300 hiker passes and only 50 horse passes in a forest. Another study Cole summarized conducted by Whitaker (1978) found that horse use loosens soil, making it more prone to erosion. Pack stock camps were found to be 6 times as large as backpacker sites, with more than 4 times the unvegetated area, with 11 times as many damaged trees and 25 times as many exposed roots in the study area in the Bob Marshall Wilderness in Montana.

Under Alternative 1, commercial pack stock trail use on system and user trails that course directly through or on the margin of riparian wetlands, riparian willow corridors, and wet and moist meadows may continue to have varying degrees of impacts to riparian MIS mule deer, yellow warbler, and riparian meadow and meadow edge bird species. Alternative 1 could potentially reduce effects along 7 miles of NSCS system trails and 102 miles of prohibited use trail habitat corridors where they course through or immediately adjacent to riparian meadow habitats. This analysis should be considered an index of potential habitat and human disturbance impact reduction, and therefore MIS habitat improvement. The actual improvement could be highly variable in both extent and time, based on the existing condition of the riparian habitat where the trail courses through or adjacent to the meadow, the level of existing commercial pack stock use, the use of the trail by other user groups, and the degree to which the habitat is used by the MIS species. It can range from little change to some higher level of impact reduction and habitat improvement.

Effects that would continue with implementation of the trail transportation system and use trails approved for use would be some level of localized reduction in riparian habitat within the trail-tread and corridor. Parallel rutting can spread the effect out in a wider swath across the meadow.

The effect on adjacent habitat vegetative structure would depend on whether the trail is adversely affecting the immediate area water table. These effects are more pronounced on trails that are in disrepair and ones that are less likely to receive periodic maintenance.

Trail use by all user groups would allow for human disturbance of MIS species along the trail corridor.

Table 4.90: Not suitable for commercial stock and prohibited pack stock use trails, as well as designated approved camps in the Ansel Adams and John Muir Wildernesses by alternative

	System Trail Miles Not Suitable for Commercial Stock Use	Number of User Trails/Miles Prohibited from Commercial Stock Use
Alternative 1	7	94/102
Alternative 2 - Mod	90	86/81
Alternative 2	73	82/80
Alternative 3	63	87/87
Alternative 4	173	153/165

The implementation of the approved Trail Plan and management levels, including approved use trails, would likely continue the commercial pack stock effects identified above over the broadest area of the AA/JM Wildernesses than other alternatives since it allows for use on the highest number of miles of system trails and approved use trails. In addition, the trailhead quota use regulating system allows for the broadest area of use destinations and campsites by commercial pack stock and so the largest area of potential human disturbance effects and habitat modification. There is likely to be the highest number of social and access trails and as a result increased impacts spread out across these destination use areas associated with the highest number of campsites.

Trail Transportation System Designation

The approval of the trail transportation system management levels (except for the commercial pack stock NSCS designations and use trail authorization/prohibitions that are discussed above) would continue to perpetuate the direct habitat effects in riparian and meadow edge habitats, as well as in forested zones. These effects are primarily the loss of habitat from the trail corridor, and the fragmentation of habitats. It is estimated that a trail tread that varies from two to as much as ten feet wide could result in between six tenths and 1.2 acres of habitat lost per mile. This number is minor in comparison to the total acres of available habitat in the wilderness, and it probably does not constitute a substantive loss of habitat.

The loss and impact is potentially greater per unit area in the limited riparian habitats, especially when trails have multiple ruts, and associated adjacent effects on the surrounding habitats such as the diversion of water away from wet meadows, stream or spring channels, or where there are off-trail erosion and sedimentation effects. This is particularly true where trail induced headcuts are resulting in the loss of a portion of a meadow, or the sedimentation of key habitat areas. The current trail inventory is insufficient at a quantitative or qualitative basis to identify the wilderness-wide magnitude and extent of these effects in riparian MIS habitats.

The approval of Alternative 1 transportation system, as well as the other transportation system alternatives, is not likely to change these impacts substantively over the short, or mid term period. The assumptions stated for the alternatives state that primary trails would likely receive basic maintenance on a regular, but limited, basis with heavy maintenance and/or reconstruction on a 20 to 30 year interval. In addition, levels of use by all user groups would not change substantially, except for commercial pack stock NSCS and use trail prohibitions. This assumption infers that the associated human disturbance effects of use of the transportation system on MIS wildlife species would not substantively change from the current situation, or by alternative, except for the NSCS suitability determinations, and commercial pack stock use trail authorizations/prohibitions. The trails analysis section predicts over the next 20 years that there would be a slight upward trend in trail condition, except where there are extremely high risk factors that would drive more immediate efforts to halt the resource impacts. Under any alternative, it is unknown how this urgency would translate into resolving the more serious observed riparian habitat degradation areas that currently exist in the AA/JM Wildernesses that are affecting MIS species habitats.

Therefore, it is probably safe to say there would continue to be some habitat loss effects associated with any of the trail management class transportation proposals. Trail improvement projects and annual maintenance work would mitigate some unknown level of these effects, predominantly on the more regularly used routes. These trail system proposals and their influence on wildlife habitat availability and condition that affect such species as mule deer, yellow warbler, and riparian meadow and meadow edge species would continue to have some adverse effects on these MIS species and their habitats, but are not likely have adverse effects to these species viability over the planning/analysis area.

The effects associated with the trail transportation system management class alternatives are more likely some level of MIS population reduction and fitness. These effects are the result of wildlife avoidance and displacement impacts and associated adverse physiological effects, as well as increased potential for predations events in trail corridors, and the overall lower habitat

availability and suitability level. The correlation of these effects with wildlife population numbers, demographics, and viability is poorly understood.

None of the proposals closes or relocates trails, two considerations that could substantially change the effects between alternatives. Closing and relocating trails, and rehabilitating closed trails in key habitats, especially where those trails are causing resource damage could improve wildlife habitats for MIS species. Such projects are outside the scope of this analysis and would be identified, analyzed, and potentially implemented as funds and Forest priorities dictate.

Cumulative Impacts

Historical effects to MIS wildlife habitats in the AA/JM Wildernesses and adjacent landscapes have been discussed in detail in regional publications such as the Sierra Nevada Forest Plan Amendment EIS and FSEIS (USDA Forest Service 2001 and 2004), past wilderness planning documents, and site specific analyses such as range management environmental assessments, and the Status of the Sierra Nevada Final Report to Congress.

The majority of the discussions are anecdotal and speculative in nature as far as the link between causal factors and changes in wildlife populations. The predominant factors that have affected MIS species and their habitats include reductions in habitat from historical overgrazing practices by all classes of livestock, changes in (or loss of) riparian habitats from mining activities, dams and water diversions, market hunting effects on mule deer, and all types of human disturbance effects from commercial and recreational use activities.

Commercial pack stock grazing, camping, and destination use would likely be light at any one time in wilderness under Alternative 1 in terms of overall numbers of riparian MIS habitats meadows being affected simultaneously so the wilderness scale effects are likely minimal when only this user group is considered. The effect is amplified and compounded when other user groups, such as hikers, backpackers and recreational stock user groups, are considered that are simultaneously using the wilderness riparian meadow landscapes. All user groups contribute to cumulative disturbance events that result in mule deer and MIS bird species displacement and avoidance events in meadow and meadow edge areas. The adverse physiological effects to these species from fight or flight reactions, and associated increased vulnerability to stress induced disease or predation events, is a cumulative effect that will remain unknown in terms of how these effects change the fitness of a species population across a wilderness landscape. The cumulative effects of all these user groups could be a substantial impact especially in category 3 wilderness zones. As an example, mule deer (especially does with fawns) and MIS bird species are likely encountering numerous daytime disturbance events in these heavier use zones in meadows and adjacent forests that are close to trails and popular destinations. Deer are likely to avoid these areas during the day and shift use to more undisturbed riparian habitat areas. MIS bird species may be subject to numerous displacement and avoidance events.

MIS Mule Deer, Yellow Warbler, and Riparian Meadow, and Meadow Edge Bird Species – Alternative 2, 2 – Modified, and 3

Analysis

The implementation of Alternatives 2, 2 – Modified, and 3 would likely have some favorable effects on these MIS species and their habitats across the AA/JM Wildernesses.

The implementation of unsuitable and rest grazing designations at 108 meadows in Table 4.89 under Alternative 2, and 110 under Alternative 2 – Modified and 3 would allow for structural habitat improvements over time for these MIS species and reduce disturbance associated with stock presence in the meadows. In addition, the implementation of stock night guidelines in suitable meadows and the 5 percent critical area maximum allowable disturbance standard would likely maintain or improve wet meadow habitat areas and areas such as springs and ephemeral pool habitats. Implementation of Alternative 2 would still allow grazing at 6 functional at risk meadows with a downward trend, while Alternative 2 – Modified, and 3 would prohibit grazing in all 17 functional at-risk meadows with downward trends.

The designation of over night stock holding camps would likely contain the spread of effects to meadow edge area habitats where pack stock camps are traditionally found. This would amount to a decrease in the number of campsites. This would also likely reduce the amount of access and social trails associated with these camps and therefore provide some habitat improvement, especially where trail crossings are reduced across stream and spring habitats. There may also be a corresponding decrease in the total area of human disturbance around meadows and meadow edges that would provide more favorable habitat conditions and a reduction in avoidance and flight reactions that mule deer and MIS birds, such as the yellow warbler, would exhibit.

Implementation of the trail plan not suitable for commercial stock designations on system trails and use trail prohibitions may have some level of localized habitat improvement associated with a reduction in trail width and narrower stream and spring crossings. This is most likely along use trails predominantly used by commercial pack stock on a regular basis to access destination camps. In addition, there would be some level of reduction of human disturbance events associated with reduced use along these trail corridors.

Alternative 2 would close 73 additional miles of system trail to commercial stock and disapprove 82 use trails for use; while Alternative 2 – Modified and 3 would close 163 additional miles of system trails and disapprove 87 user trails wilderness wide. The exact areas of overlap with meadows have not been calculated for system or user trails to describe the likely effects changes in more detail.

Alternatives 2, 2 – Modified, and 3 would also likely result in less habitat disturbance since overnight stock holding camps would be designated, and subsequently reduced in number, over the AA/JM Wilderness landscape. This could decrease the area of habitat impacts and human disturbance events in and around meadows and meadow edges for MIS species since numbers of camps would decrease as well as social and access trails associated with those trails. As a result, there could be higher levels of impact, however, at designated sites since these sites would likely be used more often.

Cumulative Impacts

There would likely be a positive contribution to the lessening of cumulative effects to MIS mule deer, yellow warbler, and meadow and meadow edge species with implementation of either alternative, with Alternative 3 having a slightly higher reduction from the prohibition of grazing in all functional at risk meadows downward trend. The system trails not suitable for commercial stock additions, use trail disapprovals, and the designation of overnight stock camps would decrease the impacts to MIS habitats in the traditional use areas where these management changes would take effect. These changes would likely produce localized habitat improvements

and a reduction in the potential for human disturbance to MIS species. There would also likely be some level of MIS habitat improvement and a reduction in human disturbance events to these MIS species in meadows determined to be unsuitable for grazing by commercial stock.

MIS Mule Deer, Yellow Warbler, and Riparian Meadow, and Meadow Edge Bird Species – Alternative 4

Analysis

The 138 meadows determined to be unsuitable for grazing in Alternative 4 (shown in Table 4.89) would likely maintain or improve habitat conditions for the MIS species over Alternatives 1 through 3. In addition, all seventeen functioning at risk meadows with a downward trend would be ungrazed, as in Alternative 3. The alternative provides for the highest level of MIS wildlife habitat maintenance and restoration over Alternatives 1 through 3. The additional closures also further reduce the potential for avoidance and disturbance interactions between humans, pack stock, and MIS wildlife species.

Alternative 4 designates 173 miles of system trail as not suitable for commercial stock, and prohibits commercial stock on 153 use trails. This would amount to roughly over twice as many miles of system trail, and numbers of use trails closed over Alternatives 2 and 3 where similar localized habitat improvement effects and decreased human disturbance effects would occur as described under Alternatives 2 and 3. In addition, designated campsites would include designated drop-off sites for spot and dunnage trips. This would include substantive reductions in habitat disturbance areas including associated social and access trail impacts. These habitat impact reductions would be most obvious in the Recreation Category 1 and 2 areas of the AA/JM Wildernesses.

Cumulative Impacts

There would likely be a positive contribution to the lessening of cumulative effects to MIS mule deer, yellow warbler, and meadow and meadow edge species with implementation of this alternative since there would likely be a substantial reduction in human disturbance events to these species.

MIS Mule Deer, Yellow Warbler, and Riparian Meadow, and Meadow Edge Bird Species – Alternative 5

Analysis

Meadow wildlife habitats where commercial pack stock grazing will cease under implementation of this alternative will have variable improvement responses in MIS wildlife habitat conditions. This would depend on the existing condition and hydraulic function of the meadow. Some historically degraded meadows would be less likely to show a marked improvement where wet meadow or wetland habitats may have been lost from former stream incisement events and loss of the meadow hydrologic functioning. Moist meadow, wet meadow, and wetland wildlife habitat recovery will be dependent on the degree of water table integrity of stream and spring channels, and the degree to which active headcuts below the rooting depth are present. It is likely many meadows would experience some level of localized improvement in small areas of meadows such as around springs, stream banks, and wet meadows that may have experienced

trampling and chiseling impacts from commercial pack stock grazing or trailing uses. Such localized improvements are likely to be increases in vegetative productivity, cover, and density all of which would translate to improved nesting, fawning, young rearing and foraging habitats for the MIS species.

Nine of eighteen meadows where hydrologic functioning has been severely degraded will likely rehabilitate over many decades since the individual meadow will have to re-cut a floodplain to develop any substantial areas of floodplain wet meadow and wetland wildlife habitat conditions that were lost or degraded from historical and/or existing land uses. There will be minor improvements of new incised floodplain wet meadow and wetland habitats, and overall improvement of vegetative structural habitat conditions in remnant wet meadow and wetland habitats, and moist and dry meadow habitats.

The most substantive habitat suitability improvement would likely occur in a subset of meadows where the hydrological functioning is largely intact and where localized impacts are present, such as small shallow headcuts, trampled and chiseled springs, seeps, ephemeral pools, wet and moist meadow areas, degraded stream and spring channels where loss of vegetated and undercut bank, and widened channels from bank chiseling and collapse have been recorded. There should be substantial localized improvement over the next 20 years in areas that have had recent annual moderate numbers of stock nights recorded, since the maintained water table will promote rapid rebuilding of bank and vegetative cover as sediment is trapped, and headcuts within the rooting depth of vegetation become stabilized.

Hiding and escape cover, and foraging habitats for MIS wildlife species including deer, riparian meadow and meadow edge songbirds that nest in ground vegetation and low shrubs would improve rapidly in this subset as vegetative species vigor, composition, and density recover toward good ecological condition and potential natural vegetation, or late seral meadow status. This alternative would be most consistent with wilderness wildlife management goals of allowing natural forces to determine wildlife populations across the landscape; however, it is the least consistent with providing recreational opportunities for wilderness users.

Therefore, the elimination of grazing will translate into improved cover and foraging habitat for wildlife species that favor ungrazed habitat conditions.

Skovlin (1984), in his discussion of grazing effects to wildlife, noted that alteration of wildlife habitats would be beneficial to certain species and detrimental to others. Habitat suitability will improve for species such as meadow voles, and ground and low shrub nesting birds, neotropical migratory birds that use meadows for summer foraging areas prior to migration, waterfowl, and amphibians. Mule deer fawn cover is likely to improve since tall forb, sedge, and grass cover would also be maintained in an undisturbed state. Mule deer use of meadows will not be interrupted by commercial pack stock presence in meadows. Degraded spring and seep habitats, including spring channels and ephemeral wetland pools, will re-vegetate and result in improved habitat suitability for amphibians such as mountain yellow-legged frog and Yosemite toad that rely on ungrazed, untrampled herbaceous vegetation for escape and hiding cover, and a foraging substrate for invertebrate food sources.

Elimination of destination camps and associated access and social trails as well as all use of the trail systems would likely result in improved MIS wildlife habitat conditions. Trails would likely decrease in width over the long-term, especially at stream and spring crossings. Destination camps would likely be reduced in size since other user groups would likely continue to use many

of these campsites. Implementation of the trail plan would be similar to Alternative 1 in that trails would still be present, except that one less user group would be using them.

Cumulative Impacts

There would be an overall positive contribution to decreasing the cumulative effects on MIS species in the AA/JM Wilderness with removal of all commercial pack stock operations. There would be less direct habitat impacts and less human disturbance throughout the areas traditionally frequented by these operations.

Some level of light recreational stock use would likely continue in wilderness including trail use, destinations, and grazing of meadows. Private recreational stock impacts would likely continue to cause localized impacts at stream and spring trail crossings, and would likely produce limited, localized effects from grazing, such as heavily trampled vegetation and the creation of erosion nick points along stream and spring channels. In addition, there would be continued use of destinations, trails, and meadows by day hikers and backpackers with some level of human disturbance presence and associated habitat impacts such as stream and trail widening and vegetation trampling. Human disturbance effects to MIS wildlife species would continue along system trail corridors, popular use trails, destinations, and camps.

Summary of Alternatives 1-5 Impacts

Wildlife Biological Evaluation/Assessment determinations common to all alternatives

Threatened and Endangered Species: Implementation of any alternatives would not affect the bald eagle and Paiute cutthroat trout or their habitat found within the analysis area.

Implementation of Alternatives 1 through 4 may affect but would not adversely affect the Sierra Nevada bighorn sheep. Alternative 5 would not affect the Sierra Nevada bighorn sheep or its habitat.

Forest Service Region 5 Sensitive Species: Implementation of Alternatives 1 through 4 may affect individuals of the following species but would not contribute to a trend toward federal listing of any of these species, or lead to a loss of their viability in the planning (analysis) area: Yosemite toad, mountain yellow-legged frog, willow flycatcher, great gray owl, American marten, Pacific fisher, California wolverine, Sierra Nevada red fox, California spotted owl, Townsends big-eared bat, and the pallid bat. Implementation of Alternative 5 would not affect any of these species.

Management Indicator Species or Species Group: Implementation of any alternative would not result in the loss of viability of any other MIS (i.e., species not on the federal threatened, endangered, or proposed species list or Forest Service Region 5 sensitive species list) found within the planning (analysis) area.

No other federally listed threatened, endangered, proposed, or Forest Service Region 5 sensitive species or their habitat would be affected by implementation of any of the alternatives.

Effects Summary by Alternative

Wildlife – Alternative 1

The majority of 267 Yosemite toad occupied breeding meadows within the AA/JM Wildernesses would likely be unaffected by commercial pack stock use if grazing patterns continue as reported and observed from 2001 through 2004. Eighty-seven of the 267 occupied breeding meadows would more likely have commercial pack stock grazing overlap where impacts to Yosemite toad breeding habitats may occur.

Actual grazing use overlap and subsequent impacts would be highly variable based on past use with many meadows likely to receive very light to no use, and therefore a high probability of non-substantive impacts to toad breeding habitat. A small percentage of the 87 occupied breeding meadows (likely < 10 percent) would likely have substantive trampling and chiseling impacts from commercial pack stock grazing in Yosemite toad breeding sites. The 20 percent ground disturbance standard would be implemented to limit the amount of disturbance in critical breeding areas, such as stream banks, lakes and ponds, where toads may be found. Impacts in Yosemite toad breeding sites could substantively increase if meadows are grazed at maximum forage utilization levels allowed in the Ansel Adams, John Muir, and Dinkey Lakes Wilderness Plan.

Gradual implementation of range unsuitable meadow determinations as a reasonably foreseeable action per 2001 Wilderness Plan direction may reduce the total number of Yosemite toad occupied breeding meadows where grazing impacts would likely occur.

Thirteen meadows identified as suitable unoccupied willow flycatcher habitat would be approved for grazing. Habitat structural characteristics could be affected if meadows are grazed to maximum allowable forage utilization levels.

The alternative allows for the highest level of potential dispersed impacts to MIS mule deer, yellow warbler, and meadow and meadow edge bird species and their habitats since it has the least restrictive management control over campsite use, destination impacts such as access and social trails, grazing impacts, and approved system and use trails. All meadows are open to commercial pack stock grazing. Two hundred forty six meadows analyzed are likely to have some level of commercial pack stock grazing use where MIS habitat impacts are most likely to occur. Four meadows would be closed to grazing. Sixty-one meadows with hydrologic functioning problems that are affecting MIS wildlife habitat conditions would continue to be open for grazing where grazing has the potential to exacerbate the problems or to slow restoration rates. Habitat structural characteristics could be affected if meadows are grazed to maximum allowable forage utilization levels.

Mountain yellow-legged frog stream habitat could be potentially affected at two meadows approved for commercial pack stock grazing.

Potentially, a reduced level of human disturbance to MIS wildlife species and habitats would occur on approximately 7 miles of system trail closed to commercial stock as a result of resource concerns, and 102 miles on 94 use trails where commercial pack stock would be prohibited. There may be some localized minor level of riparian habitat improvement on these trails, if sections with resource impacts begin to re-vegetate and narrow in width, such as where trails course through meadow, and at stream and spring crossing areas.

Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of affected areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas.

Wildlife – Alternative 2 – Modified

Alternative 2 – Modified manages for an increased level of protection for Yosemite toad meadow breeding habitats since grazing would be managed to avoid Yosemite toad occupied breeding habitats. Fifty-two meadows approved for commercial packer stock grazing overlap with Yosemite toad breeding areas. Thirty-four meadows that are approved for grazing in Alternative 1 are either unsuitable (28) for grazing or rested from grazing (six) in this alternative and would have full protection for the breeding habitats. One hundred ninety seven occupied Yosemite toad breeding meadows outside of grazing zones would be fully protected since grazing would be prohibited. Suitable/unsuitable determinations would be implemented immediately.

The alternative allows for some level of control of potential dispersed impacts to MIS mule deer, yellow warbler, and meadow and meadow edge bird species and their habitats since it designates overnight stock holding camps, implements destination quotas that would limit destination impacts such as access and social trails, grazing impacts. All meadows outside of grazing zones are closed to commercial pack stock grazing. One hundred forty three meadows analyzed are likely to have some level of commercial pack stock grazing use where MIS habitat impacts are most likely to occur. A subset of 110 meadows would be closed to grazing as a result of unsuitable for grazing determinations. Thirty four meadows with hydrologic functioning problems that are impacting MIS wildlife habitat conditions would continue to be open for grazing where grazing has the potential to exacerbate the problems or slow restoration rates.

Thirteen meadows identified as suitable unoccupied willow flycatcher habitat would be approved for grazing. Habitat structural characteristics could be affected if meadows are grazed to maximum allowable use levels.

Mountain yellow-legged frog stream habitat could be potentially affected at one meadow approved for commercial pack stock grazing.

There would be some potential for a reduced level of human disturbance to MIS wildlife species and habitats on 73 miles of system trail not suitable for commercial stock, and 80 miles on 82 use trails where commercial pack stock would be prohibited. There may be some localized minor level of riparian habitat improvement on these trails if affected sections narrow in width, such as where trails course through meadows, and at stream and spring crossing areas.

Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of affected areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas.

Wildlife – Alternative 2

Alternative 2 manages for an increased level of protection for occupied Yosemite toad meadow breeding habitats. Fifty-six meadows approved for commercial packer stock grazing overlap with Yosemite toad breeding areas. Thirty meadows that are approved for grazing in Alternative 1 are unsuitable for grazing in this alternative and would have full protection for the breeding habitats. A five percent critical area maximum allowable disturbance standard would be implemented in

all other Yosemite toad breeding habitat areas where commercial pack stock grazing would be approved to minimize trampling and chiseling effects to the breeding habitats, and minimize the potential for stock trampling of metamorph toads. Suitable/unsuitable determinations would be implemented immediately.

The alternative allows for some level of control of potential dispersed impacts to MIS mule deer, yellow warbler, and meadow and meadow edge bird species and their habitats since it designates overnight stock holding camps, implements destination quotas that would limit destination impacts such as access and social trails, grazing impacts. All meadows outside of grazing zones are closed to commercial pack stock grazing. One hundred thirty nine meadows analyzed are likely to have some level of commercial pack stock grazing use where MIS habitat impacts are most likely to occur. A subset of 108 meadows would be closed to grazing as a result of unsuitable for grazing determinations. Forty one meadows with hydrologic functioning problems that are impacting MIS wildlife habitat conditions would continue to be open for grazing where grazing has the potential to exacerbate the problems, or slow restoration rates.

Thirteen meadows identified as suitable unoccupied willow flycatcher habitat would be approved for grazing. Habitat structural characteristics could be affected if meadows are grazed to maximum allowable use levels.

Mountain yellow-legged frog stream habitat could be potentially affected at one meadow approved for commercial pack stock grazing.

There would be some potential for a reduced level of human disturbance to MIS wildlife species and habitats on 73 miles of system trail not suitable for commercial stock, and 80 miles on 82 use trails where commercial pack stock would be prohibited. There may be some localized minor level of riparian habitat improvement on these trails, if affected sections narrow in width such as where trails course through meadows, and at stream and spring crossing areas.

Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of affected areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas.

Wildlife – Alternative 3

Alternative two manages for an increased level of protection for Yosemite toad meadow breeding habitats. Fifty-three meadows approved for commercial packer stock grazing overlap with Yosemite Toad breeding areas. Thirty-three meadows that are approved for grazing in Alternative 1 are either unsuitable (32) for grazing or rested from grazing (one) in this alternative and would have full protection for the breeding habitats. A five percent critical area maximum allowable disturbance standard would be implemented in all other Yosemite toad breeding habitat areas where commercial pack stock grazing would be approved to minimize trampling and chiseling effects to the breeding habitats, and minimize the potential for stock trampling of metamorph toads. Suitable/unsuitable determinations would be implemented immediately.

The alternative allows for some level of control of potential dispersed impacts to MIS mule deer, yellow warbler, and meadow and meadow edge bird species and their habitats since it designates overnight stock holding camps, implements destination quotas that would limit destination impacts such as access and social trails, grazing impacts. All meadows outside of grazing zones are closed to commercial pack stock grazing. One hundred forty three meadows analyzed are likely to have some level of commercial pack stock grazing use where MIS habitat impacts are

most likely to occur. A subset of 110 meadows would be closed to grazing as a result of unsuitable for grazing determinations. Thirty four meadows with hydrologic functioning problems that are impacting MIS wildlife habitat conditions would continue to be open for grazing where grazing has the potential to exacerbate the problems, or slow restoration rates.

Thirteen meadows identified as suitable unoccupied willow flycatcher habitat would be approved for grazing. Habitat structural characteristics could be affected if meadows are grazed to maximum allowable use levels.

Mountain yellow-legged frog stream habitat could be potentially affected at one meadow approved for commercial pack stock grazing.

There would be some potential for a reduced level of human disturbance to MIS wildlife species and habitats on 63 miles of system trail not suitable for commercial stock, and 87 miles on 87 use trails where commercial pack stock would be prohibited. There may be some localized minor level of riparian habitat improvement on these trails, if affected sections narrow in width such as where trails course through meadows, and at stream and spring crossing areas.

Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of affected areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas.

Wildlife – Alternative 4

Alternative two manages for an increased level of protection for Yosemite toad meadow breeding habitats. Fifty-six meadows approved for commercial packer stock grazing overlap with Yosemite Toad breeding areas. Thirty meadows that are approved for grazing in Alternative 1 are unsuitable for grazing in this alternative and would have full protection for the breeding habitats. A five percent critical area maximum allowable disturbance standard would be implemented in all other Yosemite toad breeding habitat areas where commercial pack stock grazing would be approved to minimize trampling and chiseling effects to the breeding habitats, and minimize the potential for stock trampling of metamorph toads. Suitable/unsuitable determinations would be implemented immediately.

The alternative allows for some level of control of potential dispersed impacts to MIS mule deer, yellow warbler, and meadow and meadow edge bird species and their habitats since it designates overnight stock holding camps, implements destination quotas that would limit destination impacts such as access and social trails, grazing impacts. All meadows outside of grazing zones are closed to commercial pack stock grazing. One hundred twenty meadows analyzed are likely to have some level of commercial pack stock grazing use where MIS habitat impacts are most likely to occur. A subset of 138 meadows would be closed to grazing at an unknown future date as a result of unsuitable for grazing determinations. Twenty seven meadows with hydrologic functioning problems that are impacting MIS wildlife habitat conditions would continue to be open for grazing where grazing has the potential to exacerbate the problems, or slow restoration rates.

Thirteen meadows identified as suitable unoccupied willow flycatcher habitat would be approved for grazing. Habitat structural characteristics could be affected if meadows are grazed to maximum allowable use levels.

Mountain yellow-legged frog stream habitat would not be affected since all three meadows would be closed to grazing.

There would be some potential for a reduced level of human disturbance to MIS wildlife species and habitats on 173 miles of system trail not suitable for commercial stock, and 165 miles on 153 use trails where commercial pack stock would be prohibited. There may be some localized minor level of riparian habitat improvement on these trails, if affected sections narrow in width, such as where trails course through meadows and at stream and spring crossing areas.

Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of affected areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas.

Wildlife – Alternative 5

There would be no commercial pack stock grazing that would overlap with Yosemite toad occupied breeding habitats, or willow Flycatcher and great gray owl meadow suitable unoccupied habitats. Elimination of human and pack stock disturbance on trails, camps, and grazing areas associated with commercial pack stock operations would improve MIS mule deer, yellow warbler, meadow and meadow edge bird guild species habitats, as well as use of these habitats by these species.

Other user groups would likely continue to use campsites, trails, and destinations and possibly hinder rehabilitation of affected areas of habitat, as well as maintain some level of human disturbance impacts to wildlife species in these areas.

Geographic Scale

Ansel Adams East – Alternative 1

Yosemite Toad and Mountain Yellow-legged Frog

Analysis

The Algers/Rush and Thousand Island Analysis Units would likely continue to have the highest number of meadows and level of grazing use overlap with Yosemite toad breeding habitats in the AA/JM Wildernesses. Fifty percent of the breeding sites in these analysis units would likely continue to have grazing overlap in them where trampling and chiseling effects could modify breeding site habitat characteristics, and pose some risk of metamorph trampling. These effects are discussed in detail at the wilderness scale. Crater Creek analysis unit has four meadows with observed grazing; however, grazing use levels and corresponding pack stock impacts to Yosemite toad breeding areas have been very light relative to the units identified above.

Light trampling and chiseling impacts at Yosemite toad breeding sites would likely continue at meadows listed in Table 4.86 that include Deer Creek Meadows (ccd15), Upper Deer Creek (ccd18a), West End of Thousand Island Lake Meadows (thi16), Davis Lake Meadow (uru1), Marie Meadow (uru6), Upper Alger Creek Meadow (rus15), and Lower Alger Creek Terrace Meadow (rus14). Rodgers Lake Meadow (uru5) may continue to have moderate grazing impact overlap with Yosemite toad breeding sites, and may exceed the 20 percent cumulative disturbance standard if it continues to be grazed on an annual basis. Table 4.90 shows the

distribution of commercial pack stock grazing that would likely continue to overlap with Yosemite toad breeding meadows by analysis unit.

Localized stream bank collapse and chiseling impacts to mountain yellow-legged frog stream habitats at the Upper Donahue Camp (uru8) and at the west end of Thousand Island Lake (thi16) are likely to continue under this alternative with current grazing and trailing use patterns. Rodgers Lake Meadow yellow-legged frog stream habitat may experience similar impacts. The localized impacts to the species stream habitat would likely continue a small area of loss of undercut stream bank cover habitat, but would not likely exceed allowable disturbance standards. Impacts could increase if grazing were to approach allowable forage utilization standard and stream bank disturbance standards.

Table 4.91. Distribution of Yosemite toad breeding meadows in the Ansel Adams East Geographic Unit by analysis unit and overlap with grazing areas

Geo Unit	Analysis Unit	Breeding Meadows with Observed or Reported Grazing	Other Breeding sites Requested for Grazing	Not Requested for Grazing Use	Total Breeding Meadows
AA East	Upper Rush (Uru)	4	0	3	7
	Rush (Rus)	2		4	6
	Thousand Island (Thi)	3	0	2	5
	Crater Creek (CCD)	4	2	5	11
	Bloody Canyon (BLC)			1	1
	Parker (Par)			1	1
	Glacier Canyon (Glc)			3	3
Total		13	2	19	34

Ansel Adams East – Alternative 2 – Modified

Yosemite Toad and Mountain Yellow-legged Frog

Analysis

Nine occupied Yosemite toad breeding habitat meadows designated as unsuitable or prohibited in Alternative 2 – Modified in Table 4.86 would be fully protected from any future potential grazing impacts. Light trampling and chiseling impacts would cease in four of these meadows and result in slightly improved vegetative cover, and allow for unmodified breeding site habitat structure in meadows at the west end of Thousand Island Lake (thi16), Upper Algers Creek Meadow (rus15), and Lower Alger Creek Terrace (rus14), Deer Creek Meadows (ccd15), and Upper Deer Creek Meadows (ccd18a). Mountain yellow-legged frog stream habitat would receive full protection at the west end of Thousand Island Lake.

Minor pack stock trampling and chiseling impacts in the breeding habitat areas would likely continue at Rodgers Lake Meadows (uru5), Davis Lake Meadows (uru1), Marie Meadow (uru6) and Middle Deer Creek Meadow (ccd17). The implementation of a three-year grazing rotation at Davis Lake and Rodgers Lake in Upper Rush area would help to minimize the already light to moderate impacts observed at these meadow Yosemite toad breeding sites. The Donahue camp crossing (uru8) mountain yellow-legged frog habitat would likely continue to experience moderate bank chiseling impacts at the crossing areas until the crossing is relocated.

The system trail prohibition to commercial pack stock from Garnet campsite to Emerald Lake would reduce any potential sediment runoff from the trail into the mountain yellow-legged frog pond habitat along the northern section of the trail since the trail tread would likely harden as pack stock use ceased.

Ansel Adams East –Alternative 3

Yosemite Toad and Mountain Yellow-legged Frog

Analysis

The effects of implementation of these two alternatives are essentially the same as Alternative 2 – Modified, with the exception that there would be a maximum five percent ground disturbance standard implemented in the critical Yosemite toad breeding areas. The meadows where the light impacts would occur would be the same as Alternative 2 – Modified.

Ansel Adams East –Alternative 4

Yosemite Toad and Mountain Yellow-legged Frog

Analysis

The effects of Alternative 4 would be similar to Alternatives 2 – Modified, 2 and 3 except that Rodgers Lake Meadow (Uru5) in Upper Rush Creek would be unsuitable for grazing. This would eliminate the moderate impacts observed at the Yosemite toad breeding sites as well as provide protection against any future impacts to mountain yellow-legged frog stream habitat in this meadow.

Ansel Adams East –Alternative 1

MIS Mule Deer, Yellow Warbler, and Riparian Meadow and Meadow Edge Species

Analysis

Alternative 1 continuation of grazing would likely continue to promote impacts to meadow ecological condition and wildlife habitat structural components such as springs, spring and stream channels, and riparian vegetative cover in traditionally grazed areas such as Garnet Lake (thi15), NW Delta of Thousand Island Lake (thi12), and Upper (rus2) and Lower Spooky (rus3) Meadows. In addition, grazing use may continue to occur in suitable meadows where existing headcuts and stream channel incisions at a number of meadows (including the three named above) could potentially become more unstable if grazing occurs on a regular basis at allowable use levels. This could result in further loss of portions of these wet meadow habitats. Meadows

where these effects may occur also include the Emerald Meadow Complex (thi14), Johnston Meadow (min11), and seven meadows in the Crater Creek/Deer Creek grazing area (Lower Crater Meadow (ccd 1), Upper Crater (ccd2), Deer Creek (ccd15), Unnamed (ccd16, 19a and 19b), and Middle Deer Creek (ccd17)).

The continued use of the Garnet to Emerald system trail by commercial pack stock may contribute some additional sediment to the mountain yellow-legged frog pond where the trail courses around its perimeter; however, the impacts are not considered substantive at this time based on current use levels.

The effect of implementation of Alternative 1 commercial pack stock wilderness use regulating system such as trailhead quotas, and existing system and use trail approvals, as well as approved use of camps on MIS mule deer and the yellow warbler habitats are described at the wilderness scale.

Ansel Adams East –Alternative 2 – Modified, 2, 3, and 4

MIS Mule Deer, Yellow Warbler, and Riparian Meadow and Meadow Edge Species

Analysis

Implementation of the grazing prohibitions in Alternatives 2 – Modified, 2, and 3 would potentially improve MIS species habitat recovery potentials over Alternative 1 in functional at risk meadows with a downward trend at Garnet Lake (thi15), and Emerald Meadow Complex (thi14). This would be true for Johnston Meadow (min11) in Alternative 2 – Modified, 3 and 4. The reduction in stock nights at Upper (rus2) and Lower Spooky (rus3) meadows under Alternatives 2 through 4 would also improve MIS habitat conditions over Alternative 1. The prohibition of grazing in four of the Crater Creek/Deer Creek meadows (ccd 1, 2, 15, and 19a) may prevent potential headcut acceleration and wet meadow loss compared to Alternative 1. The prohibition may likely provide for an improvement in hydrologic functioning of these meadows, and restoration of additional wet meadow for the MIS species over the long-term, since it may allow for a higher potential to stabilize headcuts in spring channels and lateral stream channels that threaten meadow integrity.

Implementation of a 3 year grazing rotation for Davis and Rodgers Lake Meadows (uru1 and 5), and the additional closure of Rodgers Meadow in Alternative 4 would contribute to the maintenance of MIS meadow wildlife habitat.

Alternatives 2 through 3 NSCS system trail actions, and use trail closures would likely have a slight decrease in the extent and magnitude of habitat and human disturbance impacts to MIS mule deer and yellow warbler habitats over Alternative 1. Alternatives 2 and 3 have additional limitations over Alternative 1 in the extent of area of potential habitat and human disturbance impacts since there would be designated stock camps.

Alternative 4 would have the greatest reduction on the extent of impacts associated with camps and trails since it has the highest number of system trails and use trail closures, as well as the designation of spot and dunnage drop sites. There would be a reduction in the extent of social and access trails around camps no longer approved for use with a probable improvement in MIS habitat conditions.

Ansel Adams West – Alternative 1

Yosemite Toad and Mountain Yellow-legged Frog

Analysis

Minor amounts of grazing use are likely to continue in this geographic unit that has the potential to overlap Yosemite toad breeding sites. The implementation of this alternative would likely continue to have very minor effects to three Yosemite toad breeding areas if current grazing use levels and patterns continue. No effects to breeding sites had been noted at these areas during the interdisciplinary team field surveys in 2003 and 2004. Table 4.92 indicates that only Stairway meadow in the Cargyle Analysis Unit would likely have any commercial pack stock grazing based on previous use patterns. The meadow has had very light pack stock grazing reported for one year only from 2001 through 2003 in this geographic unit. Sixteen of the 19 meadows with Yosemite toad breeding populations in Table 4.92 have not been requested for grazing and are likely to remain ungrazed with no impacts at the Yosemite toad breeding areas. If all meadows were grazed at full implementation of the alternative allowable use standards, the effects would likely increase substantially; however, this is a highly unlikely scenario. There would be no effect to the one population of Yellow-legged frogs at Onion Peak Meadow.

Implementation of the system and use trail proposals, as well as use regulating mechanisms for commercial pack stock such as trailhead quotas, would not affect Yosemite toad or mountain yellow legged frogs or their habitats, or have any substantive changes over the existing situation in this geographic unit. No issues with commercial pack stock use or the trail system have been identified with these two species or their habitats.

Table 4.92. Distribution of Yosemite toad breeding meadows in the Ansel Adams West Geographic Unit by analysis unit and overlap with grazing areas

Geo Unit	Analysis Unit	Breeding Meadows with Observed or Reported Grazing	Other Breeding Sites Requested for Grazing	Not Requested for Grazing Use	Total Breeding Meadows
AA West	Sadler (Sad)		1		1
	Cargyle (Car)	1 (Very Light Use)	1	3	5
	Junction (Jun)			2	2
	Chiquito (Chi)			2	2
	Jackass (Jac)			1	1
	Onion Springs			1	1
	Arch (Arc)			6	6
	Cold Creek (Coc)			1	1
	Cora (Cor)			1	1
Total		1	2	17	20

Ansel Adams West – 2 – Modified, 2 3 and 4

Yosemite Toad and Mountain Yellow-legged Frog

Analysis

The effects of implementing these alternatives would likely be the same for the Yosemite toad and mountain yellow-legged frog as Alternative 1. The two breeding area meadows Carygle (car1) and Sadler (sad22) identified as suitable for commercial pack stock grazing in Chapter 2 Table 2.30 would have the critical area management protection standards implemented as previously described for the alternatives. These standards would provide for a higher level of potential habitat protection over Alternative 1 if grazing use were to increase above the current light use levels and approach maximum allowable forage use. There would be no effect to the mountain yellow-legged frog population at Onion Peak Meadow.

Implementation of the various system and use trail alternatives, destinations, and use regulating systems are not likely to have any substantive effect to the Yosemite toad or mountain yellow-legged frog and their habitats. No issues with commercial pack stock use or the trail system have been identified with these two species or their habitats.

Ansel Adams West – Alternatives 1 through 4

MIS Mule Deer, Riparian Meadow and Meadow Edge Species

Analysis

Little is known about these MIS species and the status of their habitats within this geographic unit. The yellow warbler is not an MIS species on the Sierra NF. Interdisciplinary team field analysis in 2003 and 2004 identified twelve meadows where moderate to severe hydrologic functioning impacts were evident. The impacts appear to be largely the result of historical land uses. Alternative 1 continuation of grazing would likely continue to promote impacts to meadow ecological condition and wildlife habitat structural components such as springs, spring and stream channels, and riparian vegetative cover in traditionally grazed areas at two of these meadow areas; Sadler Lake Meadow (sad12), and McClure to Sadler Meadow (sad13). McClure to Sadler Meadow stream (sad13) was determined to be functional at risk with a downward trend. The other ten meadows would be open for grazing but are not likely to show any substantive grazing use based on recent reported use information. These meadows may recover MIS habitat components over the long-term if they remain ungrazed or lightly used by commercial pack stock; however, there could be substantive impacts if they are repeatedly grazed at higher utilization levels. There is a very low probability that the meadows would be grazed at the higher utilization levels based on past reported use levels.

McClure to Sadler (sad13), Fernandez Creek (lil4), NW of Fernandez Lake (lil3), and South of Slab Lake (trd6) would be closed to grazing under Alternatives 2 – Modified, 2, 3, and 4. Closure of these meadows to grazing would provide full protection to allow for maximum potential recovery of the hydrologic functioning and vegetative potential of these meadows, and therefore MIS habitat quality over the long-term.

Alternative 4 would additionally prohibit grazing at Fernandez, Detachment, Knoblock, Chetwood, and West of Joe Crane Meadows. Closure of these meadows would similarly provide

full protection to allow for maximum potential recovery of the hydrologic functioning and vegetative potential of these meadows, and therefore MIS habitat quality over the long-term.

The continuation of the existing system and use trails, use regulating mechanisms, and campsites associated with commercial pack stock wilderness use under Alternative 1 would likely perpetuate the generalized effects of human disturbance and minor habitat modification described at the wilderness scale on MIS species and their habitat.

The implementation of NSCS, use trail prohibitions, and designated camps under Alternatives 2 through 4 would have some beneficial effects to MIS species and their habitats as described for the alternatives at the wilderness scale.

Fish Creek/Convict/McGee – Alternative 1

Yosemite Toad

Analysis

Table 4.93 indicates 11 of 44 meadows are likely to continue to have some level of pack stock grazing that overlaps Yosemite toad breeding habitat based on reported grazing use from 2001 through 2003. Another eight meadows may experience some level of use as well but there has been no reported grazing in them from 2001 through 2003. Four McGee Creek meadows were closed to grazing from 2001 through 2003 to protect Yosemite toad habitats per direction in the 2001 Record of Decision (ROD) for the Sierra Nevada Forest Plan Amendment. The closure was removed in 2004 with implementation of the 2004 ROD that removed pack stock grazing direction from the standards and guidelines for grazing management under the Sierra Nevada Forest Plan Amendment. The new ROD deferred the development of management direction to site-specific analyses such as this EIS.

Silver Divide and Upper Fish Creek Analysis Units may likely continue to have a number of meadows where grazing use overlap would occur at Yosemite toad breeding habitats. Eleven breeding meadows out of 20 in these analysis units would likely continue to have grazing overlap in them where trampling and chiseling effects could modify breeding site habitat characteristics, and pose some risk of metamorph trampling. The Stringers West of Squaw Lake (sil18) and Grassy Meadow (sil22) in particular are likely to continue to have locally moderate to heavy pack stock grazing impacts at Yosemite toad breeding sites if the current grazing pattern continues under Alternative 1. Pack stock trampling and chiseling overlap in Yosemite toad breeding sites may occur at other sites, including Peter Pande Tarn Meadow (sil7), in the meadows Between Lone Indian and Grassy (sil13), and Squaw Lake Meadow (sil10) based on monitoring from 2001 through 2004.

The maximum allowable 20 percent stream bank, lakeshore and pond disturbance standards from the 2001 Wilderness Plan would be applied as an upper acceptable trampling and chiseling impact standard if grazing use were to substantially increase. Trampling and chiseling impacts would likely increase substantially at the Yosemite toad breeding sites if this were to occur; however, it is not likely to occur in most of these meadows except at Grassy Meadow, which appears to receive a high level of consistent annual grazing use. The meadow has a degraded hydrologic function condition that potentially allows for increased potential for impacts at the breeding site. Meadow grazing may continue to have moderate impact overlap with Yosemite

toad breeding sites, and may exceed the 20 percent cumulative disturbance standard if it continues to be grazed on an annual basis.

Grazing overlap with Yosemite toad breeding sites in the McGee Analysis Unit would likely occur with light impacts likely only at Round Meadow (mcg8) if the current use pattern continues under Alternative 1.

The continuation of the existing trail system under Alternative 1 and commercial pack stock use of the system would have no substantive changes to Yosemite toad breeding habitat impacts from the existing situation. The trail along Second Meadow (mcg9) above Martin's Meadow would continue to skirt the breeding pool areas and allow for pack stock to veer through the breeding pool areas where direct overlap with metamorph areas was observed in 2003 and 2004. The trail headcut problem in Martin's Meadow that is currently eroding the lower end of the meadow and contributing sediment into Round Meadow critical Yosemite toad breeding area would continue, and commercial pack stock use of this trail may continue to accelerate the headcut expansion. Baldwin Meadow trail erosion sedimentation of the critical Yosemite toad breeding area in this meadow would continue. Commercial pack stock does not currently use the trail and it is unlikely this use would contribute to the problem. Commercial pack stock use of the poorly maintained system trail adjacent to Chute Meadow may continue to accelerate sediment delivery into the Yosemite toad breeding area in this meadow. Red Slate Meadow (ufc3) would continue to have light to moderate trampling and chiseling impacts in the breeding habitats since poor system trail alignment would still steer commercial pack stock to occasionally trail through the breeding sites.

Destination camping patterns are likely to continue as in previous years under this alternative with no identified substantive impacts to Yosemite toad breeding sites.

Table 4.93. Distribution of Yosemite toad breeding meadows in the Fish Creek/Convict/McGee Geographic Unit by analysis unit and overlap with grazing areas for Alternative 1

Geo Unit	Analysis Unit	Breeding Meadows with Observed or Reported Grazing	Other Breeding Sites Requested for Grazing	Not Requested for Grazing Use	Total Breeding Meadows
Fish Creek/Convict/McGee	Upper Fish Creek (Ufc)	2	1		3
	Silver Divide (Sil)	5	2		7
	McGee (Mcg)	3	2	5	10
	Convict (Con)	1		5	6
	Margaret (Mar)		2	15	17
	Purple Bench (Ppb)		1		1
Total		11	8	25	44

Fish Creek/Convict/McGee – Alternative 2 – Modified, 2, and 3

Yosemite Toad

Analysis

Fourteen occupied Yosemite toad breeding habitat meadows designated as unsuitable or prohibited in Alt 2 - Modified in Table 4.86 would be fully protected from any future potential commercial pack stock grazing impacts. Trampling and chiseling impacts would cease in four of these meadows, result in improved vegetative cover and allow for unmodified breeding site habitat structure at Grassy Meadow (sil22), Peter Pande Tarn Meadow (sil7), in the meadows Between Lone Indian and Grassy (sil13), and Squaw Lake Meadow (sil10)

Commercial pack stock grazing could occur at Tully Lake Meadow (ufc4), Fern Lake Meadow (mar9), Frog Lake North Meadow (mar17), Chief Lake (sil19), and Big McGee Meadow (mcg12). Grazing management would be implemented to avoid the Yosemite toad breeding areas in these meadows. Minor pack stock trampling and chiseling impacts in the breeding habitat areas may occur from incidental stock drift.

The system trail prohibition to commercial pack stock in the Baldwin-Scheelore Meadow area would prevent any future commercial pack stock use from contributing to the sedimentation problem in the Yosemite toad breeding area of the meadow. Otherwise, trail effects would be the same as Alternative 1.

Fish Creek/Convict/McGee – Alternative 4

Yosemite Toad

Analysis

The alternative would be similar to Alternatives 2 – Modified, 2, and 3 except that Chief Lake Meadow (sil19), and Fern Lake Meadow (mar9) would be unsuitable for grazing. This would eliminate the potential for any impacts related to commercial pack stock grazing at the Yosemite toad breeding site. Other effects would be the same as Alternatives 2 - Modified.

Fish Creek/Convict/McGee – Alternative 1

MIS Mule Deer, Yellow Warbler, and Riparian Meadow and Meadow Edge Species

Analysis

Alternative 1 continuation of grazing would likely continue to promote impacts to meadow ecological condition and wildlife habitat structural components such as springs, spring and stream channels, and riparian vegetative cover in traditionally grazed areas – particularly at Grassy Meadow (sil22), and Jackson Meadow (sil8).

In addition, grazing use may continue to occur in suitable meadows such as Tully Hole (ufc9), Horse Heaven (ufc8), Purple meadow (ppb12), Second Crossing (cas1), and Ram Meadow (ppb10) where moderate impacts to vegetative herbaceous cover would occur if grazing continues to occur on a regular basis as it has in the past.

The trail system issues described under Yosemite toad would also be applicable to MIS species habitats at the meadows noted in the McGee Creek area. The effect of implementation of Alternative 1 commercial pack stock wilderness use regulating system such as trailhead quotas, and the continued use of other existing system and use trail, as well as use of camps on MIS mule deer and the yellow warbler habitats are described at the wilderness scale.

Fish Creek/Convict/McGee – Alternative 2 – Modified

MIS Mule Deer, Yellow Warbler, and Riparian Meadow and Meadow Edge Species

Analysis

Implementation of the grazing prohibitions in twenty-seven meadows under Alternative 2 – Modified and twenty-six meadows under Alternative 2 would maintain or potentially improve MIS species habitat over Alternative 1, including the functional at risk meadows with a downward trend at Grassy Meadow (sil22), and Jackson Meadow (sil8). Meadows that have been traditionally grazed by commercial pack stock would likely see increases in vegetative density and productivity that may improve habitat conditions over the long-term for MIS species. In Grassy and Jackson meadows, the prohibition may likely provide for an improvement in hydrologic functioning and restoration of additional wet meadow for the MIS species over the long-term, since it may allow for a higher potential to stabilize headcuts in spring channels and lateral stream channels that threaten meadow integrity.

Frog Lake Southeast, Rainbow to Margaret (mar18), Big McGee (Hopkins Bench), and Tully Hole (ufc9) meadows were rated functional at risk with no apparent trend. Big Margaret Lake West (mar11), Coyote Lake (mar7), and Fern lake (mar9) meadows were rated functional at risk, upward trend. There has been no use reported from 2001 through 2003 in most of these meadows. Only Tully Hole has shown consistent grazing use at moderate stock night levels. Rainbow to Margaret, and Coyote would be closed to commercial pack stock grazing under these alternatives.

Approval of commercial pack stock grazing at the other meadows at moderate utilization levels would likely have some effect on the recovery potential of these meadows, and subsequently MIS habitat, over the long-term if the meadows receive regular annual use (which is unlikely).

The Cascade Valley grazing closure would be lifted to allow light grazing under Alternative 2 – Modified, but the closure would continue under Alternatives 2, 3 and 4. Natural long-term restoration of this meadow would likely continue at the same rate under all these alternatives, including Alternative 1. Alternative 2 – Modified would allow only very light commercial pack stock grazing that would have very little effect, if any, on MIS wildlife habitat restoration potential.

Fish Creek/Convict/McGee – Alternative 3 and 4

MIS Mule Deer, Yellow Warbler, and Riparian Meadow and Meadow Edge Species

Analysis

Alternatives 2 and 3 would add two more meadows to the closed to commercial pack stock grazing. Alternative 4 would add five additional meadows where MIS habitats would be fully

protected over Alternative 2 – Modified. Alternative 3 would be similar to Alternative 2 – Modified since grazing would be allowed in the meadows listed under those alternatives as having stream functioning problems.

Alternative 4 would have the greatest reduction to the extent of impacts associated with camps and trails since it has the highest number of system trails and use trail closures, as well as the designation of spot and dunnage drop sites. There would be a reduction in the extent of social and access trails around camps no longer approved for use with a probable improvement in MIS habitat conditions.

Mono Creek/Rock Creek – Alternative 1

Yosemite Toad and Mountain Yellow-legged Frog

Analysis

Pioneer Basin Yosemite toad breeding habitats would continue to be protected since the meadow grazing closure would remain in effect. No commercial pack stock grazing use has been reported or observed from 2001 through 2003 at any of the toad breeding sites as shown in Table 4.94. Interdisciplinary team field visits to the Yosemite toad breeding sites within meadows requested for grazing did not detect any impacts from commercial pack stock grazing. This pattern would likely continue with implementation of Alternative 1.

Six of the twenty-one breeding areas are fully protected with the continuation of the closure of commercial pack stock grazing in all Pioneer Basin meadows. The other requested grazing meadows would not likely experience any substantive grazing use since commercial pack stock operators rarely use areas such as Upper Laurel Creek, Little lakes Valley, and Volcanic meadow areas. There is always the possibility commercial pack stock use could shift to these locations; however, it unlikely given poor trail access, other user group conflicts, and lack of client demand to go to those destinations.

Use of the meadow north of Mono Rock (For1) for commercial pack stock grazing would likely continue with some level of trampling and chiseling effects continuing in the mountain yellow-legged frog spring channel habitat. The maximum 20 percent stream bank disturbance standard would be monitored and implemented at some point to mitigate potential continuation of effects. This use would need to be monitored to ensure no adverse effects were occurring to this habitat. The unit has a number of yellow-legged frog populations. There would likely be no effect to other populations and habitats since commercial pack stock operations do not overlap with them.

Implementation of Alternative 1 system and approved use trails would not likely change the existing situation where very few effects have been identified to toads or frog habitats, except at the Pioneer Basin Trail to 4th Lake (10,900). Use of this trail would continue to be allowed. The trail crosses a stream channel on its way to 4th Lake (10,900). Existing commercial stock use has created a widened stream crossing and incised meadow trail through habitat where Yosemite toads have been observed. These impacts would likely continue since no trail work has been conducted on this use trail, nor would it likely occur.

Table 4.94 Distribution of Yosemite toad breeding meadows in the Mono Creek/Rock Creek Geographic Unit by analysis unit and overlap with grazing areas

Geo Unit	Analysis Unit	Breeding Meadows with Observed or Reported Grazing	Other Breeding Meadows Requested for Grazing	Not Requested for Grazing Use	Total Breeding Meadows
Mono Creek/ Rock Creek	Devils (Dev)		2		2
	Volcanic (Vol)		2		2
	Graveyard (Gra)		1	1	2
	Laurel (Lau)		1	1	2
	Pioneer (Pio)		1	5	6
	Silver Peak (Sip)		1	2	3
	Little Lakes Valley (Llv)		1	2	3
	Morgan Lakes (Mrg)			1	1
	Total			9	12

Mono Creek/Rock Creek – Alternatives 2 – Modified, 2, 3 and 4

Yosemite Toad and Mountain Yellow-legged Frog

Analysis

Implementation of management to avoid critical Yosemite toad breeding areas in Alternative 2 – Modified and the five percent critical area maximum allowable disturbance standard in Alternatives 2 through 4 would provide a higher degree of toad habitat protection in two approved grazing meadows that overlap with Yosemite toad occupied breeding habitat in this geographic unit; Devils Bathtub Meadow (dev1), and Upper Graveyard Meadow (gra11). alternative 2 only if grazing were to occur in the future in those meadows. There has been no reported use in these meadows in recent years so it is unlikely there would be any substantive grazing use. Commercial pack stock grazing would be prohibited in all alternatives in the meadow north of Mono Rock (for1), providing full protection for the mountain yellow-legged frog spring channel habitat.

Implementation of the various commercial pack stock use regulating systems are not likely to have any substantive effect to the Yosemite toad or mountain yellow-legged frog and their habitats since no issues have been identified with destination uses. Similarly, there are no substantive changes to Yosemite toad or mountain yellow-legged frog habitats from system and use trail proposals except for the commercial stock closure of the system trail to Lake 10,900 under Alternatives 2 through 4. This may allow for some rehabilitation of the stream crossing through Yosemite toad habitat.

Mono Creek/Rock Creek – Alternatives 1 - 4

MIS Mule Deer, Yellow Warbler, and Riparian Meadow and Meadow Edge Species

Analysis

Little is known about these MIS species and the status of their habitats within this geographic unit. The yellow warbler is not an MIS species on the Sierra NF but does apply to Inyo NF areas in Rock Creek, Hilton Creek and Tamarack Basin.

Interdisciplinary team field analysis in 2003 identified nine meadows where stream degradation was apparent. Meadow habitat for MIS species may have been adversely affected as a result of impairment of the hydrologic functioning of the meadows. The streams in Upper Graveyard (gra11), Graveyard (gra9), and Silver Pass Meadows (sip6) were determined to be functional at risk with downward trends. The meadows would be approved for grazing under Alternative 1. Commercial pack stock reported grazing use has been light from 2001 through 2003 in the two Graveyard meadows with moderate use in Silver Pass Meadow. Alternative 1 would likely continue this pattern of use that may somewhat inhibit long-term recovery of the stream hydrologic functioning and subsequent improvement potential of MIS habitat.

Graveyard, Upper Graveyard, and Silver Pass meadows would be closed under all other alternatives. Closure of these meadows to grazing may improve the potential for hydrologic functioning and vegetative recovery over the long-term, and therefore MIS habitat quality.

Implementation of Alternative 1 use of trails and destinations would likely continue the existing generalized effects discussed at the wilderness scale, such as human disturbance impacts and overall minor habitat modification associated with trails and destination use on these MIS groups and their habitat. The continued use of the trail to Lake 10,900 and Upper Pioneer Basin under Alternative 1 and 3 would continue to affect the riparian meadow MIS habitat; however, the magnitude of the effect is not significant. There would be some minor habitat improvement with its closure under Alternatives 2 – Modified, 2, and 4.

Human disturbance from commercial pack stock operations would likely remain high at places such as in the Mono Creek corridor and Hilton Lakes areas. Impacts would remain low in places such as Laurel Creek, and First Second and Third Recesses. Designated camps, drop sites, and stock holding areas, NSCS system trail, and use trail prohibitions by alternative would provide some decrease in habitat and human disturbance impacts.

Bishop/Humphreys – Alternative 1

Yosemite Toad

Analysis

Table 4.95 indicates that three out of 26 Yosemite toad breeding sites in the unit have observed grazing impacts in them, Very minor amounts of trampling and chiseling impacts from commercial pack stock grazing use at the three breeding sites have occurred in this geographic unit. All Pine Creek grazing sites on the Inyo NF were closed from 2001 through 2003 as a result of the implementation of grazing closures to meet Sierra Nevada Forest Plan standard and guidelines for grazing management in Yosemite toad habitat. Commercial pack stock grazing

remained open during this time in French Canyon and Piute Creek on the Sierra NF. In 2004, the meadows on the Inyo were re-opened to allow grazing; however, no grazing use was reported.

Merriam Creek confluence meadow in French Canyon, and a meadow above Sierra Camp to Packsaddle Lake have shown light pack stock grazing trampling and chiseling effects in Yosemite toad breeding sites. The implementation of Alternative 1 would likely continue to have this very minor overlap of effects if current grazing use levels and patterns continue.

The maximum allowable 20 percent stream bank, lakeshore, and pond disturbance standards from the 2001 Wilderness Plan would be applied as an upper acceptable trampling and chiseling impact standard if grazing use were to substantially increase. Trampling and chiseling impacts could increase substantially at the Yosemite toad breeding sites if this were to occur; however, it is not likely to occur in most of these meadows.

There would be no effect to the mountain yellow-legged frog populations or their habitats with implementation of Alternative 1 since commercial pack stock use is not likely to overlap with frog habitats.

There would be some light to moderate levels of trampling and chiseling effects that may likely continue with pack stock use of the system trail where it crosses the Yosemite toad breeding meadow at the inlet of Upper Pine Lake. The trail is in a poor location and occasionally pack stock pass through the breeding site. This impact may be addressed at a later date with a proposal to fix the trail or re-locate the crossing. Other than this trail problem, the continuation of use of the system and use trail, as well as use regulating mechanisms for commercial pack stock such as trailhead quotas, would not impact Yosemite toad or mountain yellow legged frogs or their habitats, or have any substantive changes over the existing situation in this geographic unit.

Table 4.95. Distribution of Yosemite toad breeding meadows in the Bishop/Humphreys Geographic Unit by analysis unit and overlap with grazing areas in Alternative 1

Geo Unit	Analysis Unit	Breeding Meadows with Observed or Reported Grazing	Other Breeding Meadows Requested for Grazing	Not Requested for Grazing	Total Breeding Meadows
Bishop Humphreys	Piute (Piu)			1	1
	Humphreys Basin (Hum)		1		1
	Glacier Divide (Gla)	1	3	2	6
	French Canyon (Fre)	2	4		6
	Pine Creek		4	4	8
	Granite Park			4	4
	Total		3	12	11

Bishop/Humphreys – Alternatives 2 – Modified, 2, 3 and 4

Yosemite Toad

Analysis

Alternatives 2 through 4 would fully protect nine of the 15 meadows where grazing was observed or requested under Alternative 1 since commercial pack stock grazing would be prohibited. These meadows are primarily in Pine Creek and Upper Piute Creek from Packsaddle Tributary Confluence upstream to Piute Pass. In practicality, there would not be a substantive difference in the effects of these alternatives over Alternative 1 since grazing use has not been observed to be a substantive concern in this geographic unit.

The implementation of the trail systems proposals, destinations camps, or use regulating mechanisms would not change the existing patterns of use overlap and potential for effects in Yosemite toad habitats. Upper Pine Creek Meadow would continue to have light to moderate trampling and chiseling impacts in the breeding habitats since poor system trail alignment would still steer commercial pack stock to occasionally pass through the breeding sites. This type of effect is not mitigated by a trail management class designation, but rather a site-specific trail relocation NEPA action that is not part of the trail management level designation process.

Bishop/Humphreys – Alternatives 1 - 4

MIS Mule Deer, Yellow Warbler and Riparian Meadow and Meadow Edge Species

Analysis

Alternative 1 through 4 would likely continue to have some habitat impacts from commercial pack stock grazing at Hutchinson Meadow that may maintain the meadow habitat in a fair ecological condition where meadow vegetation species composition, density, and productivity provide lower habitat suitability for these MIS species. Waterfall Camp meadow fen habitat is also in a lower ecological condition and would likely continue to remain in that state if grazing continues under Alternative 1. It has been determined to be unsuitable for grazing and may recover as grazing is discontinued under all other alternatives. Commercial pack stock grazing use is low in this geographic unit and would likely remain so under Alternatives 1 through 4. Most meadow habitats would remain in high quality condition for MIS species except for the impacts of trails coursing through them and associated human disturbance effects on these trail corridors and around camps.

Designated camps, drop sites, and stock holding areas, NSCS system trail, and use trail prohibitions by alternative would reduce the extent of potential area for human disturbance and habitat effects to MIS species around meadow habitats. This may improve habitat conditions somewhat under the more restrictive alternatives, however the changes by alternative do not provide for substantive differences in effects to MIS species.

Florence/Bear – Alternative 1

Yosemite Toad

Analysis

The implementation of this alternative would likely have very minor effects to 14 Yosemite toad breeding areas that may be grazed under this alternative. Only four breeding area meadows have had any grazing use reported in them from 2001 through 2003. Hell Hole Meadow (hoo2) is a low elevation meadow where commercial pack stock grazing can be substantial; however, the meadow analysis report from the Sierra National Forest rated the meadow in good condition and did not document substantive impacts to the Yosemite toad breeding habitat in the meadow.

No effects to Yosemite toad breeding areas were noted at any of the other meadow areas. Forty-one of the 55 meadows with Yosemite toad breeding populations in Table 4.2.22 have not been requested for grazing and are likely to remain ungrazed with no impacts at the Yosemite toad breeding areas.

If all 41 meadows were grazed at full implementation of the alternative allowable use standards, the effects would increase substantially as described for other units. This is a highly unlikely scenario under this alternative. There would be no effect to any mountain yellow legged frog habitats since commercial pack stock grazing use does not overlap with this species' habitat in this unit.

Table 4.96. Distribution of Yosemite toad breeding meadows in the Florence/Bear Geographic Unit by analysis unit and overlap with grazing areas in Alternative 1.

Geo Unit	Analysis Unit	Breeding Meadows with Observed or Reported Grazing	Other Breeding Meadows Requested for Grazing	Not Requested for Grazing	Total Breeding Meadows
Florence/Bear	Seldon (Sel)	3	6		9
	Apollo (Apo)	1	2		3
	Dutch (Dut)		1	26	27
	Ershim (Ers)		1	8	9
	Bear Lakes (Bel)			2	2
	Italy (Ita)			1	1
	Bolsillo (Bol)			4	4
	Total		4	10	41

Florence/Bear – Alternatives 2 – Modified, 2 3 and 4

Yosemite Toad

Analysis

Effects of implementation of these alternatives would likely be the same as Alternative 1 for meadows with Yosemite toad critical areas listed in Table 4.86 since it is unlikely any

substantive grazing use would occur within this geographic unit, except as identified at Hell Hole Meadow. Grazing would be managed in all suitable meadows to avoid Yosemite toad critical breeding areas under Alternative 2 – Modified, and a five percent maximum allowable disturbance under Alternative 2, 3 and 4. Commercial pack stock grazing would be prohibited in thirty-four meadows with Yosemite toad breeding areas since these meadows are outside of grazing zones.

Florence/Bear – Alternatives 1 - 4

MIS Mule Deer, Yellow Warbler and Riparian Meadow and Meadow Edge Species

Analysis

Little is known about these MIS species and the status of their habitats within this geographic unit. The yellow warbler is not an MIS species on the Sierra NF. Field analyses did not identify any major areas of concern with respect to current commercial pack stock operations in this unit. The continuation of the existing situation under Alternative 1 would likely perpetuate the generalized effects of human disturbance and minor habitat modification associated with grazing, trails, and destination use on these MIS groups and their habitat.

Implementation of Alternatives 2 and 3 would not likely substantially change these impacts over the geographic unit.

Actions under these alternatives, such as designated camps and stock holding areas, and not suitable for commercial stock trail actions by alternative may improve habitat conditions for MIS species somewhat.

John Muir Southeast – All Alternatives

Yosemite Toad and Mountain Yellow Legged Frog

Analysis

The range of the Yosemite toad does not extend down into this geographic unit. The mountain yellow-legged frog habitats on the Coyote Plateau at Hidden Lake and Baker Lake would not be affected with implementation of any of the alternatives since the low level of commercial pack stock operations that occur in the area are not affecting the species or its habitat. The populations in the North Fork of Big Pine Creek would be unaffected for the same reason. The populations in the high lakes below Kearsarge Pass would not be affected by implementation of any of the alternatives since the majority of commercial pack stock use is traveling the system trail en route to destinations into Sequoia Kings National Park, or spot and dunnage drops in the lakes basin that do not affect the frog or its habitat. There is no commercial pack stock grazing overlap with mountain yellow-legged frog habitat in this geographic unit.

John Muir Southeast – All Alternatives

MIS Mule Deer, Yellow Warbler, and Riparian Meadow and Meadow Edge Species

Analysis

The geographic unit is entirely on the Inyo NF. The meadow and meadow edge bird guilds are not MIS species on the Inyo NF. The effects to the yellow warbler are the same under Alternatives 1 through 4. Most of the geographic unit has no yellow warbler habitat since the meadows are either too high in elevation and lack good tall shrub and riparian hardwood habitats, or the canyon riparian areas are narrow, confined, lack associated flat gradient wet meadows, and subsequently are of marginal quality. The species generally does not occur in these types of habitat, and is not a good indicator for these areas. The North Fork of Big Pine Creek does have a small area of suitable habitat below First Lake. The meadow habitat is largely in an undisturbed state except for the system trail that courses adjacent to the willow suitable habitat areas. The system trail is used predominantly by backpackers and day hikers so that the continuation of low use levels by commercial pack stock along this trail corridor would not substantively affect the use of the meadow habitat by the yellow warbler anymore than is already occurring by the other predominant user groups.

The approval of commercial pack stock grazing at Windy Gap under Alternative 1 with allowable use standards would likely prevent any long-term recovery of the this highly degraded meadow area, and would likely accelerate meadow loss from erosion due to headcut migration. This would likely accelerate loss of mule deer meadow habitat.

The closure of the Windy Gap grazing area under Alternatives 2 through 4 would prevent any further degradation of mule deer meadow habitat that is a result of trampling and chiseling impacts associated with commercial pack stock grazing. The meadow is likely to continue to erode over the long-term as headcuts continue to migrate up the incised stream channels. The meadow erosion that is the result of headcut migration would not be accelerated with implementation of the grazing closure.

Implementation of any of the wilderness trail transportation system alternatives within this unit, including trail management levels, and system and use trail suitability determinations, would continue to maintain human travel corridors that provide areas of human disturbance potential to mule deer. Alternative 4 would provide a slight decrease in human disturbance potential with the increased NSCS system trail designations and commercial pack stock increased use trail prohibitions. Commercial pack stock use is relatively low in comparison to the other user groups. The proposed trail use changes by alternative would be unlikely to be substantively different as far as changes in human disturbance effects to mule deer.

There is substantial Sierra Nevada bighorn sheep habitat overlap at Mt. Langley, Mt. Williamson, and Mt. Baxter areas in this geographic unit. Effects to Sierra Nevada bighorn sheep are minor and are described at the wilderness scale.

John Muir Southwest – Alternative 1

Yosemite Toad and Mountain Yellow Legged Frog

Analysis

The implementation of this alternative would likely have very minor potential effects to ten Yosemite toad breeding areas that could be grazed under this alternative if requested meadows were grazed. Only four breeding area meadows have had any grazing use reported from 2001 through 2003. No substantive impacts are likely in any of these meadows if grazing continues similar to current levels.

Most of this geographic unit receives very light commercial pack stock use relative to other units. Fifty-seven of the 67 meadows with Yosemite toad breeding populations in Table 4.97 have not been requested for grazing and are likely to remain ungrazed with no impacts to the Yosemite toad breeding areas. There were no unsuitable for grazing determinations in any Yosemite toad breeding meadow. If all 67 meadows were grazed at full implementation of the alternative allowable use standards, the effects would increase substantially as described for other units. This is a highly unlikely scenario under this alternative. There would be no effect to any mountain yellow legged frog populations or their habitat since commercial pack stock grazing use does not overlap with this species habitat in this unit.

Table 4.97. Distribution of Yosemite toad breeding meadows in the John Muir Southwest Geographic Unit by analysis unit and overlap with grazing areas in Alternative 1

Geo Unit	Analysis Unit	Breeding Meadows with Observed or Reported Grazing	Other Breeding Meadows Requested for Grazing	Not Requested for Grazing	Total Breeding Meadows
John Muir SW	Hobler (Hob)	1	1	11	13
	Crown Lake (Crl)		1	2	3
	Rodgers (Rod)			1	1
	Finger (Fin)			14	14
	Dusy (Dus)			1	1
	Bench (Ben)		4	12	16
	Big Maxson (Bim)	2	1		3
	Crown Basin (Crb)			3	3
	Spanish (Spa)			2	2
	Basin (Bas)			3	3
	South Woodchuck (Sow)			3	3
	Post Corral (Poc)			2	2
	Fleming Mountain (Fle)			1	1

Geo Unit	Analysis Unit	Breeding Meadows with Observed or Reported Grazing	Other Breeding Meadows Requested for Grazing	Not Requested for Grazing	Total Breeding Meadows
	Red Mountain (RMB)			2	2
Total		3	7	57	67

John Muir Southwest – Alternatives 2 – Modified, 2, 3, and 4

Yosemite Toad and Mountain Yellow Legged Frog

Analysis

The implementation of any of the alternatives would likely have very minor effects to Yosemite toad breeding areas within identified meadows that may be grazed with implementation of the manage to avoid critical areas under Alternative 2 – Modified, and the five percent maximum allowable disturbance standard in critical areas in Alternatives 2, 3, and 4. Effects of implementation would likely be similar to Alternative 1 since grazing under this alternative is likely to continue to be very light in this geographic unit. There would be no effects from commercial pack stock grazing to all other meadows in Table 4.97 since they are outside of grazing zones and would be closed to commercial pack stock grazing.

John Muir Southwest – Alternatives 2 – Modified, 2, 3, and 4

MIS Mule Deer, Yellow Warbler, and Riparian Meadow and Meadow edge species

Analysis

Little is known about these MIS species and the status of their habitats within this geographic unit. The yellow warbler is not an MIS species on the Sierra NF. Limited field analyses did not identify any major areas of MIS wildlife habitat degradation with respect to current commercial pack stock operations in this unit. The continuation of the existing situation for commercial pack stock operations, and trail management under Alternative 1 would likely perpetuate the human disturbance and minor habitat modification generalized effects identified at the wilderness scale associated with grazing, trails, and destination camp use on these MIS groups and their habitat.

Implementation of Alternatives 2 through 4 would not likely substantially change these impacts over the geographic unit. Designated camps and stock holding areas, and not suitable for commercial stock trail actions by alternative may decrease impacts and promote localized habitat improvement conditions.

4.3.2 Vegetation

Wilderness Scale

Summary of Alternative 1 Impacts

Grazing Resources: The area used by commercial pack stock would be a minor portion of the total wilderness area, but not limited to grazing zones. The direct, indirect, and cumulative effects of stock use would not be visible and may not be measurable at the wilderness or geographic scale. These effects could be measurable and visible at the analysis unit scale and would be measurable and visible at the site specific scale, and especially in the analysis units and at those sites that have substantial vegetation areas still recovering from past chronic and cumulative adverse impacts due to the impacts of historical uses such as production livestock grazing, water diversion, or mining. These include the Glacier Divide, Silver Peak, Cora, Sadler, Triple Divide, Lillian, Rush Creek, Fish Creek, McGee, Hilton, Cascade Valley, Pioneer, Graveyard, Hooper, and Silver Divide Analysis Units. The vegetative resources could trend away from desired conditions, over the long-term, at an estimated 37 of the locations visited during this project with implementation of Alternative 1.

There would be increased adverse impacts with Alternative 1 over the other alternatives and opportunities for vegetative recovery in fewer locations. The degradation of these riparian areas would become more noticeable over the long-term and many areas with current patterns of repeated use would eventually have to be closed to grazing.

Fens: A greater number of meadows with fens or fen characteristics (17) would remain in degraded conditions in this alternative than any other and the allowable trampling (20 percent) would be higher than in Alternatives 2, 3, and 4. The trampling would most likely be a local, minor, short-term effect, but degraded hydrologic conditions are likely to be long-term and more serious.

Sensitive and Watch List Plants: Individual sensitive or watch list plants may be affected by commercial and private pack stock activities, hiker use, and trail management activities; however, these impacts would be minor, local, and short-term. There are some long-term moderate to severe impacts to sensitive plant habitat regionally from historic grazing that would be somewhat less likely to recover under this alternative.

Under this alternative, the trails would be at the highest trail classes of any alternative, and the trail classes least matched to use, so the impacts to rare plants from trail maintenance and to some extent trail use, although slight, would be greatest of any alternative. There would be less possibility of impacts from avoidance of trail obstacles than in the other alternatives if maintenance actually matches trail class. Any trail impacts would be local, minor, and short-term.

More meadows (527) with potential habitat for sensitive riparian species would be open for use under this alternative than any of the others. Sixteen of the meadows with potential habitat were found to have degraded conditions, mostly due to historic cattle and sheep grazing, and would remain degraded more than under Alternatives 4 and 5.

Firewood: As in Alternatives 4 and 5, there would be no firewood brought in from outside the wilderness, eliminating risk of introducing pathogens and weed seeds from this source.

Weeds: There would be some risk of weed introduction from pack stock use, hiker use, and trail maintenance since there are populations of weeds at trailheads and pack stations. This risk is about the same as Alternative 2 -Modified, 3, and 4, but higher than Alternative 5. Weed effects are generally long-term, but the severity and extent of negative impacts is site dependent.

Summary of Alternative 2 – Modified Impacts

Grazing Resources: The areas used by commercial pack stock are a minor portion of the total wilderness area and limited to grazing zones. The direct, indirect, and cumulative effects of stock use would not be visible and may not be measurable at the wilderness or geographic scale. These effects could be measurable and visible at the analysis unit scale and would be measurable and visible at the site-specific scale. The vegetative resources in most locations are expected to be maintained at or toward desired conditions. The vegetative resources could trend away from desired conditions, for the long-term, at an estimated 21 of the locations visited during this project.

Fens: In this alternative, fens would be more protected from inadvertent commercial pack stock use than in Alternative 1 because no grazing would be permitted in fens. Fewer meadows with fens or fen characteristics (13) would remain in degraded condition than in Alternative 1, but more than Alternatives 4 and 5. There would be an overall long-term beneficial effects to fens under this alternative.

Sensitive and Watch List Plants: Individual sensitive or watch list plants may be affected by commercial and private pack stock activities, hiker use, and trail management activities; however, the effects of these activities would be minor, local, and short-term. There are some long-term moderate to severe impacts to riparian habitat regionally from historic grazing that would be more likely to recover than under Alternative 1.

Under this alternative, the trail classes, and associated use and maintenance impacts to sensitive plants, would be lower than Alternatives 1 and 3, but higher than Alternatives 4 and 5, and more consistent with use. The possibility of impacts from avoidance of trail obstacles would be higher than Alternative 1, about the same as Alternative 3, and lower than Alternatives 4 and 5. Any trail impacts would be local, minor, and short-term.

Fewer meadows (116) with potential habitat for sensitive riparian species would be open for use under this alternative than Alternative 1, but more than under Alternative 5. Grazing use would be similar to Alternative 1 for the most part, but there may be some shifts in use due to meadow closures. Meadows with severe problems would be rested and those for which range readiness is probably never reached over most of the meadow would be closed, so the riparian potential habitat with the highest risks for degradation would not be available for use until recovered. Sixteen meadows with potential habitat for sensitive riparian plants would remain in degraded conditions. The overall effect would be a long-term beneficial reduction in impacts to potential habitat for sensitive riparian species.

Firewood: This alternative would have less risk of weed introduction than Alternatives 2 and 3 because of the use of charcoal. Adjustments in elevation closures at specific sites to reflect actual availability of firewood should protect subalpine soils and vegetation better than, or at least as

well as, Alternative 1. Case-by-case approval of other campfire use could have a minimal negative impact on subalpine vegetation and careful monitoring would be required.

Weeds: There would be some risk of weed introduction from pack stock use, hiker use, and trail maintenance since there are populations of weeds at trailheads and pack stations. This risk is somewhat higher than the other alternatives because firewood may be brought in. If weeds were introduced, the effects would be long-term, moderate to severe, and although beginning locally, could easily become widespread.

Summary of Alternative 2 Impacts

Grazing Resources: The areas used by commercial pack stock are a minor portion of the total wilderness area and limited to grazing zones. The direct, indirect, and cumulative effects of stock use would not be visible and may not be measurable at the wilderness or geographic scale. These effects could be measurable and visible at the analysis unit scale and would be measurable and visible at the site-specific scale. The vegetative resources in most locations are expected to be maintained at or to trend toward desired conditions. With implementation of Alternative 2, the vegetative resources could trend away from desired conditions, for the long-term, at an estimated 21 of the locations visited during this project.

Fens: In this alternative and Alternatives 3 and 4, fens would be more protected from inadvertent commercial pack stock use than in Alternative 1 because of the 5 percent trampling limit. Fewer meadows with fens or fen characteristics (16) would remain in degraded condition than in Alternative 1, but more than Alternatives 4 and 5. There would be overall long-term beneficial effects to fens under this alternative.

Sensitive and Watch List Plants: Individual sensitive or watch list plants may be affected by commercial and private pack stock activities, hiker use, and trail management activities; however, the effects of these activities would be minor, local, and short-term. There are some long-term moderate to severe impacts regionally from historic grazing that would be more likely to recover than under Alternative 1.

Under this alternative, the trail classes, and associated use and maintenance impacts to sensitive plants, would be lower than Alternatives 1 and 3, but higher than Alternatives 4 and 5. The possibility of impacts from avoidance of trail obstacles would be higher than Alternative 1, about the same as Alternative 2 – Modified, 2, and 3, and lower than Alternatives 4 and 5. Any trail impacts would be local, minor, and short-term.

Fewer meadows (116) with potential habitat for sensitive riparian species would be open for use under this alternative than Alternative 1, but more than under Alternative 5. Grazing use would be similar to Alternative 1 for the most part, but there may be some shifts in use due to meadow closures. Meadows with severe problems (and those for which range readiness is probably never reached over most of the meadow) would be closed, so the riparian potential habitat with the highest risks for degradation would be closed. Sixteen meadows with potential habitat for sensitive riparian plants would remain in degraded conditions. The overall effect would be a long-term beneficial reduction in impacts to potential habitat for sensitive riparian species.

Firewood: Under this alternative, there would a moderate risk of the introduction of pathogens and/or weed seeds on firewood brought in from outside the wilderness and increased unauthorized gathering of wood and campfires by non-packer clients. Firewood could only be brought in to sites designated for full service (approximately 42 sites) and only used when a

wrangler is present. If pathogens or weeds were introduced, the effects would be long-term, moderate to severe, and although beginning locally, could easily become widespread.

Weeds: There would be some risk of weed introduction from pack stock use, hiker use, and trail maintenance since there are populations of weeds at trailheads and pack stations. This risk is somewhat higher than the other alternatives because firewood may be brought in. If weeds were introduced, the effects would be long-term, moderate to severe, and although beginning locally, could easily become widespread.

Summary of Alternative 3 Impacts

Grazing Resources: The areas used by commercial pack stock are a minor portion of the total wilderness area and limited to grazing zones. The direct, indirect, and cumulative effects of stock use would not be visible and may not be measurable at the wilderness or geographic scale. These effects could be measurable and visible at the analysis unit scale and would be measurable and visible at the site-specific scale. The vegetative resources in most locations are expected to be maintained at or to trend toward desired conditions. With implementation of Alternative 2, the vegetative resources could trend away from desired conditions, for the long-term, at an estimated 21 of the locations visited during this project.

Fens: In this alternative and Alternatives 3 and 4, fens would be more protected from inadvertent commercial pack stock use than in Alternative 1 because of the 5 percent trampling limit. Fewer meadows with fens or fen characteristics (16) would remain in degraded condition than in Alternative 1, but more than Alternatives 4 and 5. There would be overall long-term beneficial effects to fens under this alternative.

Sensitive and Watch List Plants: Individual sensitive or watch list plants may be affected by commercial and private pack stock activities, hiker use, and trail management activities; however, the effects of these activities would be minor, local, and short-term. There are some long-term moderate to severe impacts regionally from historic grazing that would be more likely to recover than under Alternative 1.

Under this alternative, the trail classes, and associated use and maintenance impacts to sensitive plants, would be lower than Alternatives 1 and 3, but higher than Alternatives 4 and 5. The possibility of impacts from avoidance of trail obstacles would be higher than Alternative 1, about the same as Alternative 2 and 2 – Modified, and lower than Alternatives 4 and 5. Any trail impacts would be local, minor, and short-term.

Fewer meadows (116) with potential habitat for sensitive riparian species would be open for use under this alternative than Alternative 1, but more than under Alternative 5. Grazing use would be similar to Alternative 1 for the most part, but there may be some shifts in use due to meadow closures. Meadows with severe problems (and those for which range readiness is probably never reached over most of the meadow) would be closed, so the riparian potential habitat with the highest risks for degradation would be closed. Sixteen meadows with potential habitat for sensitive riparian plants would remain in degraded conditions. The overall effect would be a long-term beneficial reduction in impacts to potential habitat for sensitive riparian species.

Firewood: Under this alternative, there would be a moderate risk of the introduction of pathogens and/or weed seeds on firewood brought in from outside the wilderness and increased unauthorized gathering of wood and campfires by non-packer clients. Firewood could only be brought in to sites for full service (approximately 42 sites) and only used when a wrangler is

present. If pathogens or weeds were introduced, the effects would be long-term, moderate to severe, and although beginning locally, could easily become widespread.

Weeds: There would be some risk of weed introduction from pack stock use, hiker use, and trail maintenance since there are populations of weeds at trailheads and pack stations. This risk is somewhat lower than Alternative 2, but higher than Alternatives 1, 2 – Modified, 4, and 5. If weeds were introduced, the effects would be long-term, moderate to severe, and although beginning locally, could easily become widespread.

Summary of Alternative 4 Impacts

Grazing Resources: The areas used by commercial pack stock are a minor portion of the total wilderness area and limited to grazing zones. The direct, indirect, and cumulative effects of stock use would not be visible and may not be measurable at the wilderness or geographic scale. These effects could be measurable and visible at the analysis unit scale and would be measurable and visible at the site-specific scale. The vegetative resources in most locations are expected to be maintained at or to trend toward desired conditions. The vegetative resources could trend away from desired conditions, for the long-term, at an estimated 20 of the locations visited during this project.

Fens: Under this alternative, fewer fens would be at risk of degrading and more degraded fens would begin recovery than in Alternatives 1, 2 – Modified, 2, and 3. Fifteen meadows with fens or fen characteristics would remain in degraded conditions. There would be less protection than in Alternative 5, since most of the risk to fens is from commercial pack stock.

Sensitive and Watch List Plants: Individual sensitive or watch list plants may be affected by commercial and private pack stock activities, hiker use, and trail management activities; however, the impacts of these activities would be minor, local, and short-term for the most part. There would be more restrictions on use in this alternative than Alternatives 1, 2, and 3, so there could be some use displaced to adjacent lands (outside wilderness, National Parks, or other National Forests) where there are populations or potential habitat for these sensitive plants, but most of these populations are either on National Parks or National Forests, so there would be protection. Displacement of use would be less likely than in Alternative 5.

Under this alternative, the trail classes, and associated maintenance, would be the lowest of any of the alternatives. However, there would be pack stock use, which there would not be in Alternative 5. There would be more risk from avoidance of trail obstacles than in the other alternatives because of the low maintenance levels. Trail impacts would be minor, local, and most likely short-term.

Fewer meadows (116) with potential habitat for sensitive riparian species would be open for use under this alternative than Alternative 1, but more than under Alternative 5. More meadows would be closed to grazing than in Alternatives 2 and 3, so there may be more shifts in use to meadows not currently used. Meadows with moderate to severe problems (and those for which range readiness is probably never reached) would be closed, so the riparian potential habitat for sensitive and watch list plants with the highest risks for degradation would be closed to commercial pack stock. Thirteen meadows with potential habitat for sensitive riparian species would remain in degraded conditions. There would be more local long-term beneficial effects of closing meadows than in Alternatives 1, 2, and 3, but there would still be some meadows with negative effects from pack stock use that would remain degraded.

Firewood: As in Alternatives 1 and 5, there would be no firewood brought in from outside the wilderness, eliminating risk of introducing pathogens and weed seeds from this source.

Weeds: There would be some risk of weed introduction from pack stock use, hiker use, and trail maintenance since there are populations of weeds at trailheads and pack stations. This risk is about the same as Alternative 1, 2 – Modified, 2, and 3 but higher than Alternatives 5.

Summary of Alternative 5 Impacts

Grazing Resources: No areas of the wilderness would be used by commercial pack stock. The direct, indirect, and cumulative beneficial effects due to increased vegetative seral status would not be visible and may not be measurable at the wilderness or geographic scale. These beneficial effects could be measurable and visible at the analysis unit scale and would be measurable and visible at the site-specific scale. The vegetative resources in most locations are expected to be maintained at or to trend toward desired conditions. The vegetative resources could trend away from desired conditions, for the long-term, at an estimated 18 of the locations visited during this project.

Fens: Since most of the risk to fens is from commercial pack stock, Alternative 5 would provide the best protection for fens, but there still could be impacts from private stock use. Five meadows with fens or fen characteristics that have degraded conditions would continue to have degraded conditions.

Sensitive and Watch List Plants: There would be no commercial pack stock impacts, but private stock use would continue and could increase. Individual sensitive or watch list plants may be affected by private pack stock, hiker use, and trail management activities; however, these activities would not cause a trend toward listing in this or any other alternative.

Under this alternative, the trail classes, and associated maintenance impacts to sensitive plant populations and habitat, would be lower than Alternatives 1, 2 – Modified, 2, and 3, but slightly higher than Alternative 4, and maintenance needs would be less because of the removal of commercial pack stock. There would be the possibility of impacts from avoidance of obstacles by hikers and private pack stock, but the risk would be less than Alternative 4.

There would be no commercial pack stock impacts to sensitive plants or their habitat in meadows in the Ansel Adams and John Muir Wildernesses. There could be some pack stock use displaced to locations outside of these wilderness areas on the Forests, National Parks, or other adjacent lands, where there are populations of these sensitive plants or potential habitat.

Firewood: As in Alternatives 1 and 4, there would be no firewood brought in from outside the wilderness, eliminating the risk of introducing pathogens and weed seeds from this source.

Weeds: Commercial pack stock would no longer be a possible vector for weed distribution into the wilderness from the pack stations or other populations in and near the wilderness, so this alternative would have the lowest risk of weed expansion in the wilderness.

Grazing Resources

Riparian Vegetation, Meadows

Introduction

Definitions

Context: The context considers whether the impact would be local or regional. For the purposes of this analysis, local impacts would be those that occur at site-specific locations, over less than 1/3 of the identified key area. Regional impacts would be impacts on the analysis unit up to the wilderness scale.

Intensity: The intensity considers whether the impact would be negligible, minor, moderate, or major. Negligible impacts are undetectable effects that would have no observable effect on the vegetative resources (species composition, productivity, or seral status). Minor impacts are observable but not expected to have an overall effect on the vegetative resource. Moderate impacts would be clearly observable and could have an appreciable effect on the vegetative resource. Major impacts would have a substantial high noticeable influence and could significantly alter the vegetative resource.

Duration: The duration considers whether the impact would occur in the short-term, long-term, or very long-term. For this analysis, short-term is one to five years. An example is grazing of vegetation expected to re-grow and recovery completely by the subsequent season. Long-term is five to 20 years. An example is repeated grazing in a season with associated trampling and fragmentation of the sod, which would be expected to take longer than five years but less than 20 to recover. Very long-term is expected to persist for greater than 20 years. An example is repeated grazing over several years with trampling impacts that has resulted in bare areas and altered vegetative species composition associated with trail or stream incisement and lowering of the water table where recovery is not expected for several decades.

Type of Impact: Impacts are evaluated in terms of whether they would be beneficial or adverse to the vegetative resource. A beneficial impact would sustain or improve late-seral vegetative productivity, vigor, and abundance. An adverse impact would not sustain or improve late-seral vegetative productivity, vigor, and abundance.

Analysis

This grazing resource analysis is focused on areas of meadow vegetation identified by the operators that are currently being used, were requested for use, or have been used historically for pack stock grazing. The discussion of consequences focuses on the effects of successfully implementing grazing with identified standards for vegetation utilization, range readiness, and stream bank alteration at key areas and provides for protection of critical areas.

Wetland obligate late-seral meadow vegetation (USDI, 1998) has developed historically and should continue to develop in areas where fine textured materials accumulate and are supported by seepage water (Wood, 1975) if the vegetation in those areas is undisturbed. Wood examined meadow stratigraphy exposed by twentieth century erosion, using radiocarbon dating as well as matching stratigraphy of volcanic ash with known eruptions dates and interpreting the evidence to indicate that the meadows and associated stream channels were naturally stable and aggrading

over time. Wood concludes that Sierra meadows, while undergoing changes in vegetation types, had remained vertically stable as sediment sinks, concluding, “Aggradation has been a continuous process”. He developed a sequential history of mountain meadow development and found, “Summer use of meadow by livestock damages the protective sod. During winter plant dormancy, flood waters from torrential winter rain storms initiate gullies leading to erosion of the valley fill and destruction of the meadow” (Wood, 1975).

As discussed by Leopold (1992) and Elmore (1987), the inorganic processes are inseparable from the complex organic processes carried on by plants and animals, and therefore they must be discussed together, especially when analyzing watershed effects. Trampling of vegetation and hoof punching in a meadow results in fragmentation of the plant and soil interface, or sod layer. When repeated trampling reoccurs prior to vegetative healing, there is a synergistic and chronic adverse impact to both plant and soil development at that site, manifested in altered vegetation species, decreased rooting depth, reduced vegetative cover, increased bare soil, and an increase in nick points potentially leading to soil loss. Trampling impacts often occur well before the applicable allowable vegetation utilization levels, of 30 percent or 40 percent, are reached.

Branson et al. (1981) found that soil loss in grass and grass-like vegetation types can be approximately 150 percent higher for bare soil than for a site with nearly 100 percent cover. Because of this relationship between soil cover and soil loss, activities that result in broken sod and reduced vegetative cover result in adverse impacts and associated increased risk to ecological function if they reoccur before the vegetation on a particular site recovers.

An important consideration when discussing effects to the vegetative resource is that grazing related adverse impacts can continue to occur at even low levels of existing use relative to historical use (Cole, 2004; Moore, 2000; Olson-Rutz, Kirchner, 1998; 1996; Cole, 1995; Cole, 1993). Damage occurring at local sites is of significance in the context of individual riparian vegetation complexes even with light and infrequent levels of pack stock use. This is especially true in areas with chronic historical adverse cumulative effects and continuing additive current impacts from grazing, trampling, or regulations of water flows below dams.

These adverse effects are long-term due to a lag time between recruitment of new pioneering, early-seral or mid-seral, species of vegetation, establishment of that new vegetation, trapping of sediment, the time required for recruitment and establishment of stabilizer species of vegetation on of the new sediment, and the resulting time required for morphological development of desirable stream channel characteristics (Winward, 2000; Kondolf, 1993; Sarr, et al, 1996).

Resistance to current impacts and vegetative resiliency (the ability to recover following impacts) is correlated with plant morphological characteristics and these characteristics are affected by the timing and intensity of grazing and trampling (Cole, 2004; Moore, 2000; Olson-Rutz, 1996; Cole, 1995). While initially resistant and resilient, once the vegetation and sod layer is damaged meadows can lose that resiliency and recovery can be a difficult and long-term proposition (Kirchner, 1998; Sarr, 1996; Kondolf, 1993; Odion, et al, 1988). However, given time and proper management conditions, degraded rangeland streams can often produce the same vegetation recovery results that we in the past have spent much time and effort attempting to produce with artificial structures (Elmore and Beschta, 1989).

The recovery of stabilizer species of vegetation and subsequent ecological recovery to satisfactory rangeland condition, both at a specific site and at affected sites throughout a watershed may take many years even in the absence of grazing. Late-seral riparian plant species

are stabilizers and are critical to sustaining meadow ecological processes over time (Winward, 2000). If an impact is repeated before vegetative and hydrological recovery can occur the subsequent erosion processes alters the hydrology which further exacerbates the alteration of vegetation, further weakening the ecological resiliency of the site and resulting in a synergistic and chronic cumulative adverse effect. These chronic, cumulative, and synergistic adverse effects migrate through and affect riparian meadows in the watershed both upstream through headcut movement and downstream through increased sediment loads and decreased vegetation available for buffering of high flows.

Conversely, this analysis assumes that increased vegetative cover provides increased protection and reduces the risks to ecological function at all sites, in all vegetation seral stages. In addition to the value of protecting the soil at individual locations within a watershed, the value of providing adequate vegetative growth and retention, or watershed roughness, to buffer flows throughout a watershed is supported by discussions of Manning's n , the coefficient of roughness in the watershed flow velocity equation, in Branson, et al, (1981); Leopold, et al, 1992, and in discussions by Elmore and Beschta (1989).

Past, Present, and Foreseeable Future Actions

While impacts related to commercial pack stock use and grazing are currently occurring in a relative small percentage of the total project area, the chronic cumulative historical impacts (due to grazing, mining, water diversion, water impoundment, and fire suppression) are widespread.

Historical Grazing

As described in the Wilderness Management Plan Final Environmental Impact Statement (USFS, 2001, Chapter III), and the Grazing Operations section of Chapter III of this document, historical grazing, including incompletely documented levels of sheep, pack stock, and cattle, likely exceeded the current levels of grazing use by up to 100 times throughout the project area. The historical use was also likely more widespread, and in every accessible location; especially by sheep in the late 1800s as competition forced use into remote locations.

The data exist to support the conclusion that Sierra Nevada ecosystems suffered from abusive grazing practices through the turn of the century (USFS, 1999, SNEP Report). There were likely very high levels of grazing by sheep in all geographic areas and most analysis units throughout the early 1900s, then a shift toward cattle grazing and recreational pack stock in the early to mid-1900s, with elimination of sheep grazing and gradual reductions in cattle grazing to the present time. In the analysis area, cattle grazing continues only on the west side of the Sierra, mostly in the southwestern Ansel Adams Wilderness.

Grazing-related historical impacts were likely major to severe in almost all locations of the project area, but especially in the west portion of the Ansel Adams Wilderness area, the Fish Creek area, and the Mono Creek Drainage (Sierra and Inyo National Forest 2200 Files, various dates; Muir, 1894; van Wagendonk and Parsons 1996; Debenedetti, 1979; and Belsky, 1999). This analysis documents conditions at assessed key area locations and concludes that while range conditions are likely improved relative to conditions in the early 1900s, riparian conditions are still degraded due to a combination of historical degradation and/or current impacts in many of these locations. This is consistent with the conclusion in Sierra Nevada Ecosystems in the Presence of Livestock (USFS, 1999, SNEP Report): "It follows then that grazed ecosystems in

the Sierra Nevada are now either in static, improving, or still declining condition because of those past abusive grazing practices.”

Continued loss of and reductions in vegetation and organic material, especially at locations with chronic cumulative historical adverse impacts, such as chronic reduced vegetation seral status due to historically incised streams, can slow or preclude establishment of late-seral, stabilizer, vegetation and delay ecological recovery. These chronic and synergistic adverse impacts are especially pronounced in meadow systems with historical degradation such as altered vegetation seral status (Kirchner, 1998; Sarr, 1995; Odion et al, 1988; Albert, 1982). This relationship has been recognized for many decades (Chapman in 1933; Cottam and Stewart, 1940; Sumner and Leonard, 1947).

For related discussions of existing conditions and historical uses of particular interest to this consequences analysis see the discussions in the Grazing Operations, Meadows, and Hydrologic Function sections and the site-specific discussions in the Mono Creek/Rock Creek (particularly Graveyard), Fish Creek/Convict/McGee, and Ansel Adams West Geographic Areas, of the Grazing Resources, section of Chapter 3 of this document.

Water Diversion and Impoundment

There have been historical water diversions and or impounds in many locations. In many of these locations local water diversions have had a minor localized effect, such as small ponds and temporary interruption of flows. These locations are not catalogued and have negligible cumulative impacts to the riparian vegetation resource. Historical and current water diversion or impoundment continue to have a substantial cumulative effect on the vegetation resources in the Ansel Adams East and Florence/Bear Geographic Areas, a lesser cumulative effect in the Ansel Adams West Area, and a negligible cumulative effect elsewhere in the project area. Other than the currently unknown area of long-term loss of riparian vegetation inundated by the water impoundment, the effects are concentrated in the stream channels and floodplains below the impoundments.

It is reasonably foreseeable that these effects are likely to continue, although slightly mitigated as water diversion and impoundment permits are renewed with new mitigations. The likely adverse cumulative impacts include continued chronic disturbance of and loss of the vegetation on in-stream bars and banks due to artificial changes in water flows and sediment delivery.

When combined with grazing and trampling-related direct and indirect effects in those same locations, the additive, cumulative effects will likely be reduced late-seral riparian vegetation, decreased vegetative cover, decreased vegetation needed to dissipate energy during high flow events, decreased bank stability, decreased vegetative ability to trap and hold sediment, and reduced water-holding capacity of the associated riparian meadows.

Mining

There are many locations where mineral exploration work has had a minor localized effect such as small rock pits or abandoned roads. These locations are not catalogued and have negligible cumulative impacts. There are a few locations where mining activities have historically affected the riparian vegetation or grazing resource and that impact continues today. In most locations, the actual mining activity occurred in relative dry and rocky sites. Often, there have been historical impacts such as a minor and localized loss of riparian vegetation due to construction of

mining infrastructure such as a cabin and roads or deposition of tailings or waste rock from the mining operation. The largest impacts are due to the associated use of pack stock and grazing in nearby meadows, are localized near the mining claims, and are similar to those described for historical grazing. Those locations include the meadows near the mining claims in McGee Creek, Fish Creek, Minaret Creek, Cabin Creek, Horton Creek, Gable Creek, Pine Creek, and Division Creek.

In riparian areas and meadows near these locations, there is usually a minor to moderate localized decrease in vegetation due to these chronic historical effects. These effects, along with the additive or synergistic effects of continued grazing and trampling of the vegetation, will likely be reduced in the vegetation needed to dissipate energy during high flow events, decreased vegetative ability to trap and hold sediment, and reduced water holding capacity of the riparian meadows.

Recreation Pack Stock

The historical recreation uses, including the use by large multiple day recreational stock group trips, are discussed in the Historical Visitor Use section of Chapter 3. The historical grazing by pack stock likely was in the same locations and merged with the grazing by production livestock. The historical cumulative effects of grazing associated with the larger recreational trips is likely the same as and indistinguishable from the effects of production livestock grazing in these same areas.

Recent pack stock use by private non-commercial groups, also discussed in the Historical Visitor Use section of Chapter 3, has likely been insignificant relative to and indistinguishable from the historical cumulative effects of production livestock grazing.

It is reasonably foreseeable that private stock use will continue to be low relative to commercial stock use and that the direct indirect and cumulative effects will be less for all alternatives except Alternative 5. It is unlikely that private stock use will increase significantly and will likely decline over the long-term as the region becomes increasingly urban and developed.

Fire Suppression

Wildfires were common in the thousands of years prior to extensive Euro-American settlement (Parsons and DeBenedetti 1979, Wood, 1975). Many common plants evolved with wildfires and exhibit specific fire-adapted traits, such as thick bark, fire-stimulated flowering, sprouting, and seed release and/or germination. In addition, fire affected the dynamics of biomass accumulation and nutrient cycling, and generated vegetation mosaics at a variety of spatial scales. Because fire influenced the dynamics of nearly all ecological processes, reduction of the influence of fire in these ecosystems because of fire suppression in the twentieth century (while not completely understood) has likely had widespread chronic cumulative effects, including increases in mature and decadent vegetation in the upland environments.

During the last century, suppression policies and modern equipment has cumulatively resulted in generally eliminating fires of low to moderate severity as a significant ecological process and has contributed to forest conditions of high vegetative fuel loads that result in high-severity fires. Thus, fires that affect significant portions of the landscape, which once varied considerably in severity, have been almost exclusively high-severity, large, stand-replacing fires during the last approximately 70 years.

Today the emphasis is shifting toward allow natural fires to burn and using prescribed fires when possible. It is reasonably foreseeable that this shift toward prescribed and prescribed-natural fire will continue and, over the very long-term will at least partially restore a more natural fire regime.

It is likely that fire suppression has had a direct effect on meadows and woody riparian vegetation types, such as aspen, and has had an indirect and cumulative adverse effect as increased upland vegetation due to fire suppression likely has resulted in reduced water and sediment availability which will continue over the long-term to very long-term. Although not catalogued, these effects are likely more common and more visible on the west-side of the Sierra than the east side due to larger areas of dense vegetation, including fire-adapted montane forest and other upland vegetation types.

Grazing Resources – Alternative - 1

Analysis

The most significant difference between Alternative 1 and the other alternatives is that Alternative 1, representing the “existing situation”, assumes little or no implementation of applicable standards in the Wilderness Plan and SNFPA such as site-specific special riparian feature (critical area) protection, utilization standards, and suitability determinations. There would be continued and repeated grazing use and associated impacts at or near existing levels of approximately 6,315 stock nights across the project area. This use would not be adjusted in response to monitoring of standards, existing condition, and trend. All meadows except those specifically closed by forest orders would be available for grazing, although use would probably continue mostly in those with recent reported use.

Without corrective management such as site containment there would be continued expansion of local moderate to severe direct effects of grazing and trampling, such as removal of vegetation, trampling of vegetation, and breaking of the vegetative sod layers in and near stock grazing areas and at stock holding sites in all geographic units. Indirect local and moderate adverse effects in these locations would include decreased late-seral vegetation, reduced vegetative cover, reduced vegetative litter, reduced root depth and density, and an increase in early and mid-seral vegetation.

Overnight stock holding, repeated trips to the same destinations, and repeated grazing uses would continue to be most common in the Fish Creek/Convict/McGee, Mono Creek/Rock Creek, and Ansel Adams East Geographic Areas. There would continue to be a general use pattern of turning the stock out to graze throughout the night, with drift fences used to hold stock in a general watershed area and little site-specific control of stock. The existing management situation results in multiple occurrences of these use patterns over one season or in consecutive seasons, with repeated adverse impacts often occurring prior to sites recovering from previous impacts.

With Alternative 1, there would be a decrease in acreage in late-seral riparian vegetation, especially in the Fish Creek, Mono Creek, Silver Divide, and Ansel Adams East areas relative to all other alternatives. Late-seral plants are stabilizers and are critical to sustaining meadow ecological processes over time (Winward, 2000). There would be a local major to moderate decrease in late-seral vegetation and decreased vegetative cover, decreased root depth and decreased root density, especially in locations experiencing repeated use and utilization above

approximately 25 percent (Olson-Rutz, et al, 1996; Cole, et al, 2004). There would be locally moderate to major adverse ecological impacts due to the loss of late-seral, stabilizer vegetation, especially in locations where the vegetative species composition has been adversely affected by historical uses and or natural events (see Table 3.30 and Table 3.31).

Without implementation of improved management controls, such as the Grazing Response Index (Reed, 1999), there would likely not be recovery of the vegetative resource to levels needed to sustain such meadow ecological processes such as providing protection during runoff events (USDI, 1998). There would be local moderate adverse impacts such as altered vegetative composition, with decreased plant production, vigor, cover, and structural diversity. This effect would be associated with stock access trails, grazing locations, campsites, and stock holding areas. Based on a review of recent research these adverse effects would be most pronounced in locations with repetitious use over a season or in consecutive seasons (Olson-Rutz, 1996; Moore, 2000; Cole, 2004).

There would be increased adverse impacts with Alternative 1 over the other alternatives and opportunities for vegetative recovery in fewer locations. The degradation of these riparian areas would become more noticeable over the long-term and many areas with current patterns of repeated use would eventually have to be closed to grazing.

It is reasonably foreseeable that there would be minor continued chronic effects and additive cumulative adverse impacts due to grazing and trampling related activities in almost all locations of the project area with implementation of Alternatives 1 through 4. It is reasonably foreseeable that these impacts would continue at local sites even with no commercial pack stock use (Alternative 5) due to private and administrative stock use and hiking use. There would be moderate to major continued chronic effects and synergistic cumulative adverse impacts due to grazing and trampling related activities in the west portion of the Ansel Adams Wilderness area, the Fish Creek area, and the Mono Creek Drainage.

Cumulative Effects

In locations with reduced vegetation seral status, whether due to the widespread and often abusive historic grazing practices, water diversions, or naturally occurring events, the continuing direct effects of commercial pack stock grazing and trampling combined with the risk of high intensity flood events (both rain-on-snow events and high intensity summer thunderstorms) or flow regulation such as below water impoundments, could result in a chronic increased risk of loss of riparian vegetation and in additional degradation of riparian conditions (see Table 3.36). Over the long-term, a cumulative effect of continued localized alteration of vegetative species composition and cover would be decreased resiliency of the ecosystem to disturbance due to events such as summer thunderstorms and spring runoff, with the loss exacerbated in locations where historical impacts include a lowering of the water table height.

The cumulative adverse effects of commercial pack stock grazing and grazing-related trailing and trampling of riparian vegetation combined with other past, present and foreseeable future actions are slightly greater for Alternative 1 than the other alternatives. They could be measurable and visible at the analysis unit scale and would be measurable and visible at the site specific-scale, and especially in the analysis units that have substantial vegetation areas still recovering from past chronic and cumulative adverse impacts due to the impacts of historical uses such as production livestock grazing, water diversion, or mining. These include the Glacier

Divide, Silver Peak, Cora, Sadler, Triple Divide, Lillian, Rush Creek, Upper Fish Creek, McGee, Hilton, Cascade Valley, Pioneer, Graveyard, Hooper, and Silver Divide Analysis Units.

Grazing Resources – Alternative 2-Modified

Analysis

Alternative 2 – Modified would identify an initial grazing capacity of approximately 15,559 stock nights in delineated grazing zones, with the number adjusted annually based on monitoring (see Table 2.30). This is the amount of grazing potentially available and it is unlikely that this level of grazing use would occur in any one year. Alternative 2 – Modified, similarly to Alternatives 2, 3, and 4, would implement grazing utilization standards, suitability determinations, and critical area protection. In Alternative 2 – Modified, critical areas are to be avoided entirely, different from Alternatives 2, 3, and 4, where there is a five percent inadvertent trampling allowance. Annual monitoring and permit administration through the Annual Operating Plan process would allow for adjustments in stock night numbers and management and would identify new key, critical, or unsuitable areas, within currently used grazing zones. Some use would be redirected to currently unused grazing zones or new areas over time.

Alternative 2 – Modified and Alternative 3 include the rest or closure of additional meadows (those with stream systems that are functioning at risk with a downward trend) relative to Alternative 2 (see Table 2.30). This will result in an immediate elimination or reduction of direct effects in six meadows, relative to Alternative 2, and will also accomplish this with a reduced need and expense for monitoring. The beneficial effect is that over the long-term the increased protection of these functional-at-risk areas, critical areas, and areas with special aquatic features, will help ensure maximum vegetative recruitment, growth, and recovery and will help ensure progress toward vegetative and ecological desired conditions at these sites. Implementation of the suitability recommendations and standards would also help prevent new adverse effects from developing in many of the sites that are currently not being used.

The implementation of suitability recommendations, allowable utilization and impact standards, and carefully designated campsite locations with Alternative 2 – Modified would help ensure that over the long-term impacts are evenly distributed and either reduced, mitigated, or the use reduced, as changes are implemented through the Annual Operating Plan (AOP) process in response to monitoring. There would likely be increased late-seral vegetation, increased vegetative cover, increased root density, and increased root depth in most of the identified key and critical areas.

Alternative 2 – Modified controls stock numbers primarily by implementation of grazing standards and also by limits on the numbers of trips to destinations. The number of animals per trip is normally limited to 25 head and group size to 15 persons. This may result in increased packing of feed and in increased overall stock numbers at destinations and on trails within a round-trip day-ride of trailheads as grazing limitations are increasingly implemented and as pack stations continually adapt to that implementation over the long-term. There would be increased active management of pack stock while grazing, with increased use of site-specific controls such as hobbles and temporary “quick corral” type fences. There would be increased stock management to avoid critical areas with a combination of site-specific controls and a trend toward only allowing stock to graze for a limited number of hours in the evening rather than leaving stock free to roam and graze all night. There would be increased packing of pellets and

hay cube type feed. Stock that are held in the wilderness overnight will be tied up in designated camps a larger percentage of the time relative to the existing management situation. There would be less dependence on drift fences to hold stock in a general vicinity as the various site-specific controls are implemented.

There would be a high reliance upon the wranglers to self-monitor and control the stock due to the combination of intermingled critical, unsuitable, and suitable areas within meadow complexes and the lack of site-specific or destination controls. Over the short-term to long-term, this may result in some increased trampling impacts to critical areas, and associated loss of late-seral riparian vegetation, and cumulatively over the long-term to very long-term, the consequence could be the need to identify site-specific controls and or the closure of specific locations to grazing use. The increased active management of pack stock and increased site-specific controls would result in additional work for operators or in additional wranglers being needed per trip. The increased packing of pellets and hay cube type feed and increased use of highlines could result in a loss of vegetative cover in and near designated stock holding areas relative to the existing management situation.

Annual monitoring and adaptation through the Annual Operating Plan process would be required and could frequently result in an identified need to cease using the more popular destination grazing areas in the short-term or closure of areas in the long-term. The effect over the long-term would be to distribute the use more evenly over the locations with designated campsites and to distribute the grazing use more evenly throughout grazing zones and into new areas. Overall, there will likely be increased late-seral vegetative status in most of the identified key and critical areas. Cumulative adverse effects such as decreased vegetative cover and structural diversity may increase in some locations as pack station operators disperse use and or move into new areas in response to closures and restrictions in existing use areas.

The nature and location of the effects associated with the designation of campsites and stock holding areas cannot be described in detail until the location and the spatial arrangement relative to trail crossings, critical areas, and grazing key areas is described.

In the long-term to very long-term the effects of implementing Alternative 2 – Modified may be increased impacts to riparian vegetation and critical areas near the more popular and accessible destinations, with the standards thresholds being reached more often and at more key areas at these locations. At these locations, there may be slightly increased risks of adverse impacts, relative to Alternatives 2, 3, 4, and 5, from events such as summer thunderstorms and spring run-off during the time it takes for monitoring and mitigation to be implemented through the Annual Operating Plan process and for vegetative recovery to occur following these adaptive management changes. Alternative 2 – Modified and Alternative 3 would both require the most frequent and extensive monitoring and allow the most flexibility and adaptation of the alternatives that allow grazing.

The impacts at the wilderness scale or geographic area scale would be negligible. If considering just the riparian areas as a focal point for use and resources the cumulative effects would be regionally minor to moderate and persistent over the long-term in some analysis units. Analysis units where adverse cumulative effects would likely continue to be noticeable over the long-term would be Glacier Divide, Silver Peak, Cascade Valley, Silver Divide, Hilton Lakes, Cora, Lillian, Fourth Recess, Upper Rush Creek, Rush Creek, Thousand Island, Margaret Lakes, Graveyard, Pioneer Basin, and Sadler.

As in Alternatives 1, 2, 3, and 4, the chronic adverse effects of grazing and grazing related trailing and trampling of riparian vegetation could be measurable and visible at the analysis unit scale and would be measurable and visible at the site specific scale, and especially in the analysis units that have substantial vegetation areas still recovering from past chronic and cumulative adverse impacts due to the impacts of historical uses such as production livestock grazing, water diversion, or mining. These include the Glacier Divide, Silver Peak, Cora, Sadler, Triple Divide, Lillian, Rush Creek, Upper Fish Creek, McGee, Hilton, Cascade Valley, Pioneer, Graveyard, Hooper, and Silver Divide Analysis Units.

Cumulative Effects

The cumulative effects of Alternative 2 – Modified with other past, present, and foreseeable actions, especially historic grazing, would be similar to Alternative 1, but would be slightly less intense. The cumulative adverse impacts at the overall wilderness scale or geographic area scale would be negligible. If considering just the riparian areas as a focal point for use and resources, the cumulative effects would be locally moderate and persistent over the long-term in some analysis units, at fewer locations than for Alternative 1 and 2 and more locations than Alternatives 3, 4 and 5.

Grazing Resources – Alternative 2

Analysis

Alternative 2 would identify an initial grazing capacity of approximately 11,386 stock nights of grazing use, with the number adjusted annually based on monitoring (see Table 2.30). With Alternative 2 grazing utilization standards, suitability determinations, and critical area protection would be implemented immediately. Annual monitoring and permit administration would allow for adjustments in stock night numbers and stock management. Monitoring would identify new key, critical, or unsuitable areas to be protected within currently used grazing zones.

In general, the effects of Alternative 2 would be similar to those of Alternative 2 – Modified, since there would be destination management, utilization standards, and most of the same meadows would be grazed. Some meadows that would be rested in Alternative 2 – Modified would be closed in Alternative 2. In critical areas, there would be a five percent allowable impact level, rather than the 20 percent as allowed in Alternative 1 or no impact (Alternatives 2 – Modified). Alternative 2 would decrease the trampling-related effects in critical areas and likely result in increased late-seral vegetation. There would be a high reliance upon the wranglers to self-monitor and control stock due to the combination of intermingled critical, unsuitable, and suitable areas within meadow complexes. Over the short-term to long-term this may result in increased trampling impacts to critical areas, an associated loss of late-seral riparian vegetation, and cumulatively over the long-term to very long-term the consequence could be the need to identify site-specific controls and or the closure of specific locations to grazing use.

The beneficial impact of implementation of Alternative 2 would be more rapid vegetative recovery in more locations than Alternative 1, but in fewer locations than Alternatives 2 – Modified, 3, 4, and 5. Successful protection of critical areas, with Alternatives 2, 2 – Modified, 3, and 4, would decrease the grazing related indirect effects in key and critical areas.

While there would be continued local and minor adverse effects, cumulative impacts at the overall wilderness scale or geographic area scale would be negligible. If considering just the

riparian areas as a focal point for use and resources the cumulative effects would be locally moderate and persistent over the long-term in some analysis units, at fewer locations than for Alternative 1, but more locations than Alternatives 2 – Modified, 3, 4, and 5.

Cumulative Effects

The cumulative effects of Alternative 2 with other past, present, and foreseeable actions, especially historic grazing, would be similar to Alternative 2 – Modified. The cumulative adverse impacts at the overall wilderness scale or geographic area scale would be negligible. If considering just the riparian areas as a focal point for use and resources, the cumulative effects would be locally moderate and persistent over the long-term in some analysis units, at fewer locations than for Alternative 1 and 2, and more locations than Alternatives 3, 4 and 5. Analysis units where adverse cumulative effects of historic grazing effects and continuing commercial pack stock use would likely continue to be noticeable over the long-term would be Glacier Divide, Silver Peak, Cascade Valley, Silver Divide, Hilton Lakes, Cora, Lillian, Fourth Recess, Upper Rush Creek, Rush Creek, Thousand Island, Margaret Lakes, Graveyard, Pioneer Basin, Hooper, and Sadler.

Grazing Resources – Alternative 3

Analysis

Alternative 3 would identify an initial grazing capacity of approximately 15,798 stock nights of grazing use, with the number adjusted annually based on monitoring (see Table 2.30). As with implementation of Alternative 2, and 2 – Modified, under Alternative 3 grazing utilization standards, suitability determinations, and critical area protection would be implemented immediately. Annual monitoring and permit administration will allow for adjustments in stock night numbers and management and will identify new key, critical, or unsuitable areas, within currently used grazing zones. Some use will be redirected to currently unused grazing zones.

Alternative 3 implements fewer controls at destinations within the wilderness. This change may result in increased overall grazing and related stock activities such as increased over-night stockholding, increased packing and feeding of supplemental feed, and multiple-day stock grazing use at the more accessible and popular destinations. For example, some operators could choose to pack feed to popular destinations that are within a day round-trip of the trailhead to allow them to continue using these popular destinations even after meadow use standards are reached. There would likely be more all expense and traveling type trips at destinations within a day-long round-trip of the trailheads, with increased use of the more accessible and/or popular destinations.

Alternatives 2 – Modified, 3, and 4 include the rest or closure of meadows with stream systems that are functioning at risk with a downward trend, while Alternative 4 also results in closure of meadows with severe hydrological function alteration. This will result in an immediate elimination or reduction of direct effects, in six meadows for Alternative 3, and 2 – Modified, and nine meadows for Alternative 4 relative to Alternative 2, and will result in a reduced need and expense for monitoring for these alternatives.

Alternative 3 includes the closure of more areas than Alternatives 1 and 2, fewer areas than Alternative 4. The beneficial impacts of closure of areas with degraded resource conditions would be the result of the immediate elimination or reduction of direct effects and more certain

resource protection and recovery. Identification and protection of critical areas would decrease the trampling related effects in critical areas and likely result in increased residual vegetation each year.

The chronic adverse effects of grazing and grazing related trailing and trampling of riparian vegetation would be similar to Alternative 2 – Modified, with slightly increased ecological risks at the more popular destinations relative to Alternatives 2, and 4, much increased relative to Alternative 5, and reduced relative to Alternative 1.

The implementation of suitability recommendations, Primary Operating Areas, allowable utilization and impact standards, and carefully designated campsite locations would help ensure that over the long-term impacts are evenly distributed and either reduced, mitigated, or the use reduced, as changes are implemented through the Annual Operating Plan (AOP) process in response to monitoring. Therefore, the long-term to very long-term adverse impacts would be those associated with ecological risks and would likely be slightly decreased at the more popular destinations relative to Alternatives 1, 2, 2 – Modified, and increased relative to Alternatives 4 and 5.

The reduced controls at destinations within the wilderness would result in additional impacts over the short-term and especially at the more popular destinations, for Alternative 3 relative to Alternatives 1, 2, 4, and 5. However, the implementation of suitability recommendations, Primary Operating Areas, allowable utilization and impacts standards, and designated campsite locations will help ensure that over the long-term impacts are evenly distributed and either reduced, mitigated, or the use reduced, as changes are implemented through the Annual Operating Plan (AOP) process in response to monitoring. With the implementation of Primary Operating Areas, the long-term, cumulative effects and associated ecological risks would likely be decreased at the more popular destinations relative to Alternatives 1, 2-Modified, 2, and 4.

In the short-term, the effects of implementing Alternative 3 may be increased impacts to riparian vegetation and critical areas near the more popular destinations, with the standards thresholds being reached more often and at more key areas at these locations. There may be slightly increased risks of adverse impacts, relative to Alternative 2, from events such as summer thunderstorms and spring run-off during the time it takes for monitoring and mitigation to be implemented through the AOP process and for vegetative recovery to occur following these adaptive management changes. Alternatives 3 and 2 – Modified would require the most frequent and extensive monitoring and adaptation of the alternatives that allow grazing.

Cumulative Effects

The cumulative effects of Alternative 3 with other past, present, and foreseeable actions, especially historic grazing, at the overall wilderness scale or geographic area scale would be negligible. If considering just the riparian areas as a focal point for use and resources, the cumulative effects would be regionally moderate, and persistent over the long-term in some analysis units, at fewer locations than for Alternative 1, 2, and 2 – Modified and at more locations than Alternative 4 and 5. Analysis units where adverse cumulative effects would likely continue to be noticeable over the long-term would be Glacier Divide, Silver Peak, Cascade Valley, Silver Divide, Hilton Lakes, Cora, Lillian, Fourth Recess, Upper Rush Creek, Rush Creek, Thousand Island, Margaret Lakes, Graveyard, Pioneer Basin, Hooper, and Sadler.

Grazing Resources – Alternative 4

Analysis

Alternative 4 would identify an initial grazing capacity of approximately 10,056 stock nights of grazing use, with the number adjusted annually based on monitoring (see Table 2.30). As with implementation of Alternatives 2, 2 – Modified, and 3, under Alternative 4 grazing utilization standards, suitability determinations, and critical area protection would be implemented immediately. Alternatives 3 and 4 include closure of additional meadows with stream systems that are functioning at risk with a downward trend. In addition, Alternative 4 also limits allowable use to 30 percent in meadows with stream systems that are functioning at risk with no apparent trend and eliminates grazing at Rodgers Lake and Baldwin and Martin's Meadows. This will result in an immediate reduction or elimination of direct effects at these sites and will be accompanied with a decreased need for associated monitoring. Alternative 4 would also implement a slightly lower allowable level of vegetation utilization in key areas functioning at risk, 30 percent rather than 40 percent for Alternative 3. The interdisciplinary team consistently noted that the indirect impacts associated with grazing, such as trampling of stream banks and trampling of critical areas was of concern well before allowable vegetation utilization levels were reached. Therefore, the change from 30 percent to 40 percent allowable utilization is not expected to have an appreciable effect. Therefore, in the discussions specific to geographic areas and analysis units, Alternatives 3 and 4 will be discussed together, with any anticipated differences noted in that discussion.

The chronic adverse effects of grazing and grazing related trailing and trampling of riparian vegetation would be similar to Alternative 2 – Modified but less at fewer locations and slightly less intense.

Over the long-term, the beneficial impact of increased protection of these functional-at-risk areas and critical areas would be increased vegetative growth, recruitment, retention, and recovery and progress toward vegetative and ecological desired conditions at these sites, relative to Alternatives 1, 2, 2 – Modified, and 3. There would be less vegetative retention, recruitment, and establishment than for Alternative 5. Implementation of the suitability recommendations and standards would also help prevent new adverse effects from developing in many of the sites that are currently not being used.

With implementation of Alternative 4, there would continue to be localized grazing and trampling related effects to vegetation within meadows, especially near designated campsites, but at lower levels than for Alternative 3. The effects associated with the designation of campsites and stock holding areas could be negligible if the process to designate campsite location also considers the spatial arrangement of meadows, grazing key areas, critical areas, and trail crossings.

In meadows and trailside riparian areas accessed by livestock, there would continue to be localized sites exhibiting a minor to moderate loss of late-seral vegetation. Over the long-term, there would be an increased ecological risk, mostly associated with trampling at stream crossings, at watering access sites, multiple access trails in grazing areas, at dusting locations near designated campsites, and associated with stock holding areas.

Implementation of Alternative 4 would allow for more certain improvement in vegetative resource conditions such as vegetative recruitment, establishment, and growth, with the least

monitoring workload of any of the alternatives (1, 2, 2 – Modified, and 3) that allow commercial pack stock grazing.

In locations with reduced vegetation seral status, whether due to historic grazing practices or due to naturally occurring events, the continuing direct effects of grazing and trampling combined with the risk of high intensity flood events (both rain-on-snow events and high intensity summer thunderstorms) or flow regulation such as below water impoundments, could result in a chronic cumulative increased risk of loss of riparian vegetation and in additional degradation of riparian conditions (see Table 3.36).

A beneficial effect would be that over the long-term the effects of increased protection of these functional-at-risk areas, critical areas, and areas with special aquatic features would help ensure maximum vegetative growth, recovery, and progress toward vegetative and ecological desired conditions at these sites. Implementation of the suitability recommendations and standards would also help prevent new adverse effects from developing in many of the sites that are currently not being used, as the direct effects of grazing use, such as trailing through meadows and trampling vegetation and sod fragmentation, are eliminated.

With implementation of Alternative 4 there would continue to be localized grazing and trampling related effects to vegetation within meadows where grazing would be permitted, especially near designated campsites, but at lower levels than for other grazing alternatives. In meadows and trailside riparian areas accessed by pack stock, there would continue to be localized sites exhibiting a loss of late-seral vegetation, mostly associated with trampling of vegetation and sod fragmentation at stream crossings, at watering access sites, multiple access trails in grazing areas, at dusting locations near designated campsites, and associated with stock holding areas. These effects would be noticeable at the site-specific scale but would not result in cumulative adverse ecological effects.

Implementation of Alternative 4 would allow for more certain improvement in vegetative resource conditions such as vegetative recruitment, establishment, and growth, with the least monitoring workload of any of the alternatives (1, 2, and 3) that allow commercial pack stock grazing.

There would be slightly reduced effects at campsites in popular destinations, slightly reduced effects due to reduced allowable use levels, and the more substantial reduced effects due to eliminating grazing Rodgers Lake, Baldwin, and Martin's Meadows. Otherwise, the grazing related effects to the riparian vegetative resource of Alternative 4 are not distinguishable from those of Alternative 3.

Cumulative Effects

The cumulative effects of Alternative 4 with other past, present, and foreseeable actions, especially historic grazing, at the wilderness scale or geographic area scale would be negligible. If considering just the riparian areas as a focal point for use and resources the cumulative effects would be regionally moderate and persistent over the long-term in some analysis units, and at fewer locations than for the other alternatives that allow grazing by commercial pack stock. Analysis units where adverse cumulative effects would likely continue to be noticeable over the long-term would be Glacier Divide, Silver Peak, Cascade Valley, Silver Divide, Hilton Lakes, Cora, Lillian, Fourth Recess, Upper Rush Creek, Rush Creek, Thousand Island, Margaret Lakes, Graveyard, Pioneer Basin, Hooper, and Sadler.

Grazing Resources – Alternative 5

Analysis

There would no commercial stock use other than an occasional use as needed for maintenance by the State Department of Water Resource or Department of Fish and Game, or for such uses as Forest contract trail work or for Forest Administrative purposes. There would be some private stock use, especially in the Cora, Fernandez, Sadler, McGee Creek, Hilton Creek, and Fish Creek areas. All these uses added together throughout the project area would likely be between 10 and 20 percent of current levels of commercial pack stock use.

There would be low recovery potential at sites where altered vegetative species composition, from late-seral and toward mid-seral or low-seral species, is associated with moderate or severe altered hydrological function, including loss of a water table. Continued access and use by hikers and private stock users in such sites could have a localized adverse effect on vegetative recovery. This effect would be most pronounced at high elevations, on sites with low or very low productivity, and in areas where altered vegetation is associated with altered hydrology and still active vertical or horizontal instability as manifested by headcuts, incised trails, or collapsing stream banks. These areas' vegetation may not appreciably recover for the very long-term.

A direct effect of no grazing would be minimal stock related trampling of and or loss of riparian vegetation in meadows, along access trails, in intermingled wet areas, at creek crossings, or associated with campsites and stock holding areas. In the short-term, the areas of bare soil in the fragmented sod and on the stream banks at these locations would rapidly be re-vegetated with late-seral species in those sites with adequate availability of moisture in the rooting zone.

A direct effect of no commercial pack stock authorization would be minimal stock related trampling of and or loss of riparian vegetation in meadows, along access trails, in intermingled wet areas, at creek crossings, or associated with campsites and stock holding areas. A beneficial cumulative impact would be that in the short-term the areas of bare soil in the fragmented sod and on the stream banks at these locations would be re-vegetated with late-seral species in those sites with adequate availability of moisture in the rooting zone. All drift fences would eventually be removed.

Implementation of Alternative 5 would allow for more certain improvement in vegetative resource conditions such as vegetative recruitment, establishment, and growth, with the least risk and least monitoring workload of any of the alternatives.

Over the very long-term, many locations currently characterized by observable alteration of vegetative species composition would be characterized by increased late-seral vegetation and increased vegetative production, vigor, structural diversity, increased cover, and decreased ecological risk.

Even without commercial pack stock grazing the chronic adverse effects of grazing and grazing related trailing and trampling of riparian vegetation could be measurable and visible at the analysis unit scale and would be measurable and visible at the site specific scale, and especially in the analysis units that have substantial vegetation areas still recovering from past chronic and cumulative adverse impacts due to the impacts of historical uses such as production livestock grazing, water diversion, or mining. These include the Glacier Divide, Silver Peak, Cora, Sadler, Triple Divide, Lillian, Rush Creek, Upper Fish Creek, McGee, Hilton, Cascade Valley, Pioneer, Graveyard, Hooper, and Silver Divide Analysis Units.

In locations with reduced vegetation seral status, whether due to historic grazing practices or due to naturally occurring events, the elimination of continuing direct effects of grazing and trampling may not result in short-term or long-term improvement due to the additive combined risk associated with high intensity flood events (both rain-on-snow events and high intensity summer thunderstorms) or flow regulation such as below water impoundments and continued grazing and grazing related trampling and trampling of riparian vegetation by private and administrative stock. The result could be a chronic cumulative increased risk of loss of riparian vegetation and in additional degradation of riparian conditions even under Alternative 5 through the long-term (see Table 3.36).

If considering just the riparian areas as a focal point for use and resources the cumulative effects would be regionally moderate, and persistent over the long-term in some analysis units, but at fewer locations than for any of the other alternatives as localized sites would continue to be maintained in low-seral or mid-seral vegetative status by episodic events such as flooding and fluvial deposition. There would also continue to be persistent chronic cumulative effects from over a century of production livestock grazing and from uses such as water diversion and impoundment. Analysis units where historical adverse cumulative effects would likely continue to be noticeable over the long-term to very long-term would be Glacier Divide, Silver Peak, Cascade Valley, Silver Divide, Hilton Lakes, Cora, Lillian, Fourth Recess, Upper Rush Creek, Rush Creek, Thousand Island, Margaret Lakes, Graveyard, Pioneer Basin, Hooper, and Sadler.

Cumulative Effects

Without authorized commercial pack stock, no additive cumulative effects of commercial pack stock grazing would occur in areas degraded by historic grazing use. Alternative 5 would allow the most recovery from historic grazing impacts. However, there would continue to be noticeable, chronic cumulative effects due to historical impacts and continued localized current impacts such as flow events, flow regulations, and private stock grazing. These adverse impacts include local moderate to major reduction in the vegetation needed to dissipate energy during high flow events, decreased vegetative ability to trap and hold sediment, and reduced water holding capacity of the riparian meadows in these analysis units and would continue to be most noticeable in the locations most affected by historical and current activities, the same as under the alternatives that allow commercial pack stock use. Alternative 5 would present the least long-term risk to the riparian resources of any of the alternatives.

Table 4.98 Summary of estimated grazing (stock nights) available by grazing alternative

Geographic Area	Alternative 1, Existing (Highest) Reported Grazing Use 2001-2003	Alternative 2 - Modified	Alternative 2	Alternative 3	Alternative 4
Ansel Adams East	1,862	2,267	2,498	2,397	2,093
Ansel Adams West	258	1,509	535	1,511	1,056
Fish Creek/Convict/McGee	1,789	1,369	1,573	1,476	689

Geographic Area	Alternative 1, Existing (Highest) Reported Grazing Use 2001-2003	Alternative 2 - Modified	Alternative 2	Alternative 3	Alternative 4
Mono Creek/Rock Creek	838	2,025	2,088	2,025	1,541
Bishop/Humphreys	357	963	988	963	963
Florence/Bear	999	5,549	1,827	5,549	1,882
John Muir Southeast	0	45	45	45	0
John Muir Southwest	212	1,832	1,832	1,832	1,832
Project Area Totals by Alternative	6,315	11,386	15,559	15,798	10,056

Fens

Analysis

Properly functioning fens have a saturated anaerobic environment that forms peat at a very slow rate, approximately 20 cm/1000 years (Cooper, pers. comm., PowerPoint presentation 11/03). Hoof action can add oxygen to the soil of fens, increasing the decomposition rate, and grazing itself removes some of the vegetative material that accumulates in fens. Hoof punching in wet soil can shear roots and eventually eliminate the rhizomatous species that are most likely to form fens, causing a vegetation composition shift toward non-peat forming taprooted and annual species (Cooper et al., 2004b). In sloping fens, on steeper slopes in particular, hoof disturbance of surface vegetation can cause peat to erode. Fens are also very sensitive to changes in ground water supply, so observed changes to hydrologic function could indicate a threat to the fen ecosystems. A preliminary limited study of cattle impacts to fens indicates that fens no longer function (accumulate organic matter) at 20 percent trampling (Cooper et al., 2004b), and function is at least somewhat impaired at lower levels of trampling. Although stock apparently prefer not walking through saturated soils (M. Morse, pers. comm.), the wet conditions often produce palatable forage longer than drier areas of a meadow, and impacts have been observed in these saturated areas in many locations.

The spring impacts noted are mostly local, from hoof punching, and would be expected to recover in a relatively short time, unless channeling of the water occurs that could dewater the fen. The rate of recovery from hoof punches appears to depend partly on the dominant plant species of the fen (USFS, 2004). Any changes to hydrologic condition such as those caused by headcuts and incision are more likely to be long-term and moderate to severe, although they may be local in extent.

Cumulative Impacts

Historic cattle and sheep grazing most likely initiated some of the moderately to severely degraded conditions in meadows with fens or fen characteristics. These historic effects are likely to be long-term and may be regional in extent. The current pack stock use is small compared with historic use, but recovery from historic effects may be slowed by pack stock grazing use.

In some areas, Little Lakes Valley particularly, hiking and fishing use are the main source of impacts to the meadows, since the area has not been used for pack stock grazing recently. Any pack stock grazing in areas like these could lead to additive damaging effects.

Private pack stock use would have impacts to fens similar to commercial pack stock use and the severity, extent, and cumulative effect of these impacts with commercial pack stock use would depend on use levels and location of use. Private pack stock use is not well documented, so the extent and location of effects is not well understood.

A Conservation Assessment for fens, outlining recommended management steps, will be started in 2005 and should provide guidelines for acceptable use and impacts when completed.

Fens – Alternative 1

If grazing continues at current levels and locations, approximately 65 percent of the known meadows with fens or fen characteristics are predicted to continue in good condition. Most of these meadows are only lightly used at present although they have a higher capacity (forage availability). There are also existing range readiness standards that help protect fens, since fens are never range ready because the soil is saturated all season. However, because most meadows would be open to grazing, any fens would be vulnerable to trampling in this alternative and more fens would remain in degraded conditions in this alternative than any other would. There would be a 20 percent trampling standard, so if the fens are monitored, no fen should become non-functional (Cooper, 2004). Existing degraded conditions at 16 meadows and along one trail would not recover. There is a widespread risk of local minor trampling effects and a low risk of local long-term changes to hydrologic condition in this alternative, higher risks than in the other alternatives.

Table 4.99 Predicted fen conditions by geographic unit (Alternative 1)

Geographic Unit	Total number of fens identified	Good conditions would continue*	Degraded conditions would improve	Degraded conditions would continue
AA East	14 + 1 (trail)	8	0	6 + 1 (trail)
AA West	6	2	1	3
FICM	14	9	2	3
MORO	18	11	0	7
BIHU	12	11	0	1
FLBE	2	2	0	0
JMSW	2	1	0	1
JMSE	0	0	0	0

Geographic Unit	Total number of fens identified	Good conditions would continue*	Degraded conditions would improve	Degraded conditions would continue
TOTALS	68 + 1 (trail)	44	3	21 + 1 (trail)

*If current grazing use remains constant, good conditions would continue, however, as grazing numbers approach capacity, conditions could degrade.

As a foreseeable action, approximately 24 meadows with fens or fen characteristics would be closed when suitability determinations are implemented as directed in the Wilderness Plan. In many of these meadows, the fact that large areas never reach range readiness was the cause of the unsuitable determination.

Cumulative Effects

The historic grazing damage, which is mostly the cause of degraded conditions, would have least chance of recovery in this alternative.

There would be no grazing restrictions in Little Lakes Valley or other high day use areas, so although no grazing use has occurred recently, there would be more of a risk of additive impacts to fens than the in the other alternatives.

Private pack stock use would most likely remain at current levels and not significantly increase risk to fens.

Fens – Alternative 2 – Modified

In this alternative, fens would be “critical areas”, as well as never range ready, and protected by direction to avoid grazing in critical areas entirely, reducing the risk of degrading fens to a minimum. The effectiveness of these standards depends on the Forest Service having enough funds and personnel to complete monitoring or the packers doing effective self-monitoring. Given the projected funding levels at or below current funding, it is unlikely that the Forest Service will be able to monitor at most locations, so most of the monitoring would fall on the packers, who would have to be trained in recognizing fens. If wranglers understand range readiness and keep stock out of areas that are not range ready, fens will be protected since they are wetlands that are never range ready. The packers would also have to keep more accurate records of stock numbers and location of use, and be timelier with reports than they have been in many cases for the monitoring to be successful.

This alternative also includes destination management that allows better control of use in areas with special resource features and concerns. The destination management framework should alert permit administrators to the presence of fens and indicate which meadows are of most concern. Given that most of the fens are currently in good condition and that destinations would be managed taking known fens into account, the condition of most fens would be maintained or improved.

In this alternative four of the meadows with fens at risk will be closed or rested, which should improve their condition a long-term beneficial effect, however, some meadows that are not currently grazed may receive use if grazing patterns shift because of restrictions, particularly near the Fish Creek/Silver Divide area.

Table 4.100: Predicted fen conditions by geographic unit (Alternative 2 - Modified)

Geographic Unit	Total number of fens identified	Good conditions would continue*	Degraded conditions would improve	Degraded conditions would continue
AA East	14 + 1 (trail)	8	1 + 1 (trail)	5
AA West	6	2	3	1
FICM	14	10	1	3
MORO	18	13	2	3
BIHU	12	11	1	0
FLOB	2	2	0	0
JMSW	2	1	0	1
JMSE	0	0	0	0
TOTALS	68 + 1 (trail)	47	8 + 1 (trail)	13

*If current grazing use remains constant, good conditions would continue, however, as grazing numbers approach capacity, conditions could degrade.

The reduction in use and the limited stays in Cascade Valley should improve the condition of the meadows with fens or fen characteristics in that area.

Fens – Alternative 2

In Alternative 2, no grazing would be planned in the “critical areas”, but they would have a 5 percent inadvertent trampling limit. Otherwise, management would be very similar to Alternative 2 – Modified; only four meadows would have different management (Stevenson, Ram, Purple, and Middle Graveyard). Only in Middle Graveyard would be a continuation of degraded conditions rather than a slight improvement, would the predicted meadow conditions be different than Alternative 2 – Modified.

Table 4.101: Predicted fen conditions by geographic unit (Alternative 2)

Geographic Unit	Total number of fens identified	Good conditions would continue*	Degraded conditions would improve	Degraded conditions would continue
AAEast	14 + 1 (trail)	8	1 + 1 (trail)	5
AAWest	6	2	3	1
FCM	14	10	1	3
MORO	18	13	1	4
BIH	12	11	1	0
FLO	2	2	0	0
JMSW	2	1	0	1
JMSE	0	0	0	0
TOTALS	68 + 1 (trail)	47	7 + 1 (trail)	14

*If current grazing use remains constant, good conditions would continue, however, as grazing numbers approach capacity, conditions could degrade.

Fens – Alternative 3

The effects to fens would be the same as Alternative 2 – Modified (Table 4.101), but the management is slightly different. Several meadows that would be rested in Alternative 2 – Modified would be called unsuitable and closed under Alternative 3. Because there is no specific destination management, there would be less control of use in sensitive areas, although the same five percent trampling standard for critical areas would apply as in Alternative 2.

Fens – Alternative 4

Under this alternative, fewer fens would be at risk of degrading and more degraded fens would begin recovery than in Alternatives 1, 2 – Modified, 2, and 3, because any meadow with existing moderate to severe hydrologic function problems would be closed, including some that would not be expected to recover in the time frame of the pack station permits, even without commercial pack stock use. There would also be a lower utilization rate for any open meadow with hydrologic function or stream problems, reducing the impact.

The lack of destination management gives less control of use in sensitive areas than Alternative 2 – Modified and Alternative 2. The strategy for protecting fens with a five percent trampling standard would be the same as Alternative 2. There would be less protection than in Alternative 5, since most of the risk to fens is from commercial pack stock. There would be a long-term local improvement in fen conditions.

Table 4.102: Predicted fen conditions by geographic unit (Alternative 4)

Geographic Unit	Total number of fens identified	Good conditions would continue*	Degraded conditions would improve	Degraded conditions would continue
AA East	14 +1 (trail)	8	1 +1(trail)	5
AA West	6	2	3	1
FICM	14	10	1	3
MORO	18	13	3	2
BIHU	12	11	1	0
FLOB	2	2	0	0
JMSW	2	1	0	1
JMSE	0	0	0	0
TOTALS	68 +1 (trail)	47	9 +1 (trail)	12

*If current grazing use remains constant, good conditions would continue, however, as grazing numbers approach capacity, conditions could degrade.

Fens – Alternative 5

Since most of the risk to fens is from commercial pack stock grazing activities, Alternative 5 would provide the best protection for fens. The direct impacts to fens from trampling and grazing

by commercial pack stock would be completely removed in this alternative. The condition of fens that have existing trampling impacts would remain constant or improve as the current impacts heal. In meadows where there are currently changes to hydrologic function, it is expected that the condition will improve more quickly without the presence of pack stock, although some would not be expected to recover in the time span of a pack stock permit. There will be no other fens in the AA/JM Wilderness placed at risk due to any shift in pack stock use; however, if use shifts to non-wilderness areas, there could be more impacts there. Several fens are known from meadows outside the wilderness boundary on the Sierra NF. There will still be minimal compaction and trampling impacts from hikers, anglers, and private pack stock. Private pack stock use could increase if commercial service is not allowed, and in that case, there could be riders with less stock knowledge and experience handling the grazing.

Table 4.103 Predicted fen conditions by geographic unit (Alternative 5)

Geographic Unit	Total number of fens identified	Good conditions would continue	Degraded conditions would improve	Degraded conditions would continue
AA East	14 +1 (trail)	8	5 +1 (trail)	1
AA West	6	2	3	1
FICM	14	10	2	3
MORO	18	13	5	0
BIHU	12	11	1	0
FLOR	2	2	0	0
JMSW	2	1	0	1
JMSE	0	0	0	0
TOTALS	68 +1 (trail)	47	16 +1 (trail)	5

Rare Plants and Weeds

Methodology

Context: The context of the impact considers whether the impact would be local or regional. For the purposes of this analysis, local impacts would refer to impacts on one plant population or potential habitat area within the wilderness. Regional impacts would be impacts to rare plant species over their known range. The ranges of the rare plants differ greatly in extent, from only occurring in one wilderness to circumboreal with a southern limit in these wilderness areas. For fens and weeds, regional includes the wilderness and areas within a few miles of the borders of the wilderness areas.

Intensity: The intensity of the impact considers whether the impact would be negligible, minor, moderate, or major. Negligible impacts are effects considered detectable but having no principal effect on biological resources. Minor impacts are effects that are detectable but not expected to have an overall effect on natural community structure. Moderate impacts would be clearly detectable and could have an appreciable effect on individual plants, habitat or potential habitat, including community ecology or natural processes. Major impacts would have a substantial, highly noticeable influence on natural resources. This would include impacts that have a

substantial effect on individual plants, habitat, or potential habitat, including community ecology or natural processes.

The intensity of the impact also considers whether the level of risk of a damaging impact would be very low, slight, moderate, or high. Examples would be the risk of pack stock trampling a rare plant near a trail or the risk of non-native species invading farther into the wilderness.

Duration: The duration of the impact considers whether the impacts would occur in the short-term or the long-term. A short-term impact would be temporary, not persisting from year to year, such as grazing within appropriate utilization and trampling standards. Long-term impact would have a permanent effect on the environment, such as altering ecological processes of meadows, streams or riparian areas.

Type of Impact: The type of impact considers whether the impact would be beneficial or adverse to biological resources. Effects to biological resources are considered beneficial if an action results in an increase in rare species or habitat components, improved native ecosystem processes, native species richness/diversity, habitat quantity or quality.

Rare Plants

Analysis Common to All Alternatives

There is essentially no species-specific research describing effects of pack stock or trail use on the species of rare plants known to occur or with potential habitat within the AA/JM Wildernesses. Effects of commercial pack stock use on plants in general include direct effects such as trampling (crushing plants, soil compaction, shearing, or dislodging soil particles) and removal of plant tissue by grazing (McClaran and Cole 1993). Chances of inadvertently damaging known, or as yet undiscovered, rare plant populations and their habitat increases as the level of ground disturbing activities increases (SNFPA, 2001). Removal of vegetation by grazing would be considered a short-term, minor, local effect in most cases if use levels were within FS utilization standards. The duration and severity of trampling effects are dependent upon site conditions, including soil moisture, soil type, and vegetation type.

Riparian habitats are generally more vulnerable to trampling impacts than rock outcrop or upland habitats. Soil shearing (hoof punching) can sever roots and is more likely when soil is wet. More generally, trampling and chiseling can change the hydrologic function of a meadow or the condition of a stream by causing soil compaction, sod fragmentation, increased bare ground, and changes in vegetation composition (Hagberg, 1995). Hydrologic function of a meadow supports the habitat of the rare plants, and changes to hydrologic function are a threat to the availability of water to plants. Water levels appear to be the main factor determining vegetation types in a meadow (Allen-Diaz, 1991). Hydrologic function changes are usually long-term, but mostly local in extent; except in areas with hydroelectric facilities, where effects are more widespread.

Trails through meadows and other riparian areas also have more effects than in rocky habitats, and a few populations of the known riparian rare plants are near trails or in meadows with moderate to severe trail effects. In meadows, trail incision or headcuts originating from trails can lead to changes in hydrologic function and alteration of the habitat for rare plants.

Although riparian habitats are most vulnerable to damage from pack stock and trails, most of the known rare plant populations (59) are in rocky or upland habitats and trails are the main source of impacts to these populations. Species that grow in rock outcrops are at a very low risk of

impacts from pack stock or trail activities because they grow in rock crevices or sandy spots between boulders, areas where there is little use and difficult access. Most of the activities in this habitat are limited to the trail tread. Plant populations bisected by or near trails may be affected by hiker and pack stock use in the trail tread, trail construction activities, trail erosion problems (soil removal or deposition), and hikers and pack stock leaving the trail to allow passage of a pack string, other hikers, or to avoid an obstacle. The impacts caused by leaving the trail tread would increase with the number of encounters more than with the number in a pack string or hiking party. If the condition of a trail is degraded, it may affect rare plant habitat by increasing soil erosion or changing water availability. Only one (Timber Creek Trail in AA West) of the trails with rare plants had a rating of moderate concern; the other seven trails near rare plant populations that were rated had lower ratings (less concern).

The trail class designations affect maintenance levels and to a limited extent, the use levels of trails. Primary use system trails (TC4, TC3, and high-use TC2) are likely to receive basic maintenance on a regular but limited basis and heavy maintenance or reconstruction at a 20/30 year interval. Trails with higher development and maintenance are more likely to remain stable with stock use. Secondary use system trails (low-use TC2 or TC1) are likely to receive little or no maintenance. Maintenance activities include moving rocks and soil and could affect rare plant populations, however any major rebuilding efforts would be done only after additional NEPA analysis. On trails that receive little maintenance, there is more likelihood of pack stock and hikers detouring around obstacles that may remain for long periods of time. Use trails are not maintained by the Forest Service, but packers may do some maintenance that could disturb habitat.

No rare plant populations are known at any of the campsites normally used by the pack stations, but use by clients is not limited and there is a small risk of trampling by clients to rare plant populations and habitat. This would be the same risk as from any hiker.

Thirty sensitive and watch list plant populations are in remote locations unaffected by pack stock use or trail use or activities and effects will not change among alternatives.

Past, Present, and Foreseeable Actions

The viability of rare plant species depends on not just the numbers of individual plants, but on the numbers of populations of the species. For most of the species considered in this analysis, there are more populations outside than inside the AA/JM Wildernesses, and they are subject to many other types of impacts than commercial pack stock and trail management. See Table 1 in the BE for recorded threats to the sensitive species. Impacts from other recreational activities in the wilderness may have additive effects with commercial pack stock or trail maintenance activities on individual populations of rare plants. Activities outside the wilderness, such as motorized recreation, large-scale mining, or construction activities, often have wider impacts and are more likely to affect a species as a whole. Populations in the wilderness enjoy more protection from human activities in general compared to those outside.

Recreational activities of various types other than commercial pack stock are listed as threats to populations of 32 of the sensitive plant species (CNDDDB, USFS files). In order of frequency of expressed concern are: hikers, OHV use, camping, mountain bikes, rock-climbing, and a ski area. The main impact of the non-motorized/wheeled activities is trampling or crushing, with effects as described for pack stock. In addition to crushing, soil disturbance is likely with OHV

use, mountain biking, and the ski area, and its duration, extent and severity would depend on the intensity of use. Ground disturbing activities at the ski area (on FS land) would be subject to the NEPA process. Impacts from rock climbing include removal of vegetation from rock faces to improve holds in addition to trampling during access to climbing sites. Private pack stock also affects these species in the AA/JM and other areas, and would have similar effects to commercial pack stock. For all these activities, impacts increase with number of users.

Roads, livestock grazing (cattle and sheep), timber management activities, hydroelectric facilities (dams and transmission lines), mining, or housing development have impacts on at least 27 of the rare species under consideration. Cattle grazing is still occurring in some areas on the west side and was only recently removed from others. Many severe and lasting impacts to stream conditions and meadows hydrologic function are a result of this use, and the impacts are great compared to that of commercial pack stock. Mining operations occurred in many locations (Convict, Hilton, McGee, Shadow-Ediza, Silver Divide, etc.), developing some of the roads and trails and affecting some of the riparian areas. These mining operations usually have only a local effect but it is long-term and the actual level of impact depends on the individual operation. Large reservoirs were constructed, inundating habitat and populations of Mono Hot Springs primrose (collection from Vermillion Valley) and possibly other species. The construction of these reservoir systems also altered the hydrology of some meadows with potential habitat for riparian sensitive species. Weed populations developed on access routes and other disturbed areas around these reservoirs (Florence, Edison, Rush Creek) that provide a seed source for expansion of the weed populations into the wilderness, reducing habitat quality for rare species. The effects from these reservoirs are long-term, of moderate extent, and locally severe. The effects of commercial pack stock are very small in comparison to those of dam construction and the removal of stock from meadows affected by dams would probably have very little effect on meadow condition.

Although very hot wildfires are listed as a threat to one species, fires may also have a beneficial effect for plants that need open habitat. For example, the Rainbow fire has apparently had a beneficial effect on the short-leaved hulsea and there is a current habitat improvement project for Father Crowley's lupine that uses controlled burning.

Over-collecting or illegal collecting are threats to species that are used in horticulture, like bitterroot and bleeding heart. Feral horses were also listed as a threat to one species.

The Pack station Permit Renewal process is currently underway and will be completed after this decision is reached. Wilderness use will be as directed in the decision for the current process.

Rare Plants – Alternative 1

Use on the 61 trails near or bisecting sensitive plant occurrences would be similar to the current use. In this Alternative, nine of those trails would be TC4 (four for hiker only), thirty-three would be TC3, eight would be TC2, six would be TC1, four use trails would be approved for stock (one for hunting only).

The trail classes in this alternative would be the highest of any alternative and trail maintenance impacts would be more likely, however any impacts would be local, minor, and short-term. In this alternative, trail classes are not well matched to actual trail use and recreation category, so there is a higher risk of damage to trails and their surroundings because they are being used in ways other than was originally designed.

Eleven sensitive and watch list riparian plant populations are in meadows that would be open to commercial pack stock grazing, so there would be a risk of trampling to individual plants, but the effects would not be significant. There are two additional populations of sensitive upland species near meadows that are grazed that would be at a very low risk of trampling impacts. Of these, only one, Jackass, has degraded conditions and those conditions would be expected to continue, putting the population of Yosemite mousetail at risk. Because the major cause of hydrologic change and the stream impacts in this meadow is the Florence Dam, removal of pack stock use would not improve the meadow conditions. All but 2 of the 529 meadows with potential habitat for riparian sensitive species would be open for grazing and, of the 23 of these meadows found to have degraded conditions, 16 would remain in degraded condition, putting the potential habitat at risk. Most of the degraded conditions that would remain are due to historic cattle use or reservoir construction and are long-term, moderate to severe, and regional effects.

Table 4.104: Summary of effects to rare plant populations and potential habitat for riparian sensitive plants (Alternative 1). The predictions for the approximate number of meadows remaining or becoming degraded is based on grazing use continuing at current levels.

Geographic Unit	Total # known populations	No known trail or pack stock threats	On or near open trails		In meadows open to grazing	Meadows with potential habitat for rare plants	Potential habitat open for grazing	Potential habitat remaining/ becoming degraded
			All use	Hiker only				
AAEast	11	4	4	0	3	52	52	2
AAWest	24	3	18	0	3	209	209	4
FCM	7	5	2	0	0	20	18	1
MORO	9	0	5	1	3	17	17	3
BIH	9	3	3	3	0	2	2	1
FLO	10	3 (1 pipeline)	4	0	2 (+1 near meadow)	51	51	4
JMSW	3	2	0	0	1	178	178	1 (due to private pack-stock)
JMSE	31	10	17	4	0	0	0	0
TOTALS	104	30	53	8	13	529	527	16

There would be no expected displacement of pack stock activity outside the wilderness, so those populations of sensitive plants outside these two wilderness areas would not be affected in this Alternative.

Table 4.105: Summary of trail classes for trails with populations of sensitive or watch list plants on or near them (Alternative 1). This includes occurrences on trails accessing, but not in the AA/JM.

Geographic Unit	Total # populations/habitat along trails	TC4	TC3	TC2	TC1	Use
AA East	4	0	2	0	1 (outside operating areas)	1
AA West	18	0	14	2	2	0
FCM	2	0	2	0	0	0
MORO	6 (one with 2 trails)	2	3	1	0	1 (hiker only)
BIH	6	0	3 (1 NSCS)	0	0	3 (2 hiker only)
FLB	4 (one with 2 trails)	0	3	0	2	0
JMSW	0	0	0	0	0	0
JMSE	21	7 (4 hiker only)	6	5	1	2
TOTALS	61 (2 with 2 trails)	9 (4 hiker only)	33	8	6	7 (3 hiker only)

Cumulative Effects

At current use levels, the cumulative effects of the past, present, and foreseeable activities, listed above, plus pack stock and trail management in Alternative 1 are not expected to cause a trend toward listing for any of the rare plant species. However, Alternative 1 has the highest likelihood of additive effects, especially on riparian resources.

Rare Plants – Alternative 2 - Modified

The destination management in this alternative allows more control of commercial pack stock use in rare plant habitat than Alternatives 1, 3, and 4. Because grazing would be restricted to grazing zones and suitable meadows, the number of meadows with potential habitat for rare plants that would be open for grazing is much smaller than in Alternative 1 (116 compared to 527). However, because the grazing zones were based on areas of current use, actual use would be expected to be at current levels unless a specific meadow closure causes displacement of grazing use. The closures and one-night stay limit in Fish Creek/Silver Divide would be most likely to cause displacement of grazing or increases in packing of feed, but the reduced risk of trampling to the riparian habitat more than balances the very slight increase in risk to rare plants along trails. There would be direction for no grazing in the fen habitat for the two *Meesia* species and round-leaved sundew (see fen discussion above). In this alternative, the trail plan aligns trail class/maintenance levels more closely with actual use and design, so there should be fewer trail impacts to rare plant populations and habitat.

Table 4.106 summarizes effects to rare plant populations. Differences from Alternative 1 include: two more populations (32 total) of rare plants would have no pack stock or trail impacts because there would be no access for commercial stock; two of the trails near rare plants that are open to pack stock use in Alternative 1 would be for hikers only in Alternative 2 – Modified; one less meadow with a rare plant population would be open for grazing; two meadows expected to continue in degraded condition under Alternative 1 would improve under Alternative 2 – Modified, but two others could receive more use. Of the 13 meadows within the elevation range of the west side riparian sensitive species with degraded conditions, 7 could receive more use, 4 would have less than current reported use, and the use would be unchanged at 2 meadows. Three of those with more planned use, Chetwood, Detachment, and Knoblock, were surveyed in 2004 and no sensitive plants were found.

Table 4.106 Summary of effects to rare plant populations and potential habitat for riparian sensitive plants (Alternative 2 - Modified). The predictions for the number of meadows remaining or becoming degraded is based on grazing use continuing at current levels.

Geographic Unit	Total # known populations	No threats from pack stock or trails	On or near open trails		In meadows open to grazing	Meadows with potential habitat for rare plants	Potential habitat open for grazing	Potential habitat remaining/ becoming degraded
			All	Hk				
AAEast	11	5	4	0	2	52	24	4
AAWest	22	3	18	0	3	209	63	4
FCM	6	5	1	0	0	20	5	1
MORO	8	1	4	1	2	17	11	2
BIH	9	3	4	2	0	2	2	0
FLO	10	3 (1 pipeline only)	4	0	2 (+1 near meadow)	51	7	4
JMSW	3	2	0	0	1	178	4	1 (due to private pack-stock)
JMSE	31	10	14	7	0	0	0	0
	104	32	51	10	11	529	116	16

Table 4.107: Trail classes of trails with populations of rare plants in Alternative 2 – Modified.

Geographic Unit	Total # populations/ habitat along trails	TC4	TC3	TC2	TC1	Use
AAEast	4	0	1	1 (no pack stock)	1	1 (hunting only)
AAWest	18 (one with 2 trails)	0	9	7	2	0
FCM	2	0	2	0	0	0
MORO	6 (one with 2 trails)	0	3	2	0	1 (hiker only)

Geographic Unit	Total # populations/habitat along trails	TC4	TC3	TC2	TC1	Use
BIH	6	0	2	3 (2 NSCS)	0	1 (hiker only)
FLB	4 (one with 2 trails)	0	3	2	0	0
JMSW	0	0	0	0	0	0
JMSE	21	4 (hiker only)	3	10 (2 NSCS)	1 NSCS	3
TOTALS	61 (3 with 2 trails)	4 (hiker only)	23	25 (5 no pack stock)	4 (1 NSCS)	6 (1 hunting only, 2 hiker only)

There would be no expected displacement of pack stock activity outside the wilderness, so those populations of sensitive plants outside these two wilderness areas would not be affected in this Alternative.

Cumulative Effects

At current use levels, the cumulative effects of the past, present, and foreseeable activities, listed above, and pack stock and trail management in Alternative 2 – Modified are not expected to cause a trend toward listing for any of the rare plant species. Because Alternative 2 – Modified has destination management, rested meadows with resource damage, and better trail/use alignment, it would have fewer additive impacts than Alternatives 1, 2, and 3.

Alternative 2

The effects of Alternative 2 would be the same as Alternative 2 – Modified, except that although no grazing would be planned in critical areas, there would also be a 5 percent inadvertent trampling limit set to allow for inadvertent entry.

Cumulative Effects

At current use levels, the cumulative effects of the past, present, and foreseeable activities, listed above, and pack stock and trail management in Alternative 2 are not expected to cause a trend toward listing for any of the rare plant species. Because Alternative 2 has destination management and better trail/use alignment, it would have fewer additive impacts than Alternatives 1, about the same as Alternative 3.

Alternative 3

The trailhead quota system of this alternative provides less control over site-specific commercial pack stock use that may affect rare plant populations and habitat. Grazing management would be similar to Alternative 2 – Modified, but three more meadows with degraded conditions would be closed to grazing. The trampling standard for fen habitat would be 5 percent, as in Alternative 2.

Under this alternative, the trail classes, and associated use and maintenance, would be lower than Alternatives 1, but higher than Alternatives 2 - Modified, 4 and 5.

There would be no expected displacement of pack stock activity outside the wilderness, so the populations of sensitive plants outside these two wilderness areas would not be affected in this Alternative.

Table 4.108 Summary of effects to rare plant populations and potential habitat for riparian sensitive plants (Alternative 3). The predictions for the number of meadows remaining or becoming degraded is based on grazing use continuing at current levels.

Geo Unit	Total # known populations	No known pack stock or trail threats	On or near open trails		In meadows open to grazing	Meadows with potential habitat for rare plants	Potential habitat open for grazing	Potential habitat remaining/becoming degraded
			All	Hk				
AA East	11	5	4	0	2	52	24	4
AA West	22	3	16	0	3	209	63	4
FCM	7	5	2	0	0	20	5	1
MORO	9	1	5	1	2	17	11	2
BIH	9	3	4	2	0	2	2	0
FLO	10	3 (1 pipeline only)	4	0	2 (+1 near meadow)	51	7	4
JMSW	3	2	0	0	1	178	4	1 (due to private pack-stock)
JMSE	31	10	14	7	0	0	0	0
	104	32	51	11	11	529	116	16

Table 4.109: Trail classes of trails with populations of rare plants in Alternative 3.

Geographic Unit	Total # populations/habitat along trails	TC4	TC3	TC2	TC1	Use
AA East	4	0	1	1	1	1
AA West	18 (one with 2 trails)	0	14	3	1	0
FCM	2	0	2	0	0	0
MORO	5 (one with 2 trails)	0	5	0	0	1 (hiker only)
BIH	6	0	2	3 (2 NSCS)	0	1 (hiker only)
FLB	4 (one with 2 trails)	0	3	2	0	0
JMSW	0	0	0	0	0	0

Geographic Unit	Total # populations/habitat along trails	TC4	TC3	TC2	TC1	Use
JMSE	21	4 (hiker only)	3	10 (2 NSCS)	1 NSCS	3
TOTALS	61 (3 with 2 trails)	4 (hiker only)	24	23 (5 no pack stock)	4 (1 NSCS)	6 (1 hunting only, 2 hiker only)

Cumulative Effects

At current use levels, the cumulative effects of the past, present, and foreseeable activities, listed above, and pack stock and trail management in Alternative 3 are not expected to cause a trend toward listing for any of the rare plant species. Because Alternative 3 has more closed meadows and better trail/use alignment, it would have fewer additive impacts than Alternatives 1, about the same as Alternative 2.

Alternative 4 – Rare Plants

This alternative has the lowest use levels and trail classes of any of the action alternatives, which reduces the risk of impacts to rare plants. There is a trailhead quota system with lower quotas in areas with resource concerns, but fewer site-specific management options than Alternative 2 – Modified. Grazing and fen management would be similar to Alternative 2 – Modified, but with a few more meadows closed.

Compared to Alternatives 1, 2, and 3, more plants are remote from pack stock and trail impacts, fewer meadows with rare plant populations would be open for grazing, and meadows with degraded conditions would have the best chance of recovery.

There could be some displacement of pack stock activity outside the wilderness because of grazing and other restrictions in this alternative, so those populations of sensitive plants outside these two wilderness areas, roughly 80 percent of the known populations in California and Nevada, could be at somewhat higher risk of negative impacts. This risk would be lower than in Alternative 5. Most of the nearby populations where increased use might be expected are either on National Forest or National Park land and would be regulated to protect sensitive plants.

Table 4.110 Summary of effects to rare plant populations and potential habitat for riparian sensitive plants (Alternative 4). The predictions for the number of meadows remaining or becoming degraded are based on grazing use continuing at current levels.

Geographic Unit	Total # known populations	No threats from pack stock or trails	On or near open trails		In meadows open to grazing	Meadows with potential habitat for rare plants	Potential habitat open for grazing	Potential habitat remaining/becoming degraded
			All	Hk				
AA East	11	6	3	0	2	52	24	2
AA West	24	4	17	0	3	209	63	4

Geographic Unit	Total # known populations	No threats from pack stock or trails	On or near open trails		In meadows open to grazing	Meadows with potential habitat for rare plants	Potential habitat open for grazing	Potential habitat remaining/ becoming degraded
			All	Hk				
FCM	7	5	2	0	0	20	5	1
MORO	9	3	3	2	1	20	11	2
BIH	9	3	4	2	0	2	2	0
FLO	10	3 (1 pipeline only)	4	0	2 (+1 near meadow)	51	7	3
JMSW	3	2	0	0	1	178	4	1 (due to private pack-stock)
JMSE	31	10	9	12	0	0	0	0
	102	36	41	15	10	529	116	13

Table 4.111: Trail classes of trails with populations of rare plants in Alternative 4

Geographic Unit	Total # populations/habitat along trails	TC4	TC3	TC2	TC1	Use
AAEast	4	0	1	1	1	1 prohibited
AAWest	17 (one with 2 trails)	0	7	9	1	0
FCM	2	0	2	0	0	0
MORO	5 (one with 2 trails)	0	1	4 (3 NSCS)	0	1 (hiker only)
BIH	6	0	2	2 (1 NSCS)	1 NSCS	1 (hiker only)
FLB	4 (one with 2 trails)	0	3	2	0	0
JMSW	0	0	0	0	0	0
JMSE	21	4 (hiker only)	3	10 (2 NSCS)	1 NSCS	3
TOTALS	60 (3 with 2 trails)	4 (hiker only)	23	24 (5 no pack stock)	4 (1 NSCS)	6 (1 hunting only, 2 hiker only)

Cumulative Effects

At current use levels, the cumulative effects of the past, present, and foreseeable activities, listed above, and pack stock and trail management in Alternative 4 are not expected to cause a trend toward listing for any of the rare plant species. Because Alternative 4 has more closed meadows

and better trail/use alignment, it would have fewer additive impacts than Alternatives 1, 2-Modified, 2, and 3.

Alternative 5 – Rare Plants

There would be no commercial pack stock use in the wilderness, so the existing populations of sensitive, proposed sensitive, and watch list plants will have no direct impacts from pack stock. The hydrologic conditions in meadows (habitats for sensitive riparian species) will likely improve without the trampling and compaction effects of the stock. These effects would be beneficial in the long-term and wilderness-wide. The level of improvement would depend on the condition of the individual meadow.

If commercial pack stock use were allowed outside the wilderness, one watch list riparian plant population would be in a meadow (Jackass) with possible pack stock use. This meadow has degraded conditions and those conditions would be expected to continue, putting the population of Yosemite mouse-tail at risk. Because the major cause of hydrologic change and the stream impacts is the Florence Dam, removal of pack stock use would not improve the meadow conditions.

Although there would be no commercial pack stock grazing, degraded conditions would continue at 12 of the meadows with potential habitat for riparian sensitive species because recovery would be very, very slow from historic cattle and dam construction effects. Private pack stock use could increase under this alternative, so there would still be a very small risk of pack stock impacts to the populations or potential habitat for rare plants.

Table 4.112: Summary of effects to rare plant populations and potential habitat for riparian sensitive plants (Alternative 5). The predictions for the number of meadows remaining or becoming degraded are based on grazing use continuing at current levels.

Geographic Unit	Total # known populations	No threats from commercial pack stock or trails	On or near open trails (no commercial pack-stock)	In meadows open to commercial pack stock grazing	Meadows with potential habitat for rare plants	Potential habitat open for grazing (commercial pack stock)	Potential habitat remaining/becoming degraded
AA East	11	8	3	0	52	0	1
AA West	22	7	15	0	209	0	4
FCM	7	4	3	0	20	0	1
MORO	9	2	5 (+1 hiker trail)	0	17	0	2
BIH	9	3	6	0	2	0	0
FLO	10	3 (1 pipeline only)	4	1 +1*	51	0	3
JMSW	3	3	0	0	178	0	1 (due to private pack-stock)
JMSE	31	13	18 (4 hiker)	0	0	0	0

Geographic Unit	Total # known populations	No threats from commercial pack stock or trails	On or near open trails (no commercial pack-stock)	In meadows open to commercial pack stock grazing	Meadows with potential habitat for rare plants	Potential habitat open for grazing (commercial pack stock)	Potential habitat remaining/becoming degraded
			only)				
	104	43	54	1*	529	0	12

*If there is commercial pack stock use outside the wilderness, there may be use at one meadow.

Table 4.113: Trail classes of trails with populations of rare plants in Alternative 5

Geographic Unit	Total # populations/habitat along trails	TC4 – No comm. pack stock	TC3 – No comm. pack stock	TC2 – No comm. pack stock	TC1 – No comm. pack stock	Use – No comm. pack stock
AA East	4	0	1	1	1	1
AA West	17 (one with 2 trails)	0	7	9	1	0
FCM	2	0	1	1	0	0
MORO	6 (one with 2 trails)	0	3	3	0	1
BIH	6	0	2	2	0	2
FLB	4 (one with 2 trails)	0	3	2	0	0
JMSW	0	0	0	0	0	0
JMSE	21	4 (hiker only)	3	10 (2 NSCS)	1 NSCS	3
TOTALS	60 (3 with 2 trails)	4 (hiker only)	23	23 (5 no pack stock)	4 (1 NSCS)	6 (1 hunting only, 2 hiker only)

Pack stock use may be displaced to non-wilderness locations or nearby National Forests or National Parks, where impacts could increase on several populations of sensitive plants. About 80 percent of the known populations of rare plants that occur or have potential habitat in the AA/JM Wildernesses occur outside the wilderness boundary. Areas of particular concern are the Golden Trout Wilderness, the meadows west of the wilderness on the Sierra NF, Yosemite NP and Sequoia-Kings Canyon NP. The National Forest and National Park locations would have management in place to protect these plant populations, so the risk would not be great.

Cumulative Effects

At current use levels, the cumulative effects of the past, present, and foreseeable activities, listed above, trail management in Alternative 5 not expected to cause a trend toward listing for any of the rare plant species and there would be no commercial pack stock use. Because Alternative 5 has no commercial pack stock use, it has fewer additive impacts than any of the other

alternatives. However, use outside the wilderness and private pack stock use would probably be higher, so pack stock effects would more likely be shifted than eliminated.

Weeds

Analysis and Cumulative Impacts

Ecosystem health is threatened by the spread of non-native weeds. They reduce native biodiversity, affect threatened, endangered and sensitive (TES) species, reduce wildlife habitat quality, modify vegetative structure and species composition, change fire and nutrient cycles, and degrade soil structure. Weed propagules can be carried into the wilderness by any users, including pack stock, hikers, and maintenance personnel. Weedy species are most likely to invade areas of disturbed soil, but are able to invade intact ecosystems as well. Lower elevations are more vulnerable to weed invasion because of more favorable temperature and moisture regimes. If new weed populations become established, the effects are likely to be long-term, widespread, and moderate to severe.

There are relatively few weed populations in the wilderness now, mostly in areas where there has been soil disturbance, such as around the reservoirs, or where fires occurred, such as in Cascade Valley. Trail construction or major repair could provide sites for establishment of weeds. In some cases, weeds that have been present for a long time, at trailheads or pack stations for example, but not invasive, may suddenly become much more invasive and spread rapidly (Bossard et al., 2000).

Feed for stock can contain seeds or propagules of non-native weedy species, and there will be a risk of weed introduction unless weed free forage is used or stock is grazed on site. Pellets are processed in such a way that any weed seeds are killed, but other forms of feed may still have live weed seeds.

Past, Present and Reasonably Foreseeable Actions

Non-native weed species were found at almost all the pack stations and are a seed source for possible expansion into the wilderness. It would be a foreseeable action that weed removal at pack stations would be required as part of the operating plans for permits that are scheduled to be issued in 2006.

Weed free forage is currently recommended for use by packers (SNFPA, 2004). There is currently a statewide collaboration between Forest Service, Park Service, BLM, State of California, and County Agricultural Commissioners to develop a certification program for weed free forage and mulch. When certified weed free forage is readily available statewide, its use will be required for all Forest Service activities, including commercial pack stock operations.

The construction and maintenance of the reservoirs at Florence, Edison, and in the Rush Creek drainage is probably the main source of the weed populations in those areas. These populations act as a seed source for invasion further into the wilderness. The cheatgrass in the Florence/Edison area flowers at approximately the same time as Mono Hot Springs evening primrose, also an annual, and occurs near populations there. It could remove water and nutrients when needed by the primrose, causing habitat degradation. The probability of cheatgrass spreading into evening primrose habitat and negatively affecting populations is greater with increasing traffic by pack stock and hikers.

Weeds – Alternative 1

There would be some risk of weed introduction from pack stock use, hiker use, and trail maintenance since there are populations of weeds at trailheads and pack stations. This risk is about the same as Alternatives 2-Modified, 2, 3, and 4, but higher than Alternative 5.

Feed would be packed in for some overnight trips as needed by the packers. Because there would be very few meadows closed to grazing, the amount of packed feed would be less than the other action alternatives.

The risk of weed introduction from trail maintenance activities is highest in this Alternative because trail classes are the highest of any Alternative.

There would be no risk of weed introduction on firewood.

Sanding could occur on any trail with approval by the Forest Service and could possibly be a source of weed seed introduction, although most likely any approved sanding would be done with weed free material.

Cumulative Effects

Weeds that are present due to other activities, particularly around dam construction sites, may be spread by pack stock and other wilderness users. As noted above, the risk of commercial pack stock acting as vectors for weeds is approximately the same for all the action alternatives, so the interaction with the effects of other disturbances that may have introduced or spread weeds would be similar for all alternatives except Alternative 5.

Weeds – Alternative 2 - Modified

The risk of weed introduction from pack stock use, hiker use, and trail maintenance would be about the same as Alternatives 1, 3, and 4, but higher than Alternative 5. Increased packing of feed may occur, which would introduce a low risk of weed introduction until weed-free forage requirements are instituted.

The use of charcoal above elevation fire closure would not be a risk of weed introduction because weed seeds are killed in the process of making charcoal.

Sanding will only occur with Forest Service approval when trail and destination readiness has been determined. Any approved sanding would be done with weed free material.

Cumulative Effects

The cumulative effects of Alternative 2 – Modified would be the same as Alternative 1.

Weeds – Alternative 2

The risks of weed introduction for Alternative 2 would be slightly less than Alternative 2 – Modified.

There would be a risk of weed seed or pathogen introduction on firewood brought in from outside the wilderness. (See Firewood section below)

Sanding would be allowed on Piute Pass only, but with approved materials. The sanding allowed requires Forest Service approval of the source of the sand, so no introduction of weeds via the sand should occur.

Cumulative Effects

The cumulative effects of Alternative 2 would be the same as Alternative 1..

Weeds – Alternative 3

There would be some risk of introducing weeds from populations at pack stations and trailheads. The risk would be higher than Alternative 1, 2 – Modified, 4, and 5, but less than Alternative 2.

The risk of weed introduction via firewood brought in from outside the wilderness would be less than Alternative 2 because the sites where it could be used would be more limited.

The risk of weed introduction by sanding would be the same as Alternative 2 – Modified.

Cumulative Effects

The cumulative effects of Alternative 3 would be the same as Alternative 1.

Weeds – Alternative 4

There would be some risk of weed introduction from pack stock use, hiker use, and trail maintenance since there are populations of weeds at trailheads and pack stations. This risk is about the same as Alternative 1, 2, and 3 but higher than Alternatives 5.

There would be no campfires allowed above the elevation closures, so there would be no risk of weed or pathogen introduction via firewood.

No sanding of passes would be allowed, so there would be no risk of weed introduction on sanding materials.

Cumulative Effects

The cumulative effects of Alternative 4 would be the same as Alternative 1.

Weeds – Alternative 5

Commercial pack stock would no longer be a possible vector for weed distribution into the wilderness from the pack stations or other populations in and near the wilderness. There would be no feed carried in to the wilderness to feed commercial stock.

There would be no firewood brought in by packers, eliminating risk of weed seed introduction into the wilderness.

No sanding of trails would occur, so there would be no risk of weed seed introduction from trail sanding activity.

Cumulative Impacts

The existing weed populations near the reservoirs would remain as sources of weed seed, but would not be spread by commercial pack stock. There would still be the likelihood of weed

spread by other vectors such as hikers, wind, streams, non-commercial pack stock, dam and trail maintenance activities, etc.

Firewood/Campfires above Elevation Closure

Firewood/Campfires – Alternative 1

There would be no firewood or charcoal brought in from outside the wilderness, eliminating risk of introducing pathogens and weed seeds from this source. There could be less risk of other wilderness users gathering firewood illegally. This is a long-term beneficial effect to the subalpine vegetation.

Cumulative Effects

Since Alternative 1 would not allow firewood or charcoal brought in from outside the wilderness, there would be no cumulative effects with other wilderness uses/activities.

Firewood/Campfires – Alternative 2 – Modified

Use of firewood by packers on a case-by-case approval basis only in areas not usually frequented by other wilderness users limits the effects on subalpine vegetation. Monitoring of firewood availability and effects of these uses would be very important.

Charcoal could be brought in to locations above the elevation fire closure by any wilderness users. There would be no risk of introducing weeds or pathogens because seeds or propagules would be killed during the charcoal making process. The use of fire pans and carrying the ashes out of the wilderness would limit effects to the soil and vegetation. Use of extra pack stock to carry charcoal is less likely than if carrying firewood, since it is more compact.

The adjustments to the elevation fire closure would only be made if documented firewood availability has shown that a change is appropriate, so subalpine vegetation would be protected by the changes.

Cumulative Effects

Although there would be no increased risk of weed introduction, there would still be a risk of charcoal campfires encouraging other wilderness users to illegally collect firewood and build illegal campfires. The risk is less than Alternatives 2 and 3, since the conditions of use include being away from other wilderness users.

Firewood/Campfires – Alternative 2

Under this alternative, there would be the highest risk of the introduction of pathogens and/or weed seeds on firewood brought in from outside the wilderness and increased illegal gathering of wood by non-packer clients. Campfires using wood carried into the wilderness would be allowed at any site used by packer clients, including spot and dunnage clients.

It has been found that firewood infected with the pathogen *Phytophthora ramorum* may be able to carry sudden oak death syndrome (Davidson and Shaw, 2003). Black oak and canyon live oak both grow in the wilderness areas at lower elevations and plants like manzanita, heather, Labrador tea, and blueberries, which are closely related to known non-oak hosts (Garbelotto et al., 2003), are common in montane and subalpine environments. Bark beetle infestation is also

possible, particularly if wood is stacked over winter (S. Frankel, pers. comm.). Weed seeds could also become attached to firewood during cutting, transportation, or storage, and fall off on the trail or at campsites. If pathogens or weeds become established in a new location, it is very difficult to eradicate them, so these effects would be long-term, moderate to severe, and could affect a large area. Depending on the type of weed introduced, herbicide could be the most effective and efficient means of eradicating it, introducing different impacts. Additional NEPA analysis would be required before herbicide could be used.

In the subalpine zone, the productivity of the whitebark pine stands is relatively low and consumption of firewood in popular camping destinations could easily surpass the production (Cole, 1989). In these low productivity areas, the downed wood plays a particularly important role in water and nutrient conservation and as habitat for other organisms. There was an inconclusive study (Gorski, 1990) of the effects of observing packer firewood use in closure areas on illegal wood gathering by other wilderness users. The clearest result was that hikers interviewed were not in favor of the packers being allowed to bring in firewood. The impacts to the subalpine vegetation caused by activities associated with unauthorized campfires would probably mostly be local and minor, but recovery time is slow, so there could be long-term effects.

Cumulative Effects

Alternative 2 firewood importing would have the highest risk of interacting with other wilderness use (backpacking) because there would be more locations above campfire closure elevations where commercial pack station clients having campfires could encourage illegal wood gathering and campfires by other users.

Firewood/Campfires – Alternative 3 - Firewood

There would be a reduced risk of introducing pathogens or weeds by packing in firewood from outside the wilderness in this alternative as compared to Alternative 2, but more than Alternatives 1, 2 – Modified, 4, and 5, where no firewood would be packed in. In this alternative, firewood could only be brought to 42 designated full service sites and only be used when a wrangler is present. The effects of a pathogen or weed introduction would be long-term, moderate to severe in intensity, and could affect a large area.

Cumulative Effects

Alternative 3 would have similar but less widespread cumulative effects with other wilderness uses as Alternative 2.

Firewood/Campfires – Alternative 4

There would be no firewood brought in from outside the wilderness, eliminating risk of introducing pathogens and weed seeds from this source.

Other wilderness users would not see packers' campfires in the fire closure area and would be less likely to gather firewood illegally to have their own campfire (INF files), reducing the risk of negative impacts to subalpine vegetation.

Cumulative Effects

There would be no cumulative effects with other wilderness uses, as in Alternative 1.

Firewood/Campfires – Alternative 5

There would be no firewood brought in from outside the wilderness, eliminating risk of introducing pathogens and weed seeds from this source.

Cumulative Effects

There would be no cumulative effects with other wilderness uses, as in Alternative 1.

Geographic Unit Scale

Ansel Adams East

Grazing Resources

Analysis

Historical grazing uses by production livestock, primarily sheep, pack stock supporting mining operations and recreational pack stock has historically been high throughout this geographic area. There have also been water diversion, impoundment, and flow disruption for approximately 70 years. There are persistent chronic effects including loss of late-seral riparian vegetation, incisement and erosion of trails, stream bank instability and stream channel incisement resulting in loss of riparian vegetation needed to dissipate energy, filter sediment and provide for water retention. These effects are most prevalent in the Rush Creek, Shadow Eidza, Thousand Island, and Minaret Analysis Units.

Grazing Resources – Alternative 1

Analysis

With implementation of Alternative 1 the direct and indirect effects of pack stock use, at reported levels of approximately 1,862 stock nights annually, and the cumulative effects to the riparian vegetation, including decreased late-seral vegetation would be most noticeable where there is existing stock use associated with an existing decline in vegetative resource conditions such as at Upper Spooky Meadows, Lower Spooky Meadows, Rodgers Lake Meadows, Garnet Lake Meadows, Thousand Island Lake Meadows, Upper Deer Creek Meadows. The meadows between Garnet and Thousand Island Lakes, around Garnet Lake, and at the west end and near the delta at the northwest corner of Thousand Island Lake are not suitable for grazing and with continued stock entry and use there would be additional trampling of vegetation on the associated unstable stream banks and headcuts.

There could also be decreases in late-seral vegetation in locations near campsites at Rodgers Lake, Marie Lake, Davis Lake, Donahue Camp, Clark Lake, Shadow Creek near the PCT trail junction, Anona Lake, Ashley Lake, and Superior Lake as stock continued to trample the existing vegetation in and along access trails near those campsites.

There is less current stock use and the direct effects may occur to a lesser extent at: the meadows areas near the junction of the Minaret Mine trail; Badger Lake Meadows; the meadow stringers below Deer Lakes; Upper Crater Meadow; the meadows above Upper Crater Meadow; and Middle Deer Creek Meadows.

Parker, Glacier Canyon, Gibbs, and Bloody Canyon: Little pack stock use occurs and there are few concerns with existing conditions in the Parker, Glacier Canyon, Gibbs, and Bloody Canyon Analysis Units. The low levels of use would likely continue under Alternative 1 and there are no expected differences between alternatives in the effects or cumulative consequences.

Upper Rush Creek: The direct effects of the new grazing use patterns developing in the Rodgers Lakes area would be an increase in trampling of vegetation, especially along the new access trails above Rodgers Lake and the meadows adjacent to Rodgers Lake, and localized sod fragmentation in the associated riparian areas.

Direct effects of stock use, especially of trampling in the less resilient moist to dry meadow vegetation types, would be continued localized trampling and loss of the vegetation in the moist to dry meadows near Marie Lake, Davis Lake, and Donahue Camp meadows and localized trampling and loss of vegetation in the short-term near the designated campsites and stock holding areas at these sites.

Over the long-term there would be a reduction in cover of the meadow vegetation and an increase in bare soil, especially near the designated camps and near stream crossing and at watering access locations such the ephemeral pond above Donahue Camp and along the shoreline near Marie Lake camp, as stock develop dusting pits and access drinking water. Cumulatively over the long-term, there could be loss of vegetation adequate to provide watershed protection along the stream at Donahue Camp, the altered vegetation would be observable but the vegetation would likely remain adequate to provide for watershed protection near Davis Lake, Marie Lake, and the benches near Donahue Camp.

Rush Creek: A direct effect would be localized trampling, increased sod fragmentation, loss of riparian vegetation, an associated decrease in vegetative cover in the short-term near the drift fences at Spooky Meadows, along the small stream in Lower Spooky Meadows, in the springs in the upper end of Lower Spooky Meadows, at the confluence of the stream and the spring channels at Upper Spooky Meadows, and in the less resilient moist to dry meadows along the trail between Spooky Meadows and Clark Lake.

There would be limited loss of riparian vegetation in the small riparian areas along the trails and localized loss of high-seral riparian vegetation along the access trail and at the designated campsite and stock holding areas near Weber Lake. The cumulative effect could be a reduction in the vegetation needed to provide protection during high flow events and increased ecological risks, especially along the streams in Upper and Lower Spooky Meadow.

Thousand Island: Continuation of existing grazing use pattern, which are resulting in trampling of the wetlands at the northwest corner and west end of Thousand Island Lake would result in a localized alteration of vegetation at these locations. The indirect effects of continued pack stock use of the access trails and wrangler camp at Garnet Lake and near Emerald Lake and at the meadows between Garnet and Thousand Island lakes would be a loss of riparian vegetation, sod fragmentation.

Cumulatively a reduction in cover and abundance of the late-seral riparian vegetation needed to provide for watershed protection.

Due to the continued trampling related direct effects of stock use in these intermingled wetland complexes, cumulatively over the long-term there would be a localized reduction in cover of the meadow vegetation on the benches to the north of Thousand Island Lake and an increase in bare soil in the areas used by stock for grazing and in the stock holding areas at campsites at Garnet Lake, Thousand Island Lake, and between Garnet and Emerald Lakes.

Shadow-Ediza: The direct effects of the existing pack stock use at the Shadow Creek campsite are trampling of the stream banks along the access trail, trampling of the stream banks at the meadow and trampling of vegetation at the campsite and stock holding area. Over the short-term, there would be continuation of the trampling effects, including sod fragmentation and localized alteration of vegetation.

The cumulative effects could cumulatively result in a reduction in cover of the late-seral meadow vegetation at the Shadow Creek grazing area and an increase in bare soil in the areas used by stock for grazing and in the stock holding areas at the campsite. There could be limited trampling of and loss of riparian vegetation in the small meadows along the Cabin Lake trail, especially along the edge of the pond and associated meadows near Cabin Lake. There would likely continue to be adequate riparian vegetation to provide the natural level of protection during high flow events at these locations.

King Creek: Direct effects related to existing pack stock use would occur near the campsites at Anona Lake, Ashley Lake, and Superior Lake: including localized trampling of vegetation at the creek crossings, in the associated stock holding areas and along associated access trails. Indirect effects over the long-term would include localized reduction of vegetative productivity and a decrease in vegetative cover in the grazing areas, with most effects occurring near the campsites. Effects at Holcomb Lake would be the same as for no grazing over the short-term, with direct effects of trailing related trampling of vegetation along the south shore and between the inlet and the upper meadows over the long-term.

These effects would be noticeable at the local scale but there would likely continue to be adequate riparian vegetation to provide the natural level of protection during high flow events at these locations.

Minaret: The existing conditions would continue at Minaret Mine Meadows. At Trinity Meadows over the short-term, there would be limited loss of vegetative productivity and over the long-term a decrease in cover at Trinity Meadows and near the trail at Middle Minaret Creek. There would likely continue to be adequate riparian vegetation to provide the natural level of protection during high flow events at these locations.

Over the short-term, a direct effect would be continued removal and trampling of vegetation in upper Johnston Meadow, especially along the unstable stream banks and on the terraces with altered vegetative composition, which are now less resilient due to the lowered water table.

Cumulatively there could be an increased risk of loss of soil and vegetation adequate to provide for watershed protection in upper Johnston Meadow. Recovery of riparian vegetation at upper Johnston Meadow may not occur over the long-term even with implementation of all applicable standards.

Crater Creek: These areas are currently used at low levels and use is not anticipated to increase. Few current direct or indirect effects are noted for the Crater Creek area.

Current areas of altered vegetation appear to be an effect of historical stock use and there would be little change with implementation of Alternative 1.

At areas used by stock, such as at the meadow stringers below Deer Lakes, Upper Crater Meadow, the meadows above Upper Crater Meadow, and Middle Deer Creek Meadows, there would be maintenance of mixed vegetative seral conditions over the long-term and eventual localized reductions in vegetative productivity and decreased vegetative cover.

River-High: At the Badger Lake Meadows there would be continued trampling of and a localized loss of riparian vegetation at the springs and along the stream, although in this resilient meadow with existing low levels of use the vegetative growth may be adequate and headcuts may still stabilize.

Late-seral plant species may increase over the long-term if the use can be managed to avoid the critical areas of Badger Lake Meadow. Although there may be some localized and minor effects of use along San Joaquin Ridge, especially associated with deer-hunting camps, there will likely be no substantial loss of vegetation in these locations and no effects, either adverse or beneficial would result from the low levels of use.

Cumulative Effects

There are some meadows, including Johnston, Garnet to Emerald Lake, and Upper Crater Creek, where there are long-term historical unstable watershed conditions and chronic processes such as instability along the associated creek and large active headcuts. With these chronic and synergistic existing conditions there is likely to be loss of riparian obligate vegetation, decreased stabilizer plant species, and increased mid-seral or early-seral vegetative condition. There is not likely to be adequate vegetation to provide for watershed protection because of the synergistic relationship between the historical and currently occurring processes.

Alternative 2-Modified

Analysis

Direct effects of implementation of Alternative 2 – Modified, with approximately 2,267 stock nights of grazing available annually, would be similar to those predicted for Alternative 2. With implementation of Alternative 2 – Modified these effects and the associated cumulative risks, the increased use and increased packing of feed and extended use of the stock holding areas at the destinations would likely result in additional localized loss of vegetation and decreased late-seral vegetation relative to Alternative 2.

The effect would be decreased vegetation needed to provide for watershed protection and an increased risk of ecological damage, relative to Alternatives 1, 2, and 4, over the long-term at and near the popular designated camps at Rodgers Lake, Marie Lake, Davis Lake, Donahue Camp, Clark Lake, Thousand Island Lake, Garnet Lake, Shadow Creek, Anona Lake, Ashley Lake, Superior Lake, Crater Meadow, Deer Creek, and Badger Lake.

Parker, Glacier Canyon, Gibbs, and Bloody Canyon: Little pack stock use occurs and there are few concerns with existing conditions or expected differences between alternatives in the Parker, Glacier Canyon, Gibbs, and Bloody Canyon Analysis Units.

Upper Rush Creek: With implementation of Alternative 2 – Modified there could be increased localized trampling of the vegetation in the moist to dry meadows at Marie Lake, Davis Lake, and Donahue Camp meadows and localized trampling and loss of vegetation in the short-term at designated campsites and stock holding areas.

Over the long-term there would be a reduction in cover of the meadow vegetation and an increase in bare soil, especially near the designated camps and near stream crossing and at watering access locations such the ephemeral pond above Donahue Camp and along the shoreline near Marie Lake camp, as stock develop dusting pits and access drinking water.

Rush Creek: There would be localized loss of riparian vegetation and decreased vegetative cover in the short-term and cumulatively over the long-term along the drift fences at Spooky Meadows and along the trail between Spooky Meadows and Clark Lake. There would be localized loss of riparian vegetation in the small riparian areas along the trails and localized loss of high-seral riparian vegetation along the access trail and at the designated campsite and stock holding areas near Weber Lake.

Over the long-term, cumulative effects and the associated risks to proper functioning condition would likely increase, relative to Alternative 1, 2, and 4 at Spooky Meadows and at Clark Lakes and would be similar to Alternative 3.

Thousand Island: The new grazing use patterns at the northwest corner of Thousand Island Lake would result in limited loss of vegetation along new access trails. There would be elimination of direct impacts such as trampling and bank alteration at the stream delta at the NW corner of Thousand Lake and to the west of the lake compared to alternatives 1, and 2. The other areas would respond as discussed for Alternative 2.

Over the long-term, there would be a localized reduction in cover of the meadow vegetation on the benches to the north of Thousand Island Lake and an increase in bare soil in the areas used by stock for grazing and in the stock holding areas at designated campsites at Garnet and Thousand Island lakes. Cumulatively these impacts would be slightly increased relative to Alternatives 1, 2, and 4, especially at the designated campsites with stock holding areas at Garnet Lake and Thousand Island Lake.

Shadow-Ediza: In the short-term, there would be maintenance of a widened stream crossing accessing the designated campsite and limited reductions in vegetative cover and productivity in the meadow downstream of the designated camp at Shadow Creek.

Over the long-term, there may be increased localized alteration of vegetation, relative to alternatives 1, 2, and 4, especially at the Shadow Creek grazing area and an increase in bare soil in the areas used by stock for grazing and in the stock holding areas at the designated campsite. There could be localized loss of riparian vegetation in the small meadows along the Cabin Lake trail, especially along the edge of the pond and associated meadows near Cabin Lake; although it is probable there will be no measurable difference between alternatives at this location over the long-term.

King Creek: Direct effects at Ashley Lake, near the designated campsite below Anona Lake, Ashley Lake, and Superior Lake would be localized trampling of vegetation at the creek

crossings, in the designated stock holding areas and along associated access trails. Indirect effects over the long-term would include localized reduction of vegetative productivity and a decrease in vegetative cover in the grazing areas, including new grazing areas on the benches south and east of Davis Lake. Effects at Holcomb Lake would be the same as for no grazing over the short-term, with direct effects of trailing related trampling of vegetation along the south shore and between the inlet and the upper meadows over the long-term.

Minaret: The existing conditions would continue at Minaret Mine Meadows. At Trinity Meadows over the short-term, there would be limited loss of vegetative productivity and over the long-term a decrease in cover at Trinity Meadows and near the trail at Middle Minaret Creek, with long-term and cumulative effects being similar for all alternatives that include pack stock use. There would be no grazing related direct effects however there would be continued loss of riparian vegetation in upper portions of Johnston Meadow as the terrace level continues to respond to the incised channel.

Over the very long-term, there may not be vegetative recovery at Johnston Meadow. In other locations in this analysis unit there would likely continue to be maintenance of adequate vegetation to provide for ecological processes.

Crater Creek: At areas proposed for stock use, such as at the meadow stringers below Deer lakes, Upper Crater Meadow, the meadows above Upper Crater Meadow, and Middle Deer Creek Meadows there would be maintenance of mixed vegetative seral conditions over the long-term and eventual localized reductions in vegetative productivity and decreased vegetative cover.

Overall is not likely that there would be measurable differences between alternatives in the Crater Creek analysis unit.

River-High: The direct effects over most of the River-High Analysis Unit would be similar to those effects with no grazing, as this area currently receives limited stock use other than on the system trails. At the Badger Lake meadow there would be limited loss of riparian vegetation at the springs and along the stream.

There would likely be adequate recruitment and retention of riparian vegetation to provide for ecological processes over the long-term throughout this analysis unit.

Cumulative Effects

Because Johnston, Garnet to Emerald Lake, and Upper Crater Creek meadows will be rested or closed in Alternative 2 - Modified, the cumulative effects of this alternative with historic effects would be more rapid recovery of the creek instability and active headcuts.

Alternative 2

Analysis

The direct effects of grazing, with approximately 2,498 stock nights available annually, would be localized, within identified standards, but visually noticeable near designated campsites including at Rodgers Lake, Marie Lake, Davis Lake, Donahue Camp, Clark Lake, Thousand Island Lake, Garnet Lake, Shadow Creek, Anona Lake, Ashley Lake, Superior Lake, Crater Meadow, Deer Creek, and to a lesser extent at Badger Lake meadows and the meadows near the

junction of the Minaret Mine Trail. For Alternative 2, 3, and 4 there would be some decrease in vegetative cover, but not as much of a decrease as for Alternative 1 in the short-term.

There are areas recommended as unsuitable for grazing, including: between Garnet and Thousand Island Lakes; the Meadows around Garnet Lake; the meadows at the west end of Thousand Island Lake; Minaret Mine Meadows; and some meadows in the Deer Creek and Crater Creek areas. The direct effects would be to immediately eliminate trampling of and removal of vegetation in most of these locations, although there would continue to be some trampling related to trailing and access to campsites.

Vegetation would likely continue to be adequate to provide for watershed protection at these sites.

Effects of implementation of the un-suitable recommendation at the applicable locations would be increases in vegetative production in the short-term, especially near springs and streams. Cumulatively, with greatly reduced direct effects of grazing and retention of each year's vegetative growth there would be a transition to late-seral vegetation and then maintenance of high-seral conditions would occur over the long-term in these areas.

Parker, Glacier Canyon, Gibbs, and Bloody Canyon: Little pack stock use occurs and there are few concerns with existing conditions, little changes in use are expected and there are little or no expected differences between alternatives in the effects to the riparian vegetation resource in the Parker, Glacier Canyon, Gibbs, and Bloody Canyon Analysis Units.

Upper Rush Creek: Direct effects of the new grazing use patterns, including increased trailing access to meadows in the Rodgers Lakes area, would be a localized increase in trampling of vegetation, especially along the new access trails, and localized sod fragmentation along the trails and in the meadow areas. Over the long-term indirect effects would be a limited area of decreased high-seral riparian species, increased mid-seral and low-seral vegetation, and decreased vegetative cover. There would be continued localized trampling of the vegetation in the moist to dry meadows at Marie Lake, Davis Lake, and Donahue Camp meadows and localized trampling and reduced vegetative cover in the short-term at designated campsites and stock holding areas. Over the long-term these direct effects would continue and would result in a cumulative reduction in cover of the meadow vegetation and an increase in bare soil, especially near the designated camps and near stream crossing and at watering access locations such the ephemeral pond above Donahue Camp and along the shoreline near Marie Lake camp, as stock continue to develop dusting pits and access drinking water.

There would likely continue to be adequate riparian vegetation to provide the natural level of protection of ecological during and following high flow events.

Rush Creek: There would be limited loss of riparian vegetation and decreased vegetative cover in the short-term and cumulatively over the long-term along the drift fences at Spooky Meadows, along the trail between Spooky Meadows and Clark Lake, and at the Clark Lake Campsite. There would be a minor and localized loss of riparian vegetation in the small riparian areas along the trails and localized loss of high-seral riparian vegetation along the access trail and at the designated campsite and stock holding areas near Weber Lake.

There would likely continue to be adequate riparian vegetation to provide the natural level of protection during high flow events at these locations, although it is likely that intensive site-

specific control would be needed and would require the use of portable electric fence to be effective at the springs and along the creek banks in Upper Spooky Meadow.

Thousand Island: The new grazing and trailing use patterns resulting from shifting use to the benches to the northwest of Thousand Island Lake would result in a minor localized loss of vegetation along new access trails due to the direct effects of trampling of vegetation. Over the long-term, with continued removal and trampling of vegetation in this area of low resiliency there would be a localized reduction in cover of the meadow vegetation on the benches to the north of Thousand Island Lake and an increase in bare soil in the areas used by stock for grazing and in the stock holding areas at designated campsites at Garnet and Thousand Island lakes.

There would likely continue to be adequate riparian vegetation to provide the natural level of protection during high flow events at these locations, except along the stream banks at the delta at the northwest corner of Thousand Island Lake where bank instability would continue beyond the long-term.

Shadow-Ediza: In the short-term direct effects would be continued trampling of vegetation along the stream banks and indirect effects would be maintenance of a widened stream crossing accessing the designated campsite. There would be local minor reductions in vegetative cover and productivity due to continued removal and trampling of vegetation in the meadow immediately downstream of the designated camp at Shadow Creek.

Over the long-term, there would be continuation of the localized alteration of vegetation, including a reduction in cover of the late-seral meadow vegetation at the Shadow Creek grazing area and an increase in bare soil in the areas used by stock for grazing and in the stock holding areas at the designated campsite. There could be local and moderate loss of riparian vegetation in the small meadows along the Cabin Lake trail, especially along the edge of the pond and associated meadows near Cabin Lake. There would likely continue to be adequate riparian vegetation to provide the natural level of protection during high flow events at these locations.

King Creek: Direct effects at Ashley Lake, near the designated campsite below Anona Lake, and Superior Lake would be localized trampling of vegetation at the creek crossings, in the designated stock holding areas and along associated access trails. Indirect effects over the long-term would include localized reduction of vegetative productivity and a decrease in vegetative cover in the grazing areas, including new grazing areas on the benches south and east of Davis Lake. Effects if grazing access is eventually approved at Holcomb Lake would be the direct effects of trailing related trampling of vegetation along the south shore and between the inlet and the upper meadows over the long-term.

If grazing access were not eventually approved at Holcomb Lake the riparian vegetation would increase and over the long-term would become established in these trail locations. Cumulatively throughout this analysis unit there would continue to be adequate riparian vegetation to provide for watershed protection.

Minaret: Little use currently occurs, little change in use is expected, and the existing conditions would likely continue at Minaret Mine Meadows with all alternatives. Over the short-term there would be localized loss of vegetative productivity, primarily associate with trailing and trampling of vegetation and over the long-term a decrease in cover at Trinity Meadows and near the trail at Middle Minaret Creek. Cumulatively there would continue to be adequate riparian vegetation to provide for watershed protection at these locations.

Other than at Johnston Meadow there would likely continue to be adequate riparian vegetation to provide for sustainability of ecological processes.

Crater Creek: At areas proposed for stock use, such as at the meadow stringers below Deer Lakes, Upper Crater Meadow, the meadows above Upper Crater Meadow, and Middle Deer Creek Meadows the direct effects of grazing would include removal of desired vegetative species, trampling of vegetation and sod fragmentation. There would be mixed vegetative seral conditions over the long-term.

There would be localized reductions in vegetative productivity and decreased vegetative cover. There would likely be adequate vegetation to provide for watershed protection at most locations except for some meadows along Deer Creek and Upper Crater Meadow where existing conditions include active erosion features such as unstable stream banks and headcuts.

River-High: The direct effects over most of these areas would be similar to those with no grazing. At the Badger Lake Meadow, there would be a minor localized loss of riparian vegetation at the springs and along the stream associated with pack stock accessing these areas for drinking water.

This is a productive and resilient site and as the applicable standards are enforced, the effects would be retention of vegetative growth and recruitment of new growth to stabilize the headcuts and there would be adequate late-seral plant species to provide watershed protection.

Cumulative Effects

There would be continued loss of riparian vegetation in upper portions of Johnston Meadow as the channel continues to become incised and the terrace level continues to respond to the incised channel (historic grazing damage). Over the long-term, there would not be vegetative recovery at Johnston Meadow and there would not be adequate riparian vegetation to provide watershed protection. Upper Crater Meadow would also continue to be used, slowing recovery from historic damage. Garnet Meadow would be closed, so recovery would be sooner than under Alternative 1. There would be more cumulative effects of Alternative 2 than Alternatives 2-Modified, 3, 4, and 5, but fewer than Alternative 1.

Grazing Resources – Alternatives 3 and 4

Analysis

Overall, the direct effects and indirect effects of implementation of Alternative 3 and 4, with approximately 2,397 and 2,093 stock nights of grazing available respectively annually, would be similar to those predicted for Alternative 2. The only substantial difference in this analysis unit being that Alternative 4 would eliminate grazing at Rodgers Lake Meadows.

With implementation of Alternative 3 and 4 the direct and indirect effects and the associated cumulative risks, along with an anticipated increased use and increased packing of feed and extended use of the stock holding areas at the destinations would likely result in localized loss of vegetation and decreased late-seral vegetation at campsites and stock holding areas. There would be decreased vegetation needed to provide for watershed protection and an increased risk of ecological damage, relative to Alternatives 1, 2, and 4. This would occur over the long-term and locally at and near the popular designated camps at Rodgers Lake, Marie Lake, Davis Lake,

Donahue Camp, Clark Lake, Thousand Island Lake, Garnet Lake, Shadow Creek, Anona Lake, Ashley Lake, Superior Lake, Crater Meadow, Deer Creek, and Badger Lake.

Parker, Glacier Canyon, Gibbs, and Bloody Canyon: Little pack stock use occurs and there are few concerns with existing conditions or expected differences between alternatives in the Parker, Glacier Canyon, Gibbs, and Bloody Canyon Analysis Units.

Upper Rush Creek: With implementation of Alternatives 3 and 4 there could be increased localized trampling of the vegetation in the moist to dry meadows at Marie Lake, Davis Lake, and Donahue Camp meadows and localized trampling and loss of vegetation in the short-term at designated campsites and stock holding areas. With Alternative 4, there would be no grazing or trampling of riparian vegetation through the riparian meadows above Rodgers Lake.

Over the long-term there would be a reduction in cover of the meadow vegetation and an increase in bare soil, especially near the designated camps and near stream crossings and at watering access locations such the ephemeral pond above Donahue Camp and along the shoreline near Marie Lake camp, as stock develop dusting pits and access drinking water. Overall, throughout this analysis unit there would likely be maintenance of the vegetation needed to provide for ecological processes.

Rush Creek: There would be localized loss of riparian vegetation and decreased vegetative cover in the short-term and cumulatively over the long-term along the drift fences at Spooky Meadows and along the trail between Spooky Meadows and Clark Lake. There would be localized loss of riparian vegetation in the small riparian areas along the trails and localized loss of high-seral riparian vegetation along the access trail and at the designated campsite and stock holding areas near Weber Lake.

Over the long-term, the risks to proper function condition would likely increase, relative to Alternative 1, 2, and 5 at Spooky Meadows, and at Clark Lakes.

Thousand Island: The new grazing use patterns at the northwest corner of Thousand Island Lake would result in limited loss of vegetation along new access trails. There would be elimination of direct impacts such as trampling and bank alteration at the stream delta at the NW corner of Thousand Lake and to the west of the lake compared to alternatives 1, and 2. The other areas would respond as discussed for Alternative 2.

Over the long-term, there would be a localized reduction in cover of the meadow vegetation on the benches to the north of Thousand Island Lake and an increase in bare soil in the areas used by stock for grazing and in the stock holding areas at designated campsites at Garnet and Thousand Island lakes. Cumulatively these impacts would be slightly increased relative to Alternatives 1, 2, and 4, especially at the designated campsites with stock holding areas at Garnet Lake and Thousand Island Lake.

Shadow-Ediza: In the short-term, there would be maintenance of a widened stream crossing accessing the designated campsite and limited reductions in vegetative cover and productivity in the meadow downstream of the designated camp at Shadow Creek.

Over the long-term, there may be increased localized alteration of vegetation, relative to alternatives 1, 2, and 5, especially at the Shadow Creek grazing area and an increase in bare soil in the areas used by stock for grazing and in the stock holding areas at the designated campsite. There could be localized loss of riparian vegetation in the small meadows along the Cabin Lake trail, especially along the edge of the pond and associated meadows near Cabin Lake; although it

is likely there will be no measurable difference between alternatives at this location over the long-term.

King Creek: Direct effects at Ashley Lake, near the designated campsite below Anona Lake, Ashley Lake, and Superior Lake would be localized trampling of vegetation at the creek crossings, in the designated stock holding areas and along associated access trails. Indirect effects over the long-term would include localized reduction of vegetative productivity and a decrease in vegetative cover in the grazing areas, including new grazing areas on the benches south and east of Davis Lake. Effects at Holcomb Lake would be the same as for no grazing over the short-term, with direct effects of trailing related trampling of vegetation along the south shore and between the inlet and the upper meadows over the long-term.

There would be isolated and local trampling of vegetation and reduced vegetative cover at creek crossings, campsites, and stock holding areas that would persist from year to year. The effect would primarily be visual and overall there would continue to be adequate vegetation to provide for sustainability of ecological processes.

Minaret: The existing conditions would continue at Minaret Mine Meadows. At Trinity Meadows over the short-term there would be limited loss of vegetative cover and productivity and over the long-term a decrease in cover at Trinity Meadows and near the trail at Middle Minaret Creek. There would be no grazing related direct effects however there would be continued loss of riparian vegetation in upper portions of Johnston Meadow as the terrace level continues to respond to the incised channel.

Long-term and cumulative effects being similar for all alternatives that include pack stock use, with locally visual trampling of riparian vegetation but continued adequate vegetation overall to maintain ecological processes. Over the very long-term, there may not be vegetative recovery at Johnston Meadow.

Crater Creek: At areas proposed for stock use, such as at the meadow stringers below Deer lakes, Upper Crater Meadow, the meadows above Upper Crater Meadow, and Middle Deer Creek Meadows there would be maintenance of mixed vegetative seral conditions over the long-term and eventual localized reductions in vegetative productivity and decreased vegetative cover.

It is not likely that there would be measurable differences between alternatives in the Crater Creek analysis unit. Overall, there would continue to be adequate vegetation to provide for sustainability of ecological processes.

River-High: The direct effects over most of the River-High Analysis Unit would be similar to those effects with no grazing, as this area currently receives limited stock use other than on the system trails. At the Badger Lake Meadow, there would be limited loss of riparian vegetation at the springs and along the stream.

It is not likely that there would be measurable differences between alternatives in the River High analysis unit. Overall there would continue to be adequate vegetation to provide for sustainability of ecological processes.

Cumulative Effects

The cumulative effects of Alternatives 3 and 4 would be similar to those of Alternative 2 – Modified.

Grazing Resources – Alternative 5

Analysis

Many of the meadows and riparian systems in the Ansel Adams East Geographic Area, especially in the north portion, are characterized by a natural appearance with low levels of altered vegetation. In these areas, there would be increased retention of each year's growth of vegetation and reduction or elimination of grazing related direct and indirect effects.

Overall, there would be increased recruitment of vegetation, increased vigor, and there would be high-seral riparian vegetation in most areas within the short-term.

There are localized areas of altered vegetative composition associated with lowered water tables, especially in the Crater Creek Analysis Unit. Recovery of the late-seral riparian vegetation would occur over the long-term in many of these areas, with a few not recovering for the very long-term.

Parker, Glacier Canyon, Gibbs, and Bloody Canyon: Little pack stock use occurs and there are few concerns with existing conditions in the Parker, Glacier Canyon, Gibbs, and Bloody Canyon Analysis Units. Little or no change would occur with implementation of Alternative 5.

Upper Rush Creek: A direct effect of no grazing would be no trampling of vegetation along access trails and in intermingled wet areas. The indirect effect would be that the areas of bare soil in the fragmented sod at Rodgers Lake, Marie Lake, Davis Lake, and Donohue camp would be re-vegetated with late-seral species over the short-term.

There would continue to be adequate vegetation to provide for watershed protection.

Rush Creek: A direct effect of no grazing would be no trampling or loss of vegetation along access trails and in intermingled wet areas, especially in both meadows at Spooky Meadows, between Spooky Meadows and Clark Lake, and in the stock holding areas at designated campsites. The indirect effect would be that in the short-term the areas of bare soil in the fragmented sod and on the stream banks at Spooky meadows would be re-vegetated with late-seral species in the short-term to long-term.

Over the long-term, there would be adequate vegetation to protect the stream banks and to provide for watershed protection. The vegetative recovery would occur but would be long-term to very long-term at Upper Alger Lakes Meadow and in the designated stock holding areas.

Thousand Island: A direct effect of no grazing would be no trampling of or loss of vegetation along access trails and in intermingled wet areas, especially along the north side of Thousand Island Lake, in the wet meadow areas at the west end of the lake, at the wrangler camp between Thousand Island and Garnet Lakes, along the north side of Garnet Lake, at the packer camp at the north east corner of Garnet Lake, along the access trail (the old trail) to the wrangler camp, and in the stock holding areas at campsites. The indirect effect would be that in the short-term the areas of bare soil in the fragmented sod and on the stream banks at these locations would rapidly be re-vegetated with late-seral species.

The vegetative recovery would occur but would be long-term at the meadow near the wrangler camp above Garnet Lake. The active headcuts in the meadow near the wrangler camp may remain active over the very long-term but could eventually be stabilized by riparian vegetation.

The stream banks at the delta of Thousand Island Lake would remain unstable over the very long-term.

Shadow-Ediza: A direct effect of no grazing would be no trampling of or loss of vegetation along access trails, in intermingled wet areas, or at the creek crossing accessing campsites and grazing areas especially at the campsites along the Shadow Creek above the PCT junction and along the trail at the wetland near Cabin Lake. In the short-term the areas of bare soil in the fragmented sod and on the stream banks at these locations would be re-vegetated with late-seral species.

Over the long-term, these areas would be characterized by high-seral vegetation, with a few localized sites, such as the avalanche chute at Cabin Lake Meadow continuing to be disturbed and maintained in lower-seral vegetative status by episodic events such as flooding and fluvial deposition.

King Creek: A direct effect of no grazing would be no trampling of or loss of vegetation along access trails, at stock use campsites and in intermingled wet areas, especially at Ashley Lake, Anona Lake, Holcomb Lake, Superior Lake, and Davis Lake. The indirect effect would be that in the short-term the areas of bare soil in the fragmented sod and on the stream banks and at stream crossings at these locations would be re-vegetated.

These areas would be at high vegetative seral status adequate to provide for watershed protection.

Minaret: Minaret Mine Meadows is currently little used by stock and existing conditions would continue. There would be continued loss of riparian vegetation in upper portions of Johnston Meadow as the terrace level continues to respond to the incised channel.

Over the very long-term, there may not be vegetative recovery at Johnston Meadow. Current impacts from stock are minor in the Middle Minaret area and at Trinity Lakes. There would be increased vegetative growth, productivity, and cover especially at the meadows near Trinity Lakes, high-seral vegetative stage would be reached over the very long-term.

Crater Creek: Many areas of Crater Creek and Deer Creek are currently used lightly or not at all, in these areas, such as Lower Crater Meadow, Upper Crater Meadow, Deer Lakes Meadows, and Upper Deer Creek Meadows, the direct effects of no grazing would be to continue vegetative recruitment and establishment of historically affected areas. In the areas that are currently being used by pack stock, such as Deer Creek Meadows a direct effect of no grazing would be no trampling of or loss of vegetation along access trails, in intermingled wet areas, or at the creek crossing accessing campsites and grazing areas. The indirect effect would be that in the short-term the areas of bare soil in the fragmented sod and on the stream banks at these locations would be re-vegetated with late-seral species.

Long-term these areas would be characterized by high-seral vegetation, with a few localized sites continuing to be disturbed and maintained in lower-seral vegetative status by episodic events such as flooding and fluvial deposition.

River-High: Most of this area is used infrequently and lightly by grazing pack stock. The direct effects of no grazing would be little change from existing conditions. The meadow near Badger Lake is used more frequently. The limited loss of riparian vegetation at the small springs and spring channels in this meadow would be reversed with a rapid recovery of vegetative vigor and

growth. The small headcut in the stream at this meadow would be stabilized by vegetative growth in the long-term, eventually increasing the area covered by vigorous late-seral species. The analysis unit would continue to be characterized by high seral vegetative conditions.

Cumulative Effects

The cumulative effects of Alternative 5 would be mostly beneficial in that the meadows with historic grazing damage or mining effects would have the most chance for recovery.

Fens

Fens – Alternative 1

The 14 meadows and one trail with fens or fen characteristics identified in this geographic unit would all be at some risk of trampling impacts since all would be open for grazing. Eight of them are currently in good condition and would probably remain so, and the somewhat degraded condition of the other six would continue:

- **Rush Creek AU:** Grazing would most likely continue at current levels at Upper Spooky and the spring with fen characteristics would continue to have some level of trampling, but would probably still be functional. At Lower Alger and Alger Terraces, the fens would continue to have light impacts, but the current good condition is expected to continue.
- **Thousand Island AU:** Garnet Lake would be grazed at current levels, so the current stream, meadow hydrology, and vegetation composition problems would remain, putting the area with fen characteristics at risk.
- **Minaret AU:** The Emily Lake Trail would be open, causing damage to the small wet meadow with fen characteristics. At Gladys/Rosalie, current use would continue, but the area with fen characteristics would probably remain functional.
- **River High AU:** The current low use of Badger Meadow would continue with slight risks to hydrologic (and fen) function.
- **Crater Creek AU:** There would be grazing in this analysis unit with continued moderate to severe impacts to springs causing risks to the fens. The access to the campsite at ccd5b Meadow would still be causing damage to the fen. The fen at Crater Meadow would remain in good condition, but there would be a risk of trampling.

Foreseeable closures due to resource condition inventory findings:

- Garnet Meadow. If this meadow is closed, either feed will have to be packed in or other meadows in the area that are not currently grazed will receive more use.
- The Emily Lake trail would possibly be closed until the wet meadow crossing is rerouted or repaired. Use could be displaced to nearby Rosalie or Gladys, which would slightly increase trampling risks near the area with fen characteristics.
- Campsite at ccd5b Meadow and its access would possibly be closed due to fen damage. Crater Meadow could also be closed due to resource concerns.

Cumulative Effects

In this geographic unit, the heavy use by hikers and backpackers is unlikely to add to effects of commercial pack stock and trail management, because few of the effects such as trampling of lakeshores and proliferation of campsites (bare ground) occur in saturated soil areas. Under Alternative 1, the most fens would remain degraded, so the cumulative effect, although very small, would be greatest of the alternatives.

Fens – Alternative 2 - Modified

Approximately 42 percent of the meadows will be in grazing zones, and inadvertent trampling and grazing impacts to any unknown fens would be more likely in these meadows.

The 14 meadows/trail with known fens or fen characteristics would continue to have some level of pack stock use, at about the same levels as current reported use. There would be direction to avoid the fens as critical areas with a 5 percent trampling “limit”, and monitoring would be required to ensure compliance. It is expected that some inadvertent trampling and use will occur, but grazing use will be reduced or discontinued if no satisfactory method of consistent avoidance is found.

- **Rush Creek AU:** There would continue to be grazing at Upper Spooky Meadow at levels similar to current grazing. Trampling to the spring with fen characteristics would be difficult to keep at less than 5 percent without changes to stock management. At Lower Alger, stock levels would be similar to current use and the slight trampling of the fen would probably continue (<5 percent). The current condition of the fen is good, and there would be no expected change.
- **Thousand Island AU:** Garnet Lake would not be grazed, so the degraded stream, hydrologic function, and vegetative composition would improve.
- **Minaret AU:** The Emily Lake trail would be closed until repaired or rerouted, so the area with fen characteristics would begin to recover. The area with fen characteristics in Gladys/Rosalie would continue to have slight trampling impacts, but would remain functional.
- **River High AU:** Very light grazing would continue at Badger Meadow, but the fen would remain in good condition.
- **Crater Creek AU:** Crater Meadow, Upper Crater Meadow, and the three meadows in Deer Creek drainage with fens at risk will be closed to grazing, so the fens should recover, but there could be inadvertent trampling. Summit and ccd4 Meadows would be open to grazing, so the fens will probably continue to have trampling impacts. The campsite at ccd5b Meadow would not be designated as a stock camp, but impacts would continue from private stock or hikers.

Cumulative Effects

The cumulative effects of hikers and backpackers with the commercial pack stock use and trail management would be even less than Alternative 1, approximately the same as Alternatives 2, 3, and 4, and slightly more than Alternative 5.

Fens – Alternative 2

The effects to the meadows with fens will be the same as Alternative 2 - Modified.

Fens – Alternative 3

The effects to the meadows with fens will be the same as Alternative 2 - Modified.

Fens – Alternative 4

Although the utilization level at Upper Spooky, Badger, and Gladys/Rosalie Meadows would be reduced, slightly reducing the risk of trampling to the areas with fen characteristics, there would be no expected difference in meadow condition from Alternative 2 - Modified. In general, the effects to the meadows with fens would be the same as Alternative 2 – Modified.

Fens – Alternative 5

The six meadows with identified fens or fen characteristics and moderate to severe spring impacts or changes in hydrologic condition will no longer have commercial pack stock impacts and would be expected to have improved conditions. These meadows are Lower Alger, Upper Spooky, 3 in the Deer Creek drainage, and Upper Crater Creek.

Cumulative Effects

There would be no commercial pack stock effects, but trail maintenance and possibly increases of private pack stock use would add to any hiker and backpacker effects.

Rare Plants

Rare Plants – Alternative 1

Of the 11 populations of sensitive and watch list plants known from in or near Ansel Adams East Geographic Unit, three are in locations remote from trails and no impacts are expected, six are in meadows (four open to grazing but no downward trends are expected), and four are near trails (two TC3, one TC1, and one use trail). Of the 52 meadows with potential habitat for sensitive species, two would have persistent or newly degraded conditions and all would be open for pack stock use. Three more meadows would remain in degraded condition if use increases over current levels. The northern AA East units are not in current pack station operating areas, so would not be expected to have use.

- **Glacier Canyon AU:** The Glacier Canyon Trail would be TC1, but stock access would require special approval, so there would be very few impacts to the populations of Congdon's sedge near this trail
- **Gibbs AU:** The population/habitat of Tahoe draba is inaccessible and there are no known threats.
- **Bloody AU:** Both Tioga sedge populations are in small meadows outside current pack station operating areas, so most of the possible impacts to these populations would be from hikers.
- **Parker AU:** There would be a small risk of pack stock impacts to the population of Tioga sedge along the Alger Trail (TC3) at Parker Pass where there are no restrictions on

use, although there is no recent reported use beyond Alger Lakes. The TC3 designation means more frequent maintenance with accompanying possibility of disturbance to this population near Parker Pass.

- **Northern AA East:** Of the 14 meadows in the elevation zone of Tioga sedge, meadow and stream conditions would remain good, except at Rodgers, where there may be a minor downward trend in vegetation composition, and Marie, where there would be no improvement in stream condition. The minor trampling damage to the lakeshore meadow potential habitat for Tioga sedge will continue.
- **Upper Rush AUs:** There would be no effects to the populations of fell-field claytonia because of their inaccessible location and rocky habitat.
- **Crater Creek AU:** The populations of alpine fireweed are in meadows that would be open to use under this alternative. There would be no predicted change in hydrologic function, PFC, or vegetation composition at these meadows, although there would be a slight trampling risk. The population of short-leaved hulsea was stimulated by the Rainbow fire and will probably decline as the area recovers from the fire and becomes more shaded. Use and maintenance of the TC3 Fish Creek Trail may cause impacts to individual plants, but no overall negative effects to the population.
- **River High AU:** The San Joaquin Peak use trail would be approved and there would be a slight risk of individual Pinzl's rock cress plants outside the wilderness and potential habitat inside the wilderness being trampled. Southern
- **AA East:** Of the 38 meadows with potential habitat for the west side sensitive riparian species, five would be closed to commercial pack stock grazing and 18 others would be in grazing zones. Conditions at Crater would remain degraded. There would be minor improvements in conditions at Johnston, Summit, and JMT/Shadow Creek Junction if stock use stays at current levels. If use increases, conditions could remain degraded.

JMT/Shadow Junction Meadows would possibly be closed as a foreseeable action.

Cumulative Effects

In this geographic unit, the heavy use by hikers and backpackers is likely to add to effects of commercial pack stock and trail management, especially by trampling of lakeshores and proliferation of campsites (bare ground). Under Alternative 1, the most potential riparian habitat would remain degraded, so the cumulative effect would be greatest.

Rare Plants – Alternative 2 Modified

Of the 11 populations of sensitive and watch list plants known from in or near Ansel Adams East Geographic Unit, five are in areas where there are no destinations and so no pack stock activity, although 1 would be on a TC1 hiker trail. In the areas where pack stock use will occur, two are remote from trails, one would be on a TC3 trail, one near an approved use trail, and two are in areas open to grazing.

- **Glacier Canyon AU:** The Glacier Canyon Trail would be TC1 and there would be no destinations in this AU, so there would only be hiker impacts to the population of Congdon's sedge.

- **Gibbs AU:** The population/habitat of Tahoe draba is inaccessible and there are no known threats.
- **Bloody AU:** Because there would be no destinations open for use in this AU and the populations of Tioga sedge are away from the trail, there would be no risk of pack stock or trail impacts to the populations of Tioga sedge, although hikers and anglers would continue to use the area and could trample individual plants.
- **Parker AU:** Because Alger Trail would be TC2 and there are no destinations beyond Alger Lake, the risk of disturbance due to trail use and maintenance of the populations of Tioga sedge is lower than the very small risk in Alternative 1 and there would be no risk of commercial pack stock impacts.
- **Northern AA East:** Because the grazing rotation plan includes East of Davis which has no current reported grazing, there will be a new area of impacts to the lakeshore and meadow potential habitat for Tioga sedge. Of the 14 meadows in the elevation zone of Tioga sedge, six are within grazing zones, which are predicted to cause minor downward trends in PFC and vegetation composition at East of Davis and in vegetation composition at Rodgers, but no change in hydrologic condition, PFC, or vegetation composition at three others. At Marie Meadow, fewer stock than currently reported would be allowed to graze, so there could be a minor improvement in conditions.
- **Upper Rush Creek:** There would be no effects to the populations of fell-field claytonia because of their inaccessible location and rocky habitat.
- **Crater Creek AU:** The effects to the populations of alpine fireweed and short-leaved hulsea are the same as Alternative 1.
- **River High AU:** The San Joaquin Ridge use trail would be approved for hunting only, so any impacts to the Pinzl's rock cress population or habitat would take place late in the season when impacts would be less damaging.
- **Southern AA East:** Under this alternative, the grazing management of the four somewhat degraded meadows with potential habitat for the west side sensitive riparian species would result in no change at Crater Meadow (trail problems), JMT/Shadow Creek Junction. Meadows and Summit Meadows, and Johnston. Eighteen other meadows, of the thirty-eight in the elevation zone for potential habitat, are in designated grazing zones and there could be more grazing in them than currently, since thirteen meadows in this geographic unit would be closed to grazing. As grazing use approaches capacity, it could lead to a minor downward trend in meadow conditions.

Cumulative Effects

The cumulative effects of hikers and backpackers with the commercial pack stock use and trail management would be less than Alternative 1, approximately the same as Alternatives 2, 3, and 4, and slightly more than Alternative 5.

Rare Plants – Alternative 2

The effects of Alternative 2 would be the same as Alternative 2 – Modified.

Rare Plants – Alternative 3

Of the eleven populations of sensitive and watch list plants known from in or near Ansel Adams East Geographic Unit, four are in areas where there are no threats from pack stock or trail activity, four are on or near trails (three system, one use trail), two are in areas open to grazing (only one with likely grazing), and one is in an area closed to grazing and unlikely to be used by pack stock.

- **Glacier Canyon AU:** The Glacier Canyon Trail would be TC1 and the trail would not be closed to commercial pack stock use, although there has been no recent reported use, so there would be a slight risk of hiker or pack stock impacts to the population of Congdon's sedge.
- **Gibbs AU:** The population/habitat of Tahoe draba is inaccessible and there are no known threats.
- **Bloody AU:** There would be no grazing zones designated in this analysis unit, but it would be possible but unlikely that pack stock would use the Bloody Canyon Trail (TC2), so there would be a very slight risk of commercial pack stock and hiker/angler impacts to the populations and habitat of Tioga sedge in small meadows away from the trail.
- **Parker AU:** The Parker Pass trail would be TC2 and open to pack stock use, but use would probably be insignificant (similar to current use), so there would be a very slight risk of trail use and maintenance, pack stock, and hiker effects to the population of Tioga sedge.
- **Northern AA East:** The effects on the potential habitat for Tioga sedge are the same as in Alternative 2 - Modified.
- **Upper Rush AUs:** There would be no effects to the populations of fell-field claytonia because of their inaccessible location and rocky habitat.
- **Crater Creek AU:** The effects on the populations of alpine fireweed and short-leaved hulsea are the same as Alternative 1.
- **River High AU:** The effects to the potential habitat of Pinzl's Rock Cress would be the same as Alternative 1.
- **Southern AA East:** Under this alternative, the grazing management of the four somewhat degraded meadows with potential habitat for the west side sensitive riparian species would result in minor improvements at Johnston and Summit Meadows, and major improvement at JMT/Shadow Creek junction Meadow, but no change at Crater Meadow (trail problem). 18 other meadows, of the 38 in the elevation zone for potential habitat, are in designated grazing zones and there could be more grazing in them than currently, since 12 meadows in this geographic unit would be closed to grazing. As grazing use approaches capacity, it could lead to a minor downward trend in meadow conditions.

Cumulative Effects

The cumulative effects would be the same as Alternative 2 – Modified.

Rare Plants – Alternative 4

Of the 11 populations of sensitive and watch list plants known from in or near Ansel Adams East Geographic Unit, 6 are in remote locations and no impacts are expected, 2 are in meadows open to grazing but no downward trends are expected, and 3 are near trails (2 TC3 and one use trail) open to all uses. Of the 52 meadows with habitat for sensitive species, 2 would have persistent or new degraded conditions.

- **Glacier Canyon AU:** The Glacier Canyon Trail would be TC1 and NSCS, so there would only be hiker impacts to the population of Congdon's sedge.
- **Gibbs AU:** The population/habitat of Tahoe draba is inaccessible and there are no known threats.
- **Bloody AU:** There would be no commercial pack stock use of this analysis unit this Alternative so the populations of Tioga sedge would be at no risk
- **Parker AU:** The Alger Trail would be TC2, but commercial pack stock use would be unlikely past Alger Lakes, so there would be a slight risk of trail use and maintenance, hiker, and commercial pack stock impacts to the population of Tioga sedge near Parker Pass.
- **Northern AA East:** Because the rotational grazing would not include Rodgers, but would increase the use of East of Davis, which currently has no reported grazing, there would be protection for the potential habitat for Tioga sedge at Rodgers Meadow and slightly increase the impacts expected at East of Davis, the overall effect being a slight improvement over Alternatives 2 - Modified and 3, where both meadows would be grazed.
- **Upper Rush AUs:** There would be no effects to the populations of fell-field claytonia because of their inaccessible location and rocky habitat.
- **Crater Creek AU:** The effects to the populations of alpine fireweed and short-leaved hulsea are the same as Alternative 1.
- **River High AU:** The San Joaquin Peak use trail would be prohibited, so there would be no pack stock impact to the potential habitat of Pinzl's rock cress.

Cumulative Effects

The cumulative effects would be the same as Alternative 2 – Modified.

Rare Plants – Alternative 5

Of the 11 populations of sensitive and watch list plants known from in or near Ansel Adams East Geographic Unit, 2 are in remote locations and no impacts are expected, 3 are in meadows open to grazing but no downward trends are expected, and 3 are near trails (2 TC3 and one use trail) open to all uses. Of the 52 meadows with habitat for sensitive species, 2 would have persistent or new degraded conditions. There would be no commercial pack stock use in this alternative, but there could be increases in private pack stock use or displacement of use to areas outside the AA/JM Wildernesses.

- **Glacier Canyon AU:** The Glacier Canyon Trail would be TC1, so there would only be hiker impacts to the population of Congdon's sedge.
- **Gibbs AU:** The population/habitat of Tahoe draba is inaccessible and there are no known threats.
- **Bloody AU:** There would be a no risk of trail or commercial pack stock impact to the populations of Tioga sedge, although there would still be hiker and angler use and a slight risk associated with those uses.
- **Parker AU:** There would be a slight risk of hiker and trail use and maintenance impacts on the population of Tioga sedge near the TC2 Alger Lakes Trail.
- **Northern AA East:** There would be no commercial pack stock use in this Alternative so the populations and potential habitat of Tioga sedge would be at no risk from pack stock use and the degraded stream conditions at Marie Meadow would improve.
- **Upper Rush AUs:** There would be no effects to the populations of fell-field claytonia because of their inaccessible location and rocky habitat.
- **Crater Creek AU:** The populations of alpine fireweed would be at no risk from commercial pack stock use, although there could still be private pack stock using meadows for grazing. There would be no risk of trampling by commercial pack stock to the population of short-leaved hulsea, but there would still be hiker and private pack stock using the TC3 trail, as well as maintenance impacts.
- **River High AU:** The effects to the potential habitat for Pinzl's rock cress would be the same as Alternative 4.
- **Southern AA East:** There would be no commercial pack stock grazing, and meadow conditions would improve at 3 of the 4 currently degraded meadows. Stream conditions in Crater Meadow would remain degraded until the trail problems are resolved. The 38 meadows with potential habitat for the sensitive riparian species would only be at risk for impacts from private pack stock or hikers.

Cumulative Effects

There would be no commercial pack stock effects, but trail maintenance and possibly increases of private pack stock use would add to any hiker and backpacker effects.

Weeds

See Wilderness Scale discussion above.

Cumulative Effects

The construction and maintenance of the hydro facilities in Rush Creek, other recreational facilities near trail heads, and the high volume of hikers and backpackers in this geologic unit add to the risks of weed spread and introduction by commercial pack stock and trail maintenance activity.

Campfires

See Wilderness Scale discussion above.

Cumulative Effects

The high volume of hikers and backpackers in this geographic unit make the risk of illegal wood gathering and campfires higher in Alternatives 2 Modified, 2, and 3.

Ansel Adams West

Grazing Resources

Analysis

The vegetation in the riparian areas of the Ansel Adams West Geographic Area continues to be affected by the chronic and synergistic effects of historical production livestock and pack stock grazing, recent production livestock grazing, current production livestock grazing. These effects are substantial and widespread enough to alter the character of the riparian areas in this Geographic Area. The recovery of these areas from the widespread and chronic effects of historical and recent production livestock grazing will take decades, regardless of the Alternative selected.

Grazing Resources – Alternative 1

Analysis

A direct effect of continued grazing, at a level of 258 stock nights of grazing reported annually, in the meadows of the Ansel Adams West Geographic Area would be localized sites with reduced vegetative cover, and or bare areas, associated with designated camps and grazing areas as animals entered nearby areas to access drinking water, roll in the dust, and feed.

There would be limited alteration of stream bank vegetation, also especially near camps, as animals accessed the streams to water and or crossed streams to find forage or to access campsites. As is discussed in the Analysis section these types of effects are of less concern in fully functional systems but, while within identified standards, may still hinder recovery or increase the risk of cumulative adverse effects during episodic events in locations that have the cumulative effects of historical and recent production livestock grazing, such throughout most of the western Ansel Adams Wilderness Area.

Implementation of Alternative 1 would continue the existing situation, which does not include adaptive management mechanisms to respond to resource concerns. The cumulative effect could be an increased loss of riparian vegetation, inadequate vegetation to provide for ecological processes, and increased risk of damage due to events such as summer thunderstorms and spring snowmelt. There would be a chronic and synergistic continued loss of late-seral vegetation and reduced ecological status at historically affected locations and increased cumulative risk at locations with current impacts.

All Analysis Units: A direct effect of existing pack stock use would be localized sod fragmentation in meadow areas, especially: along the south side of Sadler Lake; at the springs and springs channels in the Sadler to McClure Lake meadow; at Joe Crane Lake inlet meadows;

at the wrangler camp west of Joe Crane Lake; at Fernandez Creek junction meadow, at Isberg Meadow; and in the grazing area along Silver Creek near Coyote Lake. A direct effect of stock use would be continued trampling of the trail from Coyote Lake and the trail through the meadow area along Silver Creek near Coyote Lake. The resulting loss of vegetation would prevent stabilization of the active headcutting along the trail in this meadow. There would be local and minor to moderate sod fragmentation at Corral 77, Stevenson Meadow, Falls Meadow, and Stairway Meadow. There would be unknown but likely minor grazing related impacts in the Bridge Crossing, Junction, and Iron Creek areas.

A direct effect would be localized loss of vegetation along new access trails or loss of vegetation in partially recovered, formerly bare, areas in meadows and along historic production livestock trails. Indirect effects at these locations would include reduced recruitment of vegetation on in-stream bars and on the stream banks of the incised channels. There would be continued trampling effect, including reduced vegetative cover in camps, at stock holding areas, and along the associated access trails, especially along the incised trails associated with Fernandez Junction Meadow, Anne Lake, and at the Sadler Lake campsites.

Effects over the long-term would include a reduction in adequate vegetation to provide protection during flow events especially. There could continue to be reductions in late-seral riparian vegetation along the incised trail along the south side of Sadler Lake. The gully would begin to move laterally into the springs and spring channels in the Sadler to McClure Lake meadow, which would reduce the water table and result in decreased riparian vegetation. The incised and eroding trail in Fernandez Junction meadow would continue to reduce the water available for vegetation resulting in decreased riparian vegetation. There would likely be continued loss of riparian vegetation at all of these locations until and unless improved management and an active watershed and trail restoration program is implemented.

Cumulative Effects

There are some meadows, including Knoblock, Chetwood, Detachment, Fernandez Lakes, Fernandez Junction, Sadler Lake, and Joe Crane Lake where historically altered vegetative composition is combined with altered hydrological function. With these chronic existing conditions there is likely to be continued loss of riparian obligate vegetation, decreased stabilizer plant species, and increased mid-seral or early-seral vegetative condition with implementation of any alternative. There is likely to not be adequate vegetation to provide for dissipation of energy, filtering of sediment, and retention of water with implementation of any alternative at these locations, as a result of the synergistic relationship between the historical, relatively recent, and currently occurring effects and processes.

Grazing Resources – Alternative 2-Modified

Analysis

Commercial pack stock grazing under this alternative, with approximately 1,509 stock nights available annually, and grazing even with applicable standards enforced, in many of the meadows throughout the west-side of the Ansel Adams Wilderness could slow vegetative recovery and perpetuate risk of damage due to events such as summer thunderstorms and spring snowmelt of areas which have been affected by over a century of production livestock grazing. Localized sites of low-seral vegetation, reduced vegetative cover, and or bare areas would be

associated with designated camps as animals focused on nearby areas to access drinking water, roll and feed.

Effects over the long-term would include a reduction in adequate vegetation to provide protection during flow events especially: along the south side of Sadler Lake; the springs and springs channels in the Sadler to McClure Lake meadow; Fernandez Creek junction meadow; Isberg Meadow; and Fernandez Junction Meadow. There would likely be continued loss of riparian vegetation at all of these locations until and unless an active watershed and trail restoration program is implemented.

There would be local alteration of stream bank vegetation, also especially near designated camps, as animals accessed the streams to water and or crossed streams to find forage or to access campsites.

A direct effect of existing pack stock use would be localized sod fragmentation in meadow areas, especially: along the south side of Sadler Lake; at the springs and springs channels in the Sadler to McClure Lake meadow; at Joe Crane Lake inlet meadows; at the wrangler camp west of Joe Crane Lake; at Fernandez Creek junction meadow, at Isberg Meadow; and in the grazing area along Silver Creek near Coyote Lake. A direct effect of stock use would be continued trampling of the trail from Coyote Lake and the trail through the meadow area along Silver Creek near Coyote Lake. The resulting loss of vegetation would prevent stabilization of the active headcutting along the trail in this meadow. There would be local and minor to moderate sod fragmentation at Corral 77, Stevenson Meadow, Falls Meadow, and Stairway Meadow. There would be unknown but likely minor grazing related impacts in the Bridge Crossing, Junction, and Iron Creek areas.

A direct effect would be localized loss of vegetation along new access trails or loss of vegetation in partially recovered, formerly bare, areas in meadows and along historic production livestock trails. Indirect effects at these locations would include reduced recruitment of vegetation on in-stream bars and on the stream banks of the incised channels. There would be continued trampling effect, including reduced vegetative cover in the stock holding areas and along the associated access trails, especially along the incised trails associated with Fernandez Meadow, Anne Lake, and at the Sadler Lake campsites.

Cumulative effects over the long-term would include a reduction in adequate vegetation to provide protection during flow events especially. There could continue to be reductions in late-seral riparian vegetation along the incised trail along the south side of Sadler Lake. The gully would begin to move laterally into the springs and spring channels in the Sadler to McClure Lake meadow which would reduce the water table and result in decreased riparian vegetation. The incised and eroding trail in Fernandez Junction meadow would continue to reduce the water available for vegetation resulting in decreased riparian vegetation. There would likely be continued loss of riparian vegetation at all of these locations until and unless improved management and an active watershed and trail restoration program is implemented.

Cumulative Effects

There are some meadows, including Knoblock, Chetwood, Detachment, Fernandez Lakes, Fernandez Junction, Sadler Lake, and Joe Crane Lake where historically altered vegetative composition is combined with altered hydrological function. With these chronic existing conditions there is likely to be continued loss of riparian obligate vegetation, decreased stabilizer

plant species, and increased mid-seral or early-seral vegetative condition with implementation of any alternative. There is likely to not be adequate vegetation to provide for dissipation of energy, filtering of sediment, and retention of water with implementation of any alternative at these locations, as a result of the synergistic relationship between the historical, relatively recent, and currently occurring effects and processes.

These cumulative effects could increase in these meadows areas, currently little used by pack stock, if pack stock use shifted in response to grazing restrictions elsewhere.

Grazing Resources – Alternative 2

Analysis

A direct effect of grazing, with approximately 535 stock nights available annually, would be localized sites of low-seral vegetation, reduced vegetative cover, and or bare areas associated with designated camps and grazing areas as animals entered nearby areas to access drinking water, roll in the dust, and feed.

There would be local alteration of stream bank vegetation and loss of the vegetation needed to provide stability, also especially near designated camps, as animals accessed streams to water and or crossed streams to find forage or to access campsites. These types of limited and localized effects are of less concern in fully functional systems but, while within identified standards, may still hinder recovery or increase the risk of cumulative adverse effects during episodic events in locations with historically impaired riparian ecosystems that are functioning at risk.

As detailed below on a site-specific basis in the Analysis Unit section, these effects would be most likely at: Sadler Lake; Joe Crane Lake inlet meadows; the wrangler camp west of Joe Crane Lake; Fernandez Creek junction meadow; Isberg Meadow; along Silver Creek near Coyote Lake; Fernandez Meadow; and Anne Lake. At most of these locations the riparian vegetation is being affected by trail related erosion as well as by grazing utilization. There could be similar effects if use shifts to areas currently little used including; Cora Lakes; Chetwood Meadow; Knoblock Meadow; Detachment Meadow; Joe Crane Trail Junction Meadows; and Flat Lake.

Several key areas are recommended as unsuitable for grazing, including the Meadow between Sadler and McClure Lakes; Fernandez Creek Meadows; Fernandez Lake meadows; and the meadows South of Slab Lake. At these locations, the direct effects of prohibiting grazing would be increases in vegetative production in the short-term, especially near springs and streams. Transition to late-seral vegetation and then maintenance of high-seral conditions would occur over the long-term in these areas. There would likely be continued loss of riparian vegetation at Fernandez Lake Meadows and the meadow between Sadler and McClure lakes until an active watershed restoration program is implemented.

A direct effect of would be localized sod fragmentation in meadow areas, especially: along the south side of Sadler Lake; at Joe Crane Lake inlet meadows; at the wrangler camp west of Joe Crane Lake; at Fernandez Creek junction meadow, at Isberg Meadow; and in the grazing area along Silver Creek near Coyote Lake. A direct effect of stock use would be continued trampling of the trail from Coyote Lake and the trail through the meadow area along Silver Creek near Coyote Lake. The resulting loss of vegetation would prevent stabilization of the active headcutting along the trail in this meadow. There would be local and minor to moderate sod fragmentation at Corral 77, Stevenson Meadow, Falls Meadow, and Stairway Meadow. There

would be unknown but likely minor grazing related impacts in the Bridge Crossing, Junction, and Iron Creek areas.

A direct effect would be localized loss of vegetation along new access trails or loss of vegetation in partially recovered, formerly bare, areas in meadows and along historic production livestock trails. Indirect effects at these locations would include reduced recruitment of vegetation on in-stream bars and on the stream banks of the incised channels. There would be continued trampling effect, including reduced vegetative cover in the stock holding areas and along the associated access trails, especially along the incised trails associated with Fernandez Junction Meadow, Anne Lake, and at the Sadler Lake campsites.

Effects over the long-term would include a reduction in adequate vegetation to provide protection during flow events especially: along the south side of Sadler Lake; Fernandez Junction Meadow; Isberg Meadow; and Fernandez Junction Meadow. There would likely be continued loss of riparian vegetation at all of these locations until and unless an active watershed and trail restoration program is implemented.

Cumulative Effects

Cumulative effects of continued grazing and proposed grazing in the areas which have been affected by over a century of production livestock grazing, would be loss of late-seral vegetation and inadequate vegetation to provide watershed protection and perpetuation of risks of increased damage due to events such as summer thunderstorms and spring snowmelt.

Cumulative effects at Knoblock, Chetwood, Detachment, Fernandez Lakes, Sadler Lake, and Joe Crane Lake would be the same as Alternative 2-Modified.

Grazing Resources – Alternatives 3 and 4

Analysis

Commercial pack stock grazing, with approximately 1,511 stock nights in Alternative 3 and 1,056 stock nights available in Alternative 4, in many of the meadows throughout the west-side of the Ansel Adams Wilderness which continue to be affected by the chronic cumulative impacts of over a century of production livestock grazing, could slow vegetative recovery and perpetuate risk of damage due to events such as summer thunderstorms and spring snowmelt of areas.

Alternative 4 would reduce the allowable vegetation utilization level in several meadows, however the levels of trampling and related impacts would likely be similar, as these impact levels are typically reached before the allowable vegetation utilization levels. Alternative 4 would also result in prohibiting grazing in several additional areas with severe alteration of hydrological function, most notably Fernandez Junction, Chetwood, Detachment, and Knoblock meadows and the meadow West of Joe Crane Lake. However, these areas are currently little used and recovery of hydrological and vegetation would take decades, with or without grazing.

Therefore, the effects of implementing Alternative 3 and 4 would not be substantially different.

Localized sites of low-seral vegetation, reduced vegetative cover, and or bare areas would be associated with designated camps as animals focused on nearby areas to access drinking water, roll and feed. There would be local minor to moderate alteration of stream bank vegetation, also especially near designated camps, as animals accessed streams to water and or crossed streams to find forage or to access campsites.

Overall there would be slightly increased risks to watershed functioning conditions with implementation of Alternative 3 relative to Alternative 4. Even without grazing or with grazing managed by applicable standards there would be some continued loss of riparian vegetation associated with the active headcuts, gullies, and unstable stream banks over the short-term to long-term because the erosion features would likely not recover without active restoration.

All Analysis Units: There would be localized trampling of vegetation, trailing through the lakeshore meadows at Sadler Lake, sod fragmentation of meadow areas along the south side of Sadler Lake, at Joe Crane Lake inlet meadows, at the wrangler camp west of Joe Crane Lake, at Fernandez Creek junction meadow, at Isberg Meadow, in the grazing area along Silver Creek near Coyote Lake, and in the stock holding areas at the associated stock used campsites, especially at Fernandez Meadow, Anne Lake, and Sadler Lake.

Similar effects could occur in some areas, currently little used by pack stock, such as Cora Lakes, Joe Crane Trail Junction Meadows, and Flat Lake, if pack stock use shifted in response to grazing restrictions elsewhere. There may be increased use relative to existing reported use and increased related effects in the Corral 77, Hemlock Crossing and Stevenson areas as well. A direct effect would be localized trampling of and decrease of vegetation along new access trails or loss of vegetation in partially recovered, formerly bare, areas in meadows and along historic production livestock trails. Direct effects at these locations would include reduced recruitment of vegetation on in-stream bars and on the stream banks of the incised channels.

There would be no grazing at the Sadler to McClure Lake meadow, or with Alternative 4 at Chetwood Meadow, Knoblock Meadow, Detachment Meadow, and West Joe Crane Lake Meadow. With either Alternative 3 or Alternative 4 there would be some continued loss of riparian vegetation associated with the active headcuts, gullies, or unstable stream banks over the short-term to long-term and as lateral adjustments occurred over the long-term.

There would be a continual decrease in the vegetation required to provide for watershed restoration at many locations in the Ansel Adams West Geographic Area. There would be additional similar effects as use shifts to areas currently little used such as Cora Lakes, Joe Crane Trail Junction Meadows, and Flat Lake. With implementation of Alternative 3, there could be increased overnight use of these sites as well and a cumulative effect would be a gradual increase in stock use trails to and within grazing locations, decreased vegetative cover at stock holding areas and an increase in dusting pits near the designated campsites. There could be increased riparian vegetation, especially at the developing floodplain level, over the very long-term at these locations, however complete recovery would not occur for decades.

Cumulative Effects

The cumulative effects of Alternatives 3 and 4 would be similar to those of Alternative 2 - Modified.

Grazing Resources – Alternative 5

Analysis

There would be no commercial pack stock use with implementation of Alternative 5. Many of the meadows and riparian systems in the Ansel Adams West are characterized by altered vegetative composition associated with historical chronic impacts, including lowered water

tables, especially in the montane meadows of the Sadler, Cora, Lillian, and Fernandez Analysis Units. In many locations, these conditions would persist for many decades with or without the direct effects of current pack stock grazing.

Recovery of the late-seral riparian vegetation may occur more quickly without grazing and in some locations an increased retention of each year's growth of vegetation. Elimination of grazing effects would help to recruit and establish late-seral vegetation.

Cumulatively there would be slow recovery of vegetative conditions, with continued risk factors such as inadequate vegetation on incised stream banks over the long-term to very long-term.

All Analysis Units: A direct effect of no grazing would be reduced impacts including: reduced trampling of and loss of vegetation along access trails and in intermingled wet areas, especially along the south side of Sadler Lake, the Sadler to McClure Lake meadow, Joe Crane Lake, at the wrangler camp west of Joe Crane Lake, Fernandez Creek junction, Isberg Meadow, the grazing area along Silver Creek near Coyote Lake, and in the stock holding areas at the associated stock used campsites. The indirect effect would be that in the short-term the areas of bare soil in the fragmented sod and on the stream banks at these locations would rapidly be re-vegetated with late-seral species. Private recreational stock use may result in continued impacts, at or near acceptable standards but still maintaining altered vegetative conditions, at Fernandez Creek Junction, Cora Lake, and Sadler Lake.

Vegetative recovery would occur over the long-term at the meadow near the wrangler camp above Joe Crane Lake. The riparian vegetation at the meadow between Sadler and McClure Lakes would increase in vigor and productivity near the springs and spring channels, with recovery not likely until the very long-term. There would be continued loss of riparian vegetation and an increase in upland species such as lupine and lodge pole pine near the active headcut and gully on the south side of the meadow.

Some areas, currently little used by pack stock, such as Cora Lakes, Chetwood Meadow, Knoblock Meadow, Detachment Meadow, Joe Crane Trail Junction Meadows, and Flat Lake, would experience little change, with current conditions persisting over the long-term.

Over the long-term the gullies in the meadow between Sadler and McClure lakes could be stabilized by vegetation, rock, boulders, and woody debris, allowing the riparian areas at the springs and on the north side of the meadow to recover and to begin expanding. There could be continued incisement and reductions in riparian vegetation associated with the trail through the meadows along the south shore of Sadler Lake as private stock and hiker traffic continue the trampling related impacts.

Throughout this geographic unit, the vegetation on the degraded meadow terraces would continue to be characterized by mid-seral and low-seral species, with high-seral species occurring and increasing in vigor and abundance over the long-term in areas that are sub-irrigated by springs and spring channels. Cumulatively the in-stream bars would be slowly vegetated, with early-seral annual herbaceous vegetation in the short-term and with perennial, late-seral, riparian vegetation over the long-term to very long-term.

Cumulative Effects

Altered vegetative composition associated with historical chronic impacts, including lowered water tables, especially in the montane meadows of the Sadler, Cora, Lillian, and Fernandez

Analysis Units would persist for many decades with or without the direct effects of current pack stock grazing. Alternative 5, however, offers the best opportunity for recovery of historic effects of any of the alternatives.

Fens

Fens – Alternative 1

Most meadows would be open for grazing, so there would be risk of trampling and grazing impacts, most likely in currently used meadows.

- **Sadler AU:** There would continue to be grazing at the McClure to Sadler Meadow, which would continue existing trampled condition of the spring area with fen characteristics, and there would be a minor downward trend in the stream and meadow conditions generally.
- **Lake Catherine AU:** At Stevenson Meadow, grazing would continue at current levels and the fen would continue to be in good condition, with a slight risk of trampling.
- **Cargyle AU:** The four meadows with fens will be open to grazing, but they would probably not be used because there has been no recent reported grazing use. Fen conditions would remain as they are currently or improved unless grazing increases dramatically.

Cumulative Effects

Historic and current livestock grazing effects are most severe in this geographic unit and therefore there is the highest probability of current commercial pack stock use preventing recovery of historic impacts or continuing/expanding the damage to meadows in general and any fens in these meadows. Since commercial pack stock grazing use is currently light in this GU, the additive effect is very small, but any increased use might slow recovery.

Fens – Alternative 2 - Modified

Approximately 23 percent of the meadows will be open for grazing, and inadvertent trampling and grazing impacts to any unknown fens would be more likely in these meadows.

- **Sadler AU:** McClure to Sadler Meadow would be rested until conditions improve, so the fen would begin to recover from the trampling impacts.
- **Lake Catherine AU:** At Stevenson Meadow, grazing would be allowed and current use levels would be expected. Because the fen is avoidable, there would be no more than inadvertent trampling, and it would remain in good condition.
- **Cargyle AU:** Three of the meadows with fen impacts would not be grazed, so there would be recovery from trampling. At the other two, grazing would be allowed, but may not occur, since the meadows have not recently been grazed.

Cumulative Effects

The cumulative effects of commercial pack stock use, trail management activities, and historic grazing impacts would be somewhat less than Alternative 1 because of the resting of some meadows, destination management, and standards and guidelines to avoid fens as critical areas.

Fens – Alternative 2

The effects to meadows in Cargyle AU and the number in grazing zones would be the same as Alternative 2 - Modified, except for the following:

- **Sadler AU:** Sadler to McClure, which would be closed to grazing entirely. The closure would make recovery more likely.
- **Lake Catherine AU:** There would be no grazing at Stevenson Meadow, so the fen would have no trampling impacts associated with grazing.

Cumulative Effects

The cumulative effects to fens would be essentially the same as Alternative 2 modified.

Alternative 3

The effects to fens would be the same as Alternative 2 - Modified, except that Sadler to McClure would be closed as in Alternative 2.

Cumulative Effects

The cumulative effects to fens would be essentially the same as Alternative 2 modified.

Alternative 4

The percentage of meadows in grazing zones is the same as Alternative 2 - Modified.

Effects to the seven meadows with fens at risk would be also be the same, but a lower utilization standard would be in effect at Between Cargyle and Stairway Meadow and the risk of trampling would be very slightly lower.

Cumulative Effects

The cumulative effects to fens would be essentially the same as Alternative 2 modified.

Alternative 5

The degraded stream and hydrologic function conditions at McClure to Sadler Meadow would not recover over the period of the grazing permit, although there could be some slight improvement in vegetative condition. Removal of the pack stock should allow springs to recover from trampling impacts at Cargyle North, Middle East Fork Meadow, and Between Stairway and Cargyle Meadows.

Cumulative Effects

The cumulative effects to fens would be less than the other alternatives because there would be no commercial pack stock grazing.

Rare Plants

Rare Plants – Alternative 1

Of the 24 populations of sensitive and watch list plants known from in or near Ansel Adams West Geographic Unit, 3 are in remote locations and no impacts are expected, 3 are in meadows open to grazing but no downward trends are expected, and 18 are near trails open to all uses. In this alternative, the trails that could have impacts on the sensitive and watch list populations have the highest trail classes of any alternative. Of the 209 meadows with habitat for sensitive species, 5 would have persistent or newly degraded conditions.

- **Fuller Buttes AU:** The French Trail would be TC2 and there would be continued maintenance by a volunteer group, but infrequent or no FS maintenance. The population of Mono Hot Springs evening primrose bisected by the trail would be at a very low risk for trampling by pack stock, weed introduction, and trail maintenance activities. Most trail use and maintenance takes place after the flowering of this species. The population of Yosemite lewisia is not expected to be affected by pack stock or trail activities because of its remote location.
- **Cassidy AU:** The population of Yosemite lewisia is in a remote location and there would be no impacts.
- **Lower Mono Creek AU:** The Mono Hot Springs Cutoff (Soda Springs Trail) would be TC1 and use would probably continue to be mostly by hikers, so there would be a very light risk of hiker or pack stock impacts to the population of Mono Hot Springs evening primrose, and probably no trail maintenance activity.
- **Hot Springs AU:** The Mono Hot Springs trail would be TC1 and continue to be used mostly by Forest Service stock, not commercial, so there would be a minimal risk of pack stock trampling and maintenance impacts to the population of Mono Hot Springs evening primrose.
- **Staniford AU:** The Lillian Lake Loop and Walton Trails would be TC3, so there would be minimal pack stock trampling risk, and trail maintenance and use activities could slightly affect the four populations of Kettle Dome buckwheat.
- **Jackass AU:** Both the Norris Lake and Fernandez Trails would be TC3, so the populations of Kettle Dome buckwheat at the trailheads would be at a low risk for pack stock, hiking, and trail maintenance activities.
- **Lake Catherine AU:** Grazing would probably continue at current levels and there would be no change in conditions expected at Stevenson and Hemlock Crossing Meadows, so the habitat for the west side riparian sensitive species would remain in good condition. The Stevenson Trail would be TC3 with related small risk of trampling from use and trail maintenance to the two populations of Kettle Dome buckwheat. Since this is a plant of granite outcrops, risk is very low.
- **Lillian AU:** The population of Congdon's sedge is in a remote location and there would be no impacts. The Timber Creek Trail would be TC2 and there would be a slight risk of pack stock, hiker, or trail maintenance impacts to the population of Kettle Dome buckwheat, but its rocky habitat provides some protection. Degraded conditions would

continue at Fernandez Meadow so the habitat for Bolander's candle moss would be at risk. No change in meadow or stream condition would be expected at the other meadows with potential habitat for Bolander's candle moss, so degraded stream and hydrologic function conditions would continue at Fernandez Meadow.

- **Cargyle AU:** The fen environment of the round-leaved sundew at Cargyle, North Cargyle, and Upper High Meadows would be open for grazing, but there would be no predicted change in hydrologic function, PFC, or vegetation composition if use continues at current low levels. There would be a 20 percent trampling limit and the fen would be a special riparian feature that would be protected under the SNFPA. The meadow between Cargyle and Stairway would have minor improvements in hydrologic conditions if grazing numbers stay low as expected.
- **Triple Divide AU:** There would be no expected change in the use or conditions at the 4 meadows with habitat for the west side sensitive riparian species.
- **Sadler AU:** There would be minor improvement to the moderately degraded stream and hydrologic function conditions at Joe Crane Trail Junction Meadow where there is potential habitat of Bolander's candle moss.
- **Cora AU:** Degraded conditions would continue at Knoblock, Detachment, and Chetwood Meadows, affecting the potential habitat for alpine fireweed, Bolander's clover, and Bolander's candle moss, although surveys did not locate any populations. Since the degraded conditions were caused by cattle use, the minimal impacts from pack stock would probably not further degrade these meadows. All 17 meadows with potential habitat for these species would be open for grazing by pack stock, but very little use occurs now and no changes would be expected. The Stevenson, Isberg, and Chetwood Cabin Trails would be TC3, so there would be low risk of trampling and maintenance impacts to the 4 populations of Kettle Dome buckwheat.
- **Bridge Crossing and Arch AUs:** No expected change in the use or condition of the three meadows that are potential habitat for the west side sensitive riparian species. All would be open to grazing.
- The rocky outcrop habitat of Congdon's lewisia would be at very low risk of impacts from pack stock or trail impacts.

Cumulative Effects

Recent and continuing cattle grazing is the major source of degraded meadow conditions in this geographic unit. Where cattle grazing continues, the effect of current levels of commercial pack stock use on potential habitat for sensitive riparian species is minimal compared to the cattle grazing.

The construction of the Edison Reservoir inundated at least one population of Mono Hot Springs evening primrose as evidenced by a plant collection from Vermillion Valley, reducing the total population of this species and reducing the area of potential habitat. There is also more risk that commercial pack stock will act as weed vectors into the remaining populations because of the introduction of weeds near Edison Lake, apparently associated with the dam construction.

Alternative 2 Modified – Rare Plants

Of the 22 populations of sensitive and watch list plants known from in or near this geographic unit, 3 are in remote locations and no impacts are expected, 3 are in meadows open to grazing but no downward trends are expected, and 16 are near trails open to all uses. Of the 209 meadows with habitat for sensitive species, 4 would have persistent or newly degraded conditions.

- **Fuller Buttes AU:** The impacts to the population of Mono Hot Springs evening primrose would be the same as Alternative 1. The population of Yosemite lewisia is not expected to be impacted by pack stock or trail activities because of its remote location.
- **Cassidy AU:** The population of Yosemite lewisia is not expected to be impacted by pack stock or trail activities because of its remote location.
- **Lower Mono AU:** The effects to the population of Mono Hot Springs evening primrose along the Mono Hot Springs Cutoff (Soda Springs trail) would be the same as Alternative 1.
- **Hot Springs AU:** The risks to the population of Mono Hot Springs evening primrose would be the same as Alternative 1.
- **Staniford AU:** The Lillian Lake Loop would be TC3 and the Walton Trail would be TC2, so there would be a slightly smaller risk of pack stock trampling and trail maintenance impacts to the 4 populations of Kettle Dome buckwheat than in Alternative 1.
- **Jackass AU:** The effects to the Kettle Dome buckwheat populations would be the same as Alternative 1.
- **Lake Catherine AU:** Stevenson Meadow would be closed to grazing and Hemlock Crossing would be grazed at current levels, so there would be reduced commercial pack stock impacts to the potential habitat for the west side riparian sensitive species. The Stevenson Trail would be TC2 and there would be a slightly lower risk of trampling or trail maintenance impacts on the two population of Kettle Dome buckwheat, but the rocky habitat offers protection from most impacts.
- **Lillian AU:** The population of Congdon’s sedge is in a remote location and there would be no impacts. The effects to the population of Kettle Dome buckwheat would be the same as Alternative 1. There would be continued degraded conditions at Fernandez Meadow under Alternative 2 - Modified, although it would be rested. No change in meadow or stream condition would be expected at the other meadows with potential habitat for Bolander’s candle moss.
- **Cargyle AU:** The fen environments of the round-leaved sundew at Cargyle Meadow, North Cargyle, and Upper East Fork Meadows would be “critical areas” and have a 5 percent trampling standard. All three meadows are in a grazing zone, but there would be no predicted change in hydrologic function or PFC, but vegetation composition could have a minor downward trend if grazing use approaches meadow capacity. Of the 34 meadows in Cargyle AU that are in the elevation range of the west side riparian species, all are in a grazing zone and would be expected to have minor trampling impacts, but at two, Stairway and Between Stairway and Cargyle, there would be predicted minor

downward trends in vegetation composition. At Between Stairway and Cargyle, there would also be downward trends in hydrologic condition and stream PFC.

- **Triple Divide AU:** There would be no expected change in the use or conditions at the 4 meadows with habitat for the west side sensitive riparian species.
- **Sadler AU:** The effects to the potential habitat of Bolander's candle moss would be the same as Alternative 1.
- **Cora AU:** The effects to the potential habitat of alpine fireweed, Bolander's clover, and Bolander's candle moss would be the same as Alternative 1. Nine meadows in Cora would be in grazing zones. The impacts to the populations of Kettle Dome buckwheat would be the same as Alternative 1 and 3.
- **Bridge Crossing and Arch AUs:** The effects to potential habitat for the west side sensitive riparian species would be outside of any grazing zone, so no use would be expected. Since no use has been recently reported, there would be no change in the current condition.
- The rocky outcrop habitat of Congdon's lewisia would be at very low risk of impacts from pack stock or trail impacts.

Cumulative Effects

The cumulative effects of cattle grazing and hydrologic facilities with commercial pack stock use and trail management activities is less than in Alternative 1 because fewer meadows would be open for grazing, there would be better implementation of standards and guidelines, and more control of use because of destination management.

Rare Plants – Alternative 2

The effects of Alternative 2 would be the same as those of Alternative 2 – Modified.

Rare Plants – Alternative 3

Of the 22 populations of sensitive and watch list plants known from in or near Ansel Adams West Geographic Unit, 3 are in remote locations and no impacts are expected, 3 are in meadows open to grazing but no downward trends are expected, and 16 are near trails open to all uses. Of the 209 meadows with habitat for sensitive species, 4 would have persistent or newly degraded conditions.

- **Fuller Buttes AU:** The impacts to the population of Mono Hot Springs evening primrose would be the same as Alternative 1. The population of Yosemite lewisia is not expected to be impacted by pack stock or trail activities because of its remote location.
- **Cassidy AU:** The population of Yosemite lewisia is not expected to be impacted by pack stock or trail activities because of its remote location.
- **Lower Mono AU:** The effects to the population of Mono Hot Springs evening primrose along the Mono Hot Springs cutoff (Soda Springs trail) would be the same as Alternative 1.

- **Hot Springs AU:** The Mono Hot Springs trail would be TC2, but probably continue to be used mostly by Forest Service stock, not commercial, so there would be a minimal risk of pack stock trampling and a slightly higher risk of maintenance impacts to the population of Mono Hot Springs evening primrose.
- **Staniford AU:** The impacts to the Kettle Dome buckwheat would be the same as Alternative 1.
- **Jackass AU:** The effects to the Kettle Dome buckwheat populations would be the same as Alternative 1.
- **Lake Catherine AU:** If Stevenson is grazed to capacity, there could be a minor downward trend in stream condition, putting the potential habitat for the west side riparian sensitive species at risk. At Hemlock Crossing, there would be no change from present condition. The effects to the populations of Kettle Dome buckwheat would be the same as Alternative 2 - Modified.
- **Lillian AU:** The population of Congdon's sedge is in a remote location and there would be no impacts. The effects to the population of Kettle Dome buckwheat would be the same as Alternative 1. The effects to potential habitat for Bolander's candle moss would be the same as Alternative 2 - Modified.
- **Cargyle AU:** The effects to the fen environments of the round-leaved sundew at Cargyle Meadow, North Cargyle, and Upper East Fork Meadows would be the same as Alternative 2 - Modified. For the 34 meadows in Cargyle AU with potential habitat for the west side riparian sensitive species, the effects would be the same as Alternative 2 - Modified, but Cargyle Meadow would also have a downward trend in vegetation composition.
- **Sadler AU:** The effects to potential habitat for Bolander's candle moss would be the same as Alternative 1.
- **Triple Divide AU:** There would be no expected change in the use or conditions at the 4 meadows with habitat for the west side sensitive riparian species.
- **Cora AU:** the effects to potential habitat for alpine fireweed, Bolander's clover and Bolander's candle moss would be the same as Alternative 2 - Modified. The impacts to the populations of Kettle Dome buckwheat would be the same as Alternative 1 and 2 - Modified.
- **Bridge Crossing and Arch AUs:** The effects to potential habitat for the west side sensitive riparian species would be the same as Alternative 2 - Modified.
- The rocky outcrop habitat of Congdon's lewisia would be at very low risk of impacts from pack stock or trail impacts.

Cumulative Effects

The cumulative effects of Alternative 3 would be similar to those of Alternative 2 – Modified.

Alternative 4

Of the 22 populations of sensitive and watch list plants known from in or near Ansel Adams West Geographic Unit, 3 are in remote locations and no impacts are expected, 3 are in meadows open to grazing but no downward trends are expected, and 15 are near trails open to all uses and 1 would be on a hiker use trail. Of the 209 meadows with habitat for sensitive species, 4 would have persistent or newly degraded conditions.

- **Fuller Buttes AU:** The impacts to the population of Mono Hot Springs evening primrose would be the same as Alternative 1. The population of Yosemite lewisia is not expected to be impacted by pack stock or trail activities because of its remote location.
- **Cassidy AU:** The population of Yosemite lewisia is not expected to be impacted by pack stock or trail activities because of its remote location.
- **Lower Mono Creek AU:** There would be no risk of pack stock trampling or maintenance impacts to the population of Mono Hot Springs evening primrose along Soda Springs trail, as it would not be in the system, and would not be approved as a use trail for commercial stock.
- **Hot Springs AU:** The risk to the population of Mono Hot Springs evening primrose would be the same as Alternatives 1 and 2 - Modified.
- **Staniford AU:** The impacts to the Kettle Dome buckwheat would be the same as Alternative 2 - Modified.
- **Jackass AU:** The Norris Lake Trail would be TC3 and Fernandez Trails would be TC2, so the populations of Kettle Dome buckwheat at the trailheads would be at a slightly lower risk for pack stock, hiking, and trail maintenance activities than in Alternatives 1, 2 - Modified, and 3.
- **Lake Catherine AU:** The effects to the potential habitat for the west side riparian sensitive species would be the same as Alternative 3. The impacts to the Kettle Dome buckwheat would be the same as Alternative 2 - Modified.
- **Lillian AU:** The population of Congdon's sedge is in a remote location and there would be no impacts. The effects to the population of Kettle Dome buckwheat would be the same as Alternative 1. Although grazing would be prohibited at Fernandez meadow, the degraded conditions (due to cattle use) would probably not improve within the time period of the pack stock permits. There would be no predicted change to hydrologic or stream function in the other meadows with potential habitat for Bolander's candle moss.
- **Cargyle AU:** the effects to the round-leaved sundew and the west side riparian sensitive species would be the same as Alternative 2 - Modified. There would be a 30 percent utilization standard at between Cargyle and Stairway Meadow, so there would be a slightly higher chance of the meadow conditions improving than in Alternatives 1, 2 - Modified, and 3.
- **Sadler AU:** There could be slightly more improvement to the degraded conditions at Joe Crane Trail Intersection meadow where there is potential habitat for Bolander's candle moss because there would be a 30 percent utilization limit rather than 40 percent.

- **Triple Divide AU:** There would be no expected change in the use or conditions at the four meadows with habitat for the west side sensitive riparian species.
- **Cora AU:** The effects to potential habitat for alpine fireweed, Bolander's clover, and Bolander's candle moss would be the same as Alternative 2 - Modified. The impacts to the populations of Kettle Dome buckwheat would be slightly less than Alternatives 1, 2 – Modified, and 3 because the Chetwood Cabin trail would be TC2 and maintenance would be less frequent.
- **Bridge Crossing and Arch AUs:** The effects to potential habitat for the west side sensitive riparian species would be the same as Alternative 2 - Modified.
- The rocky outcrop habitat of Congdon's lewisia would be at very low risk of impacts from pack stock or trail impacts.

Cumulative Effects

The cumulative effects of Alternative 4 would be similar to those of Alternative 2 – Modified.

Alternative 5

There would be no commercial pack stock use under this Alternative, but there could be an increase in private stock use. Of the 22 populations of sensitive and watch list plants known from in or near this geographic unit, 3 are in remote locations and no impacts are expected, 3 are in meadows open to grazing but no downward trends are expected, 15 are near trails open to all uses and 1 would be on a hiker use trail. Of the 209 meadows with habitat for sensitive species, 4 would have persistent or newly degraded conditions.

- **Fuller Buttes AU:** There would be a slight risk of trail maintenance effects on the population of Mono Hot Springs evening primrose along the French Trail (TC2), but there would be no commercial pack stock use. There would be no effect on the population of Yosemite lewisia because of its remote location.
- **Cassidy AU:** The population of Yosemite lewisia is not expected to be impacted by trail activities because of its remote location and there would be no commercial pack stock activity.
- **Lower Mono Creek AU:** The effects to the populations of Mono Hot Springs evening primrose would be the same as Alternative 4.
- **Hot Springs AU:** There would be no commercial pack stock activity, but Forest Service pack stock use would continue, so the risks to the population of Mono Hot Springs evening primrose would be only slightly lower than Alternative 1, 2, and 4.
- **Staniford AU:** There would be no commercial pack stock use, Lillian Lake Loop would be TC3, and the Walton trail would be TC2, so this alternative would have the least impact on the 4 populations of Kettle Dome buckwheat.
- **Jackass AU:** The effects to the Kettle Dome buckwheat would be slightly less than in Alternative 4 because commercial pack stock would not be using the trails and there would only be hiker, private stock, and maintenance effects.

- **Lake Catherine AU:** There would be no commercial pack stock grazing, so there would only be a risk of impacts to potential habitat for the west side riparian sensitive species from private pack stock. The effects to the Kettle Dome buckwheat on the Stevenson trail would be the same as Alternative 2 - Modified.
- **Lillian AU:** The population of Congdon's sedge is in a remote location and there would be no impacts. The effects to the population of Kettle Dome buckwheat would be the same as Alternative 1, except that there would be no risk of trampling by commercial pack stock. There would be no commercial pack stock grazing, so there would be minor improvements of meadow conditions and the only risk of impacts to potential habitat for the west side riparian sensitive species would be from private pack stock.
- **Cargyle AU:** There would be no risk of degrading the condition of the three meadows where the round-leaved sundew is found, the spring impacts in Upper East Fork Meadow should improve in condition, improving the habitat for this species. With the removal of commercial pack stock there would be minor improvement to two of the meadows in Cargyle AU that are potential habitat for the west side riparian sensitive species, and the at other meadows there would be no change.
- **Sadler AU:** There could be slightly more improvement than in Alternative 4 to the degraded conditions at Joe Crane Trail Intersection meadow where there is potential habitat for Bolander's candle moss because there would be no commercial pack stock grazing.
- **Triple Divide AU:** There would be no commercial pack stock use, so conditions at the 4 meadows with habitat for the west side sensitive riparian species could improve slightly.
- **Cora AU:** There would be minor improvements to Knoblock, Chetwood, and Detachment meadows as in Alternative 1, and there would be no risk of any grazing impacts. The impacts to the populations of Kettle Dome buckwheat would be lower than the other alternatives because there would be no commercial pack stock and the trail levels would be the same as Alternative 4.
- **Bridge Crossing and Arch AUs:** There would be no pack stock use at all, but there has been no recent reported use, so there would be no expected change to the potential habitat for the west side sensitive riparian species.
- The rocky outcrop habitat of Congdon's lewisia would be at very low risk of impacts from trail impacts and there would be no commercial pack stock use.

Cumulative Effects

The cumulative effects of Alternative 5 would be somewhat less than those of Alternative 2 – Modified.

Weeds/Campfires

See Wilderness Scale discussions above.

Cumulative Effects

There would be very few cumulative effects in this geographic unit because very few campsites are above the elevation closure and backpacking use is light to moderate.

Fish Creek/Convict/McGee

Analysis

Historical grazing uses by production livestock, primarily sheep but some cattle, pack stock supporting mining operations and recreational pack stock has historically been high throughout this geographic area. There are persistent chronic effects including loss of late-seral riparian vegetation, incisement and erosion of trails, stream bank instability and stream channel incisement resulting in loss of riparian vegetation needed to dissipate energy, filter sediment and provide for water retention. These effects are most prevalent and accompanied by the additive cumulative effects of current pack stock grazing and use in the McGee, Fish Creek, Cascade valley, and Silver Divide Analysis Units.

Grazing Resources – Alternative 1

Analysis

The high reported grazing in 2001-2003 was 1,789 stock nights in this geographic area. Many meadows in the Fish Creek watershed will experience direct effects of grazing under Alternative 1. They are often grazed now and would likely experience continued grazing in the short-term, sometimes in meadows that may be unsuitable for grazing. The direct effects in these meadows would be a localized loss of vegetation where stock roll and dust themselves near campsites and in stock holding areas. Indirect effects would be localized reduced vegetative vigor and productivity. Indirect effects over the long-term would be a reduction of late-seral vegetative species, a decrease in vegetative cover and areas with early-seral species and bare areas within meadows.

There would be a decrease in riparian vegetation adequate to protect the watershed during flow events, reduced recovery potential of riparian vegetation. Depending upon the timing, location and intensity of events the cumulative effect may be increased degradation of meadow and riparian areas.

These direct and indirect effects of pack stock grazing use would occur over the short-term at: Deer Camp; Purple Meadow; High Camp; Purple Bench; Ram Tarn meadow along the trail above Purple Meadow; lower Long Canyon Meadow; Lee and Cecil Lakes; Jackson Meadow; Grassy Lake Meadow; most of the higher elevation meadows in the Silver Divide area; Duck Lake meadows; Second Meadow; the tarn pond and riparian areas along access trails below Lee Lake; Martin's Meadow, Round Meadow, Baldwin Meadow, north of Big McGee Lake; and along the trail to Steelhead Lake. The direct and indirect effects of pack stock use may occur but are less likely due to little existing use at: the box canyons above Grassy and Jackson meadows; Pika and Virginia Lake; the meadows east of Duck Pass; Chute Meadow; Genevieve Lake camp; and Cloverleaf Lake.

There would be no grazing or related effects such as hoof punching of vegetation and sod at Second Crossing. The late-seral vegetation would increase near the trails leading from the campsite into the meadow and along the stock access trails in the meadow.

Coldwater, Purple Bench, Upper Fish Creek, Cascade Valley, Silver Divide, and Margaret:

The meadows in Cascade Valley near the confluence of Fish Creek with Minnow and Purple Creek were closed to grazing in 1988. Direct effects would be continued vegetative recovery with annual herbaceous vegetation filling in formerly bare areas and late-seral riparian vegetation increasing at or below the bank full level of the associated streams.

There may be some increased trampling and loss of annual vegetation as stock roaming between drift fences periodically enters these sites. There would be trampling of and localized loss of riparian vegetation at the designated stock camps at Virginia Lake, and on the access trail to and near the camps at Deer Camp and Horse Heaven. There would continue to be excessive deposition over the long-term and until repair and restoration work is accomplished along the trails in the Minnow Creek watershed upstream of Grassy Lake, including the trail near Lake of the Lone Indian and the incised and eroded trail toward Peter Pande Lake from Grassy Lake and at Peter Pande Lake.

Direct effects would be localized decreased vegetative growth, maintenance of existing bare stock dusting areas and continuation of localized altered vegetative species composition. Long-term there would be localized decreased vegetative recruitment, productivity, and establishment and an increase in mid-seral and early-seral plant species.

Over the long-term there would be localized reduced recruitment and establishment of vegetation on in-stream bars. These processes would be especially noticeable at: the meadow areas along the incised and eroded trail to Sheep Camp below Lee and Cecil Lakes; the meadows near Duck Lake; Purple Meadow; Purple Bench; Ram Tarn meadow along the trail above Purple Meadow; Jackson Meadow; Horse Heaven; lower Long Canyon Meadow; Island Crossing (Fox) meadow; Tully Hole; and Third Crossing Meadow. The cumulative adverse impact of these effects would be reduced resiliency and persistence of an at risk functioning condition over the very long-term.

The large headcuts in Jackson Meadow and stream bank instability at Tully Hole would remain active due to the degree of channel incisement.

Convict: There would be some continued loss of riparian vegetation along the trail between Edith and Clover lakes, at the inlet to Edith Lake, and associated with pack stock related trampling along the access trails and designated campsites and stock holding areas at Edith and Genevieve lakes. There would be trampling of vegetation and localized sod fragmentation at the small ponds near the stock holding area at the Genevieve Lake designated campsite.

These effects would not be likely to result in a lack of adequate riparian vegetation to provide protection and likely would not result in increased ecological risks in these locations.

McGee: There would be localized decreases in vegetative productivity, vigor, and recruitment at Second Meadow, Martin's Meadow, Round Meadow, Baldwin Meadow, and along the trail at the junction north of Big McGee Lake. In Martin's meadow the large headcut would remain active for the long-term, but may be stabilized by riparian vegetation over the very long-term. There would be localized vegetation damage and sod fragmentation due to trampling in riparian areas along the trail toward Golden Lake. However, these areas would continue to be at risk until

trail restoration is accomplished. Elsewhere there would be little change from the current condition and trend as most areas in McGee canyon have not been grazed in the last few years.

In most areas of McGee Creek, increased vegetative growth would allow a trend toward the potential natural vegetative community and provide watershed protection.

Cumulative Effects

The effects of historic grazing, mining, and pack stock use are most prevalent and accompanied by the additive cumulative effects of current pack stock grazing and use in the McGee, Fish Creek, Cascade Valley, and Silver Divide Analysis Units.

There are some meadows, including Martin's Meadow, Grassy Meadow, Jackson Meadow, Island Crossing (Fox) meadow, Third Crossing Meadow, Cascade Valley meadows, riparian meadows along the trail to Lee Lake, and Tully Hole Meadow where there are long-term historical unstable watershed conditions and chronic processes such as instability along Fish Creek, instability along Minnow Creek, and active headcuts. With these chronic existing conditions there is likely to be loss of riparian obligate vegetation, decreased stabilizer plant species, and increased mid-seral or early-seral vegetative condition. There is likely to not be adequate vegetation to provide for watershed protection with implementation of any alternative, as a result of the synergistic relationship between the historical and currently occurring processes.

Grazing Resources – Alternative 2-Modified

Analysis

There would be an estimated 1,369 stock nights of grazing available with implementation of Alternative 2-Modified. Locations where direct grazing and trailing related effects would occur include: Virginia Lake; Deer Camp; Horse Heaven; Purple Bench; Cascade valley; Horse Heaven; lower Long Canyon Meadow; Island Crossing (Fox) meadow; Third Crossing Meadow; Genevieve Lake camp; Second Meadow, Martin's Meadow, Round Meadow, Baldwin Meadow, north of Big McGee Lake; and along the trail to Steelhead Lake.

There would likely be increased effects, over the long-term and cumulatively due to increased risk factors at Horse Heaven, Tully Hole, Third Crossing, Long Canyon, and Purple Bench.

Areas categorized as not suitable for grazing or where grazing would be prohibited would see increases in vegetative production, especially near springs and streams. Transition to late-seral vegetation would occur over the long-term in these unsuitable areas: Lee and Cecil Lakes; the box canyons above Grassy and Jackson; most of the higher elevation meadows in the Silver Divide area; Ram Tarn meadow along the trail above Purple Meadow; Jackson Meadow; Purple Meadow; Pika and Duck Lake meadows; Virginia Lake Meadows; meadows east of Duck Pass; the tarn pond and riparian areas along access trails below Lee Lake; Second Crossing Meadow; the majority of Convict basin; most of McGee Creek; and at Coyote Lake Meadows. Grassy Lake Meadow; would not be grazed, however, the stream bank instability and associated loss of riparian vegetation would likely continue over the long-term at these locations.

Coldwater, Purple Bench, Upper Fish Creek, Cascade Valley, Silver Divide, and Margaret:

The meadows in Cascade Valley near the confluence of Fish Creek with Minnow and Purple Creek were closed to grazing in 1988 and there would be resumed grazing at low levels. There

would likely continue to be vegetative recovery, with annual herbaceous vegetation filling in formerly bare areas. There may be some increased trampling and loss of annual vegetation as stock roaming between drift fences periodically enters these sites. The effects in the meadows categorized as not suitable would be similar to no grazing, these include Grassy Lake Meadow, the box canyons above Grassy and Jackson, most of the higher elevation meadows in the Silver Divide area, Pika and Duck Lake meadows, Virginia Lake Meadows, meadows east of Duck Pass, the tarn pond and riparian areas along access trails below Lee Lake, Second Crossing Meadow, Purple Meadow, Ram Tarn meadow along the trail above Purple Meadow, and at Coyote Lake Meadows. The large headcuts in Jackson Meadow would remain active over the long-term; however increased controls and reductions or elimination of grazing related direct effects such as trampling of vegetation and stream banks, along the stream and near the headcuts would allow for increased vegetative growth and establishment over the very long-term. There would be limited loss of riparian vegetation at the designated stock camps at Virginia Lake, and on the access trail to and near the camps at Deer Camp and Horse Heaven.

At locations available for grazing the direct effects of this alternative would be localized decreased vegetative growth and bare stock dusting areas.

Long-term there would be localized decreased vegetative recruitment and establishment and an increase in mid-seral and early-seral plant species. Over the long-term, there would be reduced recruitment and establishment of vegetation on in-stream bars. These processes would be especially noticeable at Purple Bench, Horse Heaven, lower Long Canyon Meadow, Island Crossing (Fox) Meadow, and Third Crossing Meadow. There would likely be increased effects such as development of rolling and dusting pits, decreased vegetative cover and cumulative decreases in late-seral vegetation near designated campsites at Horse Heaven, Third Crossing, lower Long Canyon, and Purple Bench.

Convict: No grazing is proposed. There would be some continued loss of riparian vegetation along the trail between Edith and Clover lakes, at the inlet to Edith Lake, and associated with the access trails and designated campsites and stock holding areas at Edith and Genevieve lakes.

McGee: There would be localized decreases in vegetative productivity, vigor, and recruitment at Second Meadow, Martin's Meadow, Round Meadow, Baldwin Meadow, and along the trail at the junction north of Big McGee Lake. In Martin's Meadow, the large headcut would remain active in the short-term, but may be stabilized by vegetation over the very long-term. There would be localized vegetation damage and sod fragmentation due to trampling in riparian areas along the trail toward Golden Lake. Elsewhere there would be little change from the current condition and trend, as most areas in McGee canyon have not been grazed in the last few years.

In most areas, the increased vegetative growth would allow a trend toward the potential natural vegetative community.

Cumulative Effects

The resting of the meadows with the most degraded conditions would make the cumulative effects of Alternative 2-Modified with the historic grazing effects less than those in Alternative 1, although there would still be long-term instabilities along Fish Creek and Minnow Creek.

Grazing Resources – Alternative 2

Analysis

There are an estimated 1,573 stock nights of grazing available under Alternative 2 in this geographic area. Some meadows assessed in the McGee Creek watershed and many meadows in the Fish Creek watershed will experience the direct effects of grazing as described for Alternative 1, including: Virginia Lake; Deer Camp; Purple Meadow; Purple Bench; Ram Tarn meadow along the trail above Purple Meadow; lower Long Canyon Meadow; Genevieve Lake camp; Second Meadow; Martin's Meadow; Round Meadow, Baldwin Meadow; north of Big McGee Lake; and along the trail to Steelhead Lake. The effects at these sites would be reduced relative to Alternative 1, with increase probability of meeting the applicable standards in key and critical areas.

The indirect effects in these meadows would be limited to a localized loss of vegetation, reduced vigor, cover, and productivity where stock roll and dust themselves near designated campsites and in stock holding areas.

Cumulative effects over the long-term would be a localized reduction of late-seral vegetative species and limited areas with early-seral species and bare areas. There would continue to be adequate riparian vegetation in most locations to meet vegetative desired conditions for the meadow resource and to provide for watershed protection. A long-term cumulative effect would be localized areas with increased risks to proper functioning condition due to inadequate vegetative cover.

There are some areas identified as suitable for grazing where long-term unstable watershed conditions exist such as instability along Fish Creek, and large active headcuts. These conditions indicate that even with implementation of all standards, there is likely to be at least a portion of these areas continuing to degrade as a result of these ongoing processes, including Martin's Meadow, Jackson Meadow, Horse Heaven, Island Crossing (Fox) Meadow, Third Crossing Meadow, and Tully Hole Meadow.

In the areas recommended as not suitable for grazing would be immediate elimination of pack stock trailing and trampling and increases in vegetative production and cover in the short-term, especially near springs and streams. Transition to late-seral vegetation would occur over the long-term in these ungrazed areas: Lee and Cecil Lakes and along the associated access trailing; the box canyons above Grassy and Jackson; most of the higher elevation meadows in the Silver Divide area; Pika and Duck Lake meadows; Virginia Lake Meadows; meadows east of Duck Pass; the tarn pond and riparian areas along access trails below Lee Lake; Second Crossing Meadow; the majority of Convict basin; and most of McGee Creek. Cumulatively, over the long-term to very long-term the riparian vegetation in these areas should reach high-seral status. Several of these areas identified as not suitable would exhibit continued degraded conditions in a large portion of the meadows over the long-term, or possibly for decades, including Coyote Lake Meadows and Grassy Lake Meadow.

Coldwater, Purple Bench, Upper Fish Creek, Cascade Valley, Silver Divide, and Margaret:

The meadows in Cascade Valley near the confluence of Fish Creek with Minnow and Purple Creek were closed to grazing in 1988 and would continue to see vegetative recovery with annual herbaceous vegetation filling in formerly bare areas and late-seral riparian vegetation increasing, especially at or below the level of the associated streams. There is reduced recovery potential and

there would likely be slow vegetative recovery over the very long-term at the second terrace level. There may be some increased trampling and loss of annual vegetation as stock roaming between drift fences periodically enters these sites.

The effects in the meadows categorized as not suitable would be similar to no grazing, these include Grassy Lake Meadow, the box canyons above Grassy and Jackson, most of the higher elevation meadows in the Silver Divide area, Pika and Duck Lake meadows, the meadows east of Duck Pass, the tarn pond and riparian areas along access trails below Lee Lake, Second Crossing Meadow, and at Coyote Lake Meadows. There would be limited loss of riparian vegetation at the designated stock camps at Virginia Lake, and on the access trail to and near the camps at Deer Camp and Horse Heaven.

At locations available for grazing the direct effects of this alternative would be localized decreased vegetative growth and maintenance of existing bare stock dusting areas and continuation of localized altered vegetative species composition.

Long-term there would be localized decreased vegetative recruitment and establishment and an increase in mid-seral and early-seral plant species. Over the long-term, there would be reduced recruitment and establishment of vegetation on in-stream bars. The above direct effects of grazing and trailing would be especially noticeable at: the meadow areas along the trail to Lee and Cecil Lakes; Purple Meadow; Purple Bench; Ram Tarn meadow and along the trail above Purple Meadow; Jackson Meadow; Horse Heaven; lower Long Canyon Meadow; Island Crossing (Fox) meadow; and Third Crossing Meadow. The large headcuts in Jackson Meadow and the unstable stream banks in Tully Hole would remain active over the long-term; however, these meadows are large enough to allow management of stock while still avoiding additional impacts to these unstable areas. There may be increased vegetative growth and establishment over the very long-term in these locations; however, unstable conditions would persist over the long-term.

Convict: Little grazing currently occurs and no grazing is proposed. There would be some continued loss of riparian vegetation due to the direct effects of trampling along the trail between Edith and Clover lakes, at the inlet to Edith Lake, and associated with the access trails and designated campsites and stock holding areas at Edith and Genevieve Lakes.

Over the long-term, there may not be adequate vegetation to provide for watershed protection along the trail between Edith and Cloverleaf lakes.

McGee: There would be localized minor decreases in vegetative productivity, vigor, and recruitment at Second Meadow, Martin's Meadow, Round Meadow, Baldwin Meadow, and along the trail at the junction north of Big McGee Lake associated with trampling of vegetation and sod fragmentation which would not recover annually in given the low resiliency at these sites.

In Martin's Meadow the large headcut would remain active for the long-term, but may be stabilized by vegetation over the very long-term. There would be localized vegetation damage and sod fragmentation due to trampling in riparian areas along the trail toward Golden Lake. Elsewhere there would be little change from the current condition and trend, as most areas in McGee canyon have not been grazed in the last few years. Cumulatively in most areas of McGee Canyon other than the above, the increased vegetative growth would result in a trend toward the potential natural vegetative community.

Cumulative Effects

The cumulative effects of Alternative 2 would be similar to those of Alternative 2-Modified, but the most degraded meadows would be closed rather than rested. Since the historic effects are expected to take a long time to recover, there would probably be no difference in effects.

Grazing Resources – Alternatives 3 and 4

Analysis

There would be approximately 1,476 stock nights of grazing available with Alternative 3 and 689 stock nights available with Alternative 4. Locations where direct grazing and trailing related effects would occur include: Virginia Lake; Deer Camp; Horse Heaven; Purple Bench; Horse Heaven; lower Long Canyon Meadow; Island Crossing (Fox) meadow; Third Crossing Meadow; Genevieve Lake camp; Second Meadow, Martin's Meadow, Round Meadow, Baldwin Meadow, north of Big McGee Lake; and along the trail to Steelhead Lake.

Areas categorized as not suitable for grazing or where grazing would be prohibited would see increases in vegetative production, especially near springs and streams.

Transition to late-seral vegetation would occur over the long-term in the ungrazed, unsuitable areas: Lee and Cecil Lakes; the box canyons above Grassy and Jackson; most of the higher elevation meadows in the Silver Divide area; Ram Tarn meadow along the trail above Purple Meadow; Jackson Meadow; Purple Meadow; Pika and Duck Lake meadows; Virginia Lake Meadows; meadows east of Duck Pass; the tarn pond and riparian areas along access trails below Lee Lake; Second Crossing Meadow; the majority of Convict basin; most of McGee Creek; and at Coyote Lake Meadows.

Jackson Meadow (under Alternative 4) and Grassy Lake Meadow, under both Alternative 3 and Alternative 4; would not be grazed, however the stream bank instability and associated loss of riparian vegetation would likely continue over the long-term at these locations. There would likely be increased effects, over the long-term and cumulatively due to increased risk factors at Horse Heaven, Tully Hole, Third Crossing, Long Canyon, and Purple Bench.

Coldwater, Purple Bench, Upper Fish Creek, Cascade Valley, Silver Divide, and Margaret:

The meadows in Cascade Valley near the confluence of Fish Creek with Minnow and Purple Creek were closed to grazing in 1988 and there would continue to be vegetative recovery, with annual herbaceous vegetation filling in formerly bare areas. There may be some increased trampling and loss of annual vegetation as stock roaming between drift fences periodically enters these sites. The effects in the meadows categorized as not suitable would be similar to no grazing, these include Grassy Lake Meadow, the box canyons above Grassy and Jackson, Jackson Meadow (under Alternative 4); most of the higher elevation meadows in the Silver Divide area, Pika and Duck Lake meadows, Virginia Lake Meadows, meadows east of Duck Pass, the tarn pond and riparian areas along access trails below Lee Lake, Second Crossing Meadow, Purple Meadow, Ram Tarn meadow along the trail above Purple Meadow, and at Coyote Lake Meadows. There would be limited loss of riparian vegetation at the designated stock camps at Virginia Lake, and on the access trail to and near the camps at Deer Camp and Horse Heaven.

At locations available for grazing, the direct effects of this alternative would be localized decreased vegetative growth and bare stock dusting areas.

There would likely be increased effects such as development of rolling and dusting pits, decreased vegetative cover and cumulative decreases in late-seral vegetation near designated campsites at Horse Heaven, Third Crossing, lower Long Canyon, and Purple Bench. Over the long term, there would be reduced recruitment and establishment of vegetation on in-stream bars. These processes would be especially noticeable at Purple Bench, Horse Heaven, lower Long Canyon Meadow, Island Crossing (Fox) Meadow, and Third Crossing Meadow. Long-term there would be localized decreased vegetative recruitment and establishment and an increase in mid-seral and early-seral plant species. The large headcuts in Jackson Meadow would remain active over the long-term; however elimination of grazing related direct effects such as trampling of vegetation and stream banks, along the stream and near the headcuts would allow for increased vegetative growth and establishment over the very-long term under Alternative 4 and to a slightly lesser extent with increased control of grazing under Alternative 3.

Convict: No grazing is proposed. There would be some continued loss of riparian vegetation along the trail between Edith and Clover lakes, at the inlet to Edith Lake, and associated with the access trails and designated campsites and stock holding areas at Edith and Genevieve lakes.

There would continue to be adequate vegetation to provide for normal ecological processes throughout the Convict Analysis Unit.

McGee: There would be localized decreases in vegetative productivity, vigor, and recruitment at Second Meadow, Martin's Meadow, Round Meadow, Baldwin Meadow, and along the trail at the junction north of Big McGee Lake. In Martin's Meadow, the large headcut would remain active in the short-term, but may be stabilized by vegetation over the very long-term. There would be localized vegetation damage and sod fragmentation due to trampling in riparian areas along the trail toward Golden Lake. Elsewhere there would be little change from the current condition and trend, as most areas in McGee canyon have not been grazed in the last few years.

In most areas, the increased vegetative growth would allow a trend toward the potential natural vegetative community.

Cumulative Effects

The cumulative effects of Alternatives 3 and 4 would be similar to those of Alternative 2.

Grazing Resources – Alternative 5

Analysis

Little grazing currently occurs in the McGee Creek and Convict Creek drainages. The direct effects of no grazing in most of the key area meadows assessed in these areas would not be substantially different from the existing condition. Some impacts such as increased sediment deposition would continue associated with the trails and abandoned mining access routes. Indirect effects would include increased vegetative establishment and growth and a trend toward late-seral vegetation in the short-term on most of the meadow assessed. There is some private pack stock use, especially in the fall during deer hunting season. This use is not thought to be substantial enough to affect recovery of the riparian vegetation, especially as it occurs late season, well after range readiness and when stock parties tend to carry supplementary feed.

The Fish Creek portion of this geographic area currently receives substantial grazing. No grazing would result in increased vegetative production, vigor and recruitment over the short-term and

increases in late-seral vegetation over the long-term, especially in meadows located along tributaries to Fish Creek and near springs in all meadows. Several meadows along Fish Creek, including those at Third Crossing, Tully Hole, the confluence of Minnow Creek, the Confluence of Purple Creek, and Island Crossing could continue to be adversely effected by incisement along the Fish Creek channel. Several meadows in the McGee Creek watershed, including Baldwin, Martin's, Big McGee Lake inlet, Cable Meadow, and Round meadow, could continue to be adversely affected by the flows from McGee Creek, by runoff from trails, or by runoff from the Sheelore mining road.

Over the long-term to very long-term most of the meadows would return to the potential natural vegetation for that site.

Coldwater, Purple Bench, Upper Fish Creek, Cascade Valley, Silver Divide, and Margaret:

The meadows in Cascade Valley near the confluence of Fish Creek with Minnow and Purple Creek were closed to grazing in 1988. With continued no grazing long-term there would be increased vegetative recruitment and establishment and an increase in late-seral species.

Over the long-term there would be recovery of conditions such as re-vegetation of bare dusting areas with annual herbaceous vegetation, as is currently occurring. There would be continued establishment of late-seral riparian vegetation on stream banks, and establishment of early-seral vegetation in the short-term and late-seral vegetation in the long-term on in-stream bars.

There would be increased establishment of late-seral riparian vegetation on stream banks, and establishment of early-seral vegetation on in-stream bars. These processes would be especially noticeable at: the meadow areas along the trail to Lee and Cecil Lakes; the tarn pond below Lee Lake; Purple Meadow; Purple Bench; Ram Tarn meadow along the trail above Purple Meadow; Jackson Meadow; and Grassy Meadow; Horse Heaven; lower Long Canyon Meadow; Island Crossing (Fox) meadow; and Second Crossing Meadow.

At Jackson Meadow and Grassy Lake Meadows, the vegetation on the old meadow terraces would continue to be characterized by mid-seral and early-seral species, with high-seral species occurring and increasing in vigor and abundance over the long-term in areas that are sub-irrigated by springs and spring channels. High-seral riparian vegetation would increase in productivity, vigor and abundance along the small spring channels and at the springs. The in-stream bars would be slowly vegetated, first with annual herbaceous vegetation in the short-term and with perennial, late-seral, riparian vegetation over the long-term. Some of the unstable stream banks and larger headcuts could remain active over the long-term, but may be stabilized by late-seral riparian vegetation over the very long-term. Recovery to fully function late-seral riparian vegetation on the terraces and stream banks may not occur even over the very long-term and cumulatively there may not be adequate vegetation to provide for watershed protection near the deeper incisement and headcuts.

Convict: There would be vegetative growth and increased cover at the small ponds adjacent to Genevieve Lake. There would also be increased vegetative growth, recruitment and establishment in the riparian areas along the trail between Edith and Cloverleaf Lakes and at the inlet to Edith Lake.

Other than at Genevieve, Edith, and Cloverleaf lakes, there would be little change from existing conditions elsewhere in Convict Basin. Cumulatively over the long-term there would be adequate vegetation to provide for watershed restoration.

McGee: With elimination of the direct effects of pack stock use, such as trampling of vegetation and sod fragmentation, there would be limited increases in vegetative productivity, vigor, and recruitment at Second Meadow, Martin's Meadow, Round Meadow, and along the trail at the junction north of Big McGee Lake. There would be a reduction or elimination of vegetation damage by trampling in riparian areas along the trail to Golden Lake.

Elsewhere, there would be little change from the current as most areas in McGee canyon have not been grazed in the last few years. In most areas, the increased vegetative growth would cumulatively allow a trend toward potential natural vegetative community. In Martin's Meadow, the large headcut would remain active for the long-term, but may eventually be stabilized by vegetation. The vegetation at Baldwin Meadow and Round meadow would continue to be effected by frequent fluvial deposition, retaining a mix of seral classes over the long-term.

Cumulative Effects

Since there would be no commercial pack stock impacts to interfere with recovery of historic effects, Alternative 5 would have beneficial effects on the grazing resource.

Fens

Fens – Alternative 1

All meadows except Second Crossing would be open for grazing.

- **McGee AU:** Grass Lake and Steelhead would be open to grazing but no use has occurred recently, so the fen would stay in its current good condition if no increase in grazing occurs.
- **Purple Bench AU:** The grazing management plan implemented in 2002 in the Purple Meadow area, does not allow use in saturated areas, so the fens are protected and conditions should improve. The low stock numbers at Purple Bench should maintain the fen in good condition.
- **Upper Fish Creek AU:** The three meadows with areas with fen characteristics would be open to grazing, but only at Tully Hole would the condition be expected to decline due to continuing use.
- **Cascade Valley AU:** There is a temporary closure of Second Crossing to grazing, so it would be protected from most trampling impacts. At Third Crossing, grazing would be allowed so there would be no expected recovery of hydrologic function. The fens at Island Crossing and Iva Belle Hot Springs would remain in good condition because there is no change in use expected.
- **Silver Divide AU:** There would continue to be grazing allowed at Peter Pande tarn so the area with fen characteristics would receive some impacts, but it would remain functional.
- **Margaret AU:** There would continue to be trampling impacts to the fen at Coyote grazing area, and there may be a downward trend.
- **Convict AU:** Mildred Lake would not be in the operating areas of the pack stations, so the fens would have virtually no risk of pack stock impact.

Cumulative Effects

In this geographic unit, many of the meadows show negative effects of heavy historic livestock and recent commercial pack stock use. Continued commercial pack stock grazing use at current levels in this area would be likely to prevent recovery of meadows with fens or continue degraded conditions in more places than the other alternatives.

Use of Iva Belle Hot Springs, where there are some fens, by hikers and backpackers adds to use by commercial pack station clients at that location, although holding or grazing pack stock is not allowed at the Hot Springs.

Fens – Alternative 2 - Modified

Approximately 41 percent of the meadows will be open for grazing, and inadvertent trampling and grazing impacts to any unknown fens would be more likely in these meadows.

- **McGee AU:** Grass Lake and Steelhead Meadows would be closed to grazing, so there would be no risk of pack stock impacts to the fen.
- **Purple Bench AU:** The grazing management and effects would be the same as Alternative 1, continuing the grazing management plan in the Purple Meadow area (Ram and High Camp). Use at Purple Bench would be limited to current low levels, so fen conditions should remain good.
- **Upper Fish Creek AU:** No grazing would be allowed at Red Slate Meadow, so there would only be inadvertent use impacts. Tully Lake would be open for grazing and there may be some shift from closed areas, so use may increase somewhat, but the fen area would have critical area protection, so should remain in good condition. At Tully Hole, use will be somewhat less than current use, but no change is expected in hydrologic condition and there will still be trampling impacts.
- **Cascade Valley AU:** The closure will continue at Second Crossing, so the fen condition will continue to improve. Third Crossing will have a reduced number of stock nights from its current use, but there will still be some trampling impacts and no change in meadow conditions is expected. Iva Belle Hot Springs will remain closed to pack stock camping and grazing, so the fen condition would remain the same.
- **Silver Divide AU:** Grazing would not be allowed at Peter Pande tarn, so the hydrologic function would show minor improvement as would the area with fen characteristics. Grazing will be allowed at Island Crossing, but at very restricted numbers, so the area with fen characteristics would remain in good condition.
- **Margaret AU:** Grazing will be allowed at the Coyote Grazing area, but at slightly reduced numbers. The trampling of the fen will continue.
- **Convict AU:** No grazing would be allowed in Mildred Meadow, so the fens should continue to be in good condition.

Cumulative Effects

The resting of some meadows and closer control of grazing numbers and locations should help the meadows recover from previous livestock and commercial pack stock use, so the cumulative effect would be less than Alternative 1, beneficial in some places that get less use.

Fens – Alternative 2

The effects to the meadows with fens or fen characteristics would be the same as Alternative 2 - Modified.

Fens – Alternative 3

The effects to the meadows with fens or fen characteristics would be the same as Alternative 2 – Modified, except in the Purple AU. Ram Meadow would be closed due to a stream problem, so there would be no risk of impacts to the fen.

Fens – Alternative 4

The effects to fens and areas with fen characteristics would be the same as Alternative 2 - Modified, except that at Tully Hole and Third Crossing, utilization rates are reduced, so there would be a very slightly lower risk of trampling, but there would be no expected change in meadow conditions.

Fens – Alternative 5

There would be only minimal expected change in the degraded conditions of Third Crossing, Ram Meadow, and Tully Hole, but fen conditions would improve at Second Crossing and Coyote Grazing area with the removal of pack stock trampling impacts.

Cumulative Effects

Because there would be no commercial pack stock grazing, there would be beneficial effects to meadows previously damaged by livestock and commercial pack stock grazing.

Rare Plants

Rare Plants – Alternative 1

Of the six populations of sensitive and watch list plants known from in or near this geographic unit, four are in a meadow where there is no pack stock use, one is near a trail open to all uses, and one is on a use trail outside the wilderness with little current use. Of the 20 meadows with habitat for sensitive species, 1 would have persistent or newly degraded conditions.

- **Cascade Valley AU:** Second Crossing and Cascade Valley would remain closed and they would have moderate and minor meadow function improvements, respectively. The other meadows would have no change to hydrologic function, stream condition, or vegetation composition, so the riparian habitat would show local improvements in this AU. The Fish Creek Trail would continue to be TC3, so there would continue to be a risk of trampling of the short-leaved hulsea population if pack stock leave the trail.
- **Silver Divide AU:** Continued use of Long Canyon would prevent recovery of the stream and could cause a minor downward trend in vegetation composition in potential habitat for Bolander's candle moss.
- **Convict AU:** There would be no use at Mildred without special permission, so no impacts are expected to the sensitive and watch list plants in Mildred Meadow.

- **McGee AU:** The population of Inyo beardtongue near McGee Pack Station on a use trail outside the wilderness currently receives little or no impact from pack stock, and there would be no expected displacement of wilderness use. Any new day ride routes would have to be approved by the Forest Service.
- **Purple AU:** The Purple to Cascade Valley trail would be TC3, and there would be some risk of trampling and maintenance impacts to the subalpine fireweed population. These effects would be the same as those of Alternatives 2 Modified - 4.
- There would be very few impacts to the potential habitat for Congdon's lewisia because it is rocky and would not receive much pack stock use. Trail impacts would mostly be limited to the tread, a minimal percentage of the habitat.

Cumulative Effects

In this geographic unit, many of the meadows show negative effects of heavy historic livestock and recent commercial pack stock use. Continued commercial pack stock grazing use at current levels in this area would be likely to prevent recovery of meadows with potential habitat for sensitive plants or continue degraded conditions in more places than the other alternatives. The heavy use of Fish Creek trail by hikers and backpackers could have additional effects, with commercial pack stock use, on sensitive plant populations and habitat.

Rare Plants – Alternative 2 - Modified

Of the six populations of sensitive and watch list plants known from in or near this geographic unit, 4 are in a meadow where there is no pack stock use, and 1 are near a trail open to all uses.

- **Cascade Valley AU:** The effects to the population of short-leaved hulsea would be the same as Alternative 1. Allowing very limited grazing of Cascade Valley Meadows could slow recovery somewhat, but the small numbers should be insignificant.
- **Silver Divide AU:** There would be minor downtrend in vegetation composition at Long Canyon Meadow because Grassy Meadow would be closed to stock. Limiting the stay to one night in this analysis unit should improve riparian habitat in general, but may displace use to areas not currently used or used only at low levels, such as Long Canyon.
- **Convict AU:** There would be no grazing in Mildred Meadow, so populations of Mingan moonworts and the four watch list species would be at no risk from grazing. Trail use in the area would be limited to accessing Mildred from Dorothy Lake, as stock would be prohibited from the Convict Canyon and Mildred-Bright Dot trails and no trips are authorized to Mildred. There would be a very minimal risk of trampling by pack stock to the sensitive and watch list species present.
- **McGee AU:** The effects to the population of Inyo beardtongue just outside the wilderness would be the same as Alternative 1.
- **Purple AU:** The effects to subalpine fireweed AU would be the same as Alternative 1, 3, and 4.
- The effects to the potential habitat for Congdon's lewisia would be the same as Alternative 1.

Rare Plants – Alternative 2

Effects would be the same as Alternative 2 – Modified.

Rare Plants – Alternative 3

Of the six populations of sensitive and watch list plants known from in or near this geographic unit, 4 are in a meadow where there is no pack stock use, 1 is near a trail open to all uses, and 1 is on a use trail with little current use. Of the 20 meadows with habitat for sensitive species, 1 would have persistent or newly degraded conditions.

- **Cascade Valley AU:** The effects to riparian habitat and to the population of short-leaved hulsea would be the same as Alternative 1.
- **Silver Divide AU:** The effects to riparian habitat in Long Canyon would be the same as Alternative 2 - Modified.
- **Convict AU:** The effects to Mingan moonwort and the four watch list species are the same as Alternative 2 - Modified.
- **McGee AU:** The effects to the population of Inyo beardtongue just outside the wilderness would be the same as Alternative 1.
- **Purple AU:** The effects to subalpine fireweed would be the same as Alternative 1, 2 – Modified, and 4.
- The effects to the potential habitat of Congdon’s lewisia would be the same as Alternative 1.

Cumulative Effects

Cumulative effects of Alternative 3 would be similar to those of Alternative 2 – Modified.

Rare Plants – Alternative 4

Of the six populations of sensitive and watch list plants known from in or near this geographic unit, four are in a meadow where there is no pack stock use, one is near a trail open to all uses, and one is on a little used use trail. Of the 20 meadows with habitat for sensitive species, 1 would have persistent or newly degraded conditions.

- **Cascade Valley AU:** The effects to the potential habitat for the west side riparian species would be the same as Alternative 1, although there could be slightly less impact at Third Crossing Meadow because utilization would be limited to 30 percent rather than 40 percent. The effects to riparian habitat and to the population of short-leaved hulsea would be the same as Alternative 1.
- **Silver Divide AU:** The effects to riparian habitat in Long Canyon would be the same as Alternative 1. Limiting the stay to one night in this analysis unit should improve riparian habitat in general.
- **Convict AU:** The effects to Mingan moonwort and four watch list species are the same as Alternative 2 - Modified.

- **McGee AU:** The effects to the population of Inyo beardtongue would be the same as Alternative 1.
- **Purple AU:** The effects to subalpine fireweed would be the same as Alternative 1-3.
- The effects to the potential habitat of Congdon's lewisia would be the same as Alternative 1.

Cumulative Effects

Cumulative effects of Alternative 4 would be similar to those of Alternative 2 – Modified.

Rare Plants – Alternative 5

Of the six populations of sensitive and watch list plants known from in or near this geographic unit, four are in a meadow where there is no pack stock use, one is near a trail open to all uses, and one is on a little used use trail. Of the 20 meadows with habitat for sensitive species, 1 would have persistent or newly degraded conditions.

- **Cascade AU:** Because there would be no pack stock grazing or trail use, effects would be less than the other alternatives and there would only be private pack stock use of the meadows.
- **Silver AU:** There would be minor improvements to vegetation composition at Long Canyon, improving the habitat for the Bolander's candle moss and alpine fireweed.
- **Convict AU:** there would be no risk of pack stock trampling to Mingan moonwort or the watch list plants at Mildred Meadow.
- **McGee AU:** There could be displacement of use to outside the wilderness, and it would be more likely that the use trail where there is a population of Inyo beardtongue would be used for day rides, increasing the possibility of trampling.
- **Purple AU:** The Purple to Cascade Valley Trail would be TC2 and there would be no commercial pack stock, so the risk of trampling and maintenance impacts would be less than Alternatives 1-4.
- The potential habitat for Congdon's lewisia would be a risk from private pack stock, hikers, and trail maintenance only, not commercial pack stock.

Cumulative Effects

The lack of commercial pack stock use would allow recovery of historic livestock and pack stock grazing effects.

Weeds

See Wilderness Scale discussion.

Cumulative Effects

Hikers and backpackers on Fish Creek and Minnow Creek Trail, especially accessing Iva Belle Hot Springs, act as additional vectors, with commercial pack stock, for weed spread from existing cheatgrass infestations (unknown origin) in the Reds Meadow and Island Crossing areas.

Campfires

See Wilderness Scale discussion.

Cumulative Effects

There are many campsites in this geographic unit above the existing campfire closure where backpackers may be encouraged to illegally gather firewood and make campfires if commercial packers are allowed to bring in charcoal or firewood (Alternatives 2 – Modified, 2, and 3).

Mono Creek/Rock Creek

Analysis

The Mono Creek/Rock Creek Geographic Area continues to be affected by the chronic and synergistic effects of historical grazing, recent production livestock grazing, current production livestock grazing, and the additive cumulative effects of current pack stock grazing.

Grazing Resources – Alternative 1

Analysis

The high reported grazing between 2001 and 2003 was 838 stock nights in this geographic area. The locations in this geographic area where there is likely to be continued stock use with existing management include: Volcanic Knob meadows; Pocket Meadow; Mudd Lake meadows; lower Laurel Creek meadows; Quail Meadow; Hopkins Bench Camp meadows; Upper Graveyard Meadows; Cold Creek meadows; Turk Meadow; Davis Lake meadows; Dorothy Lake outlet meadows; the lakeshore meadows at lower Graveyard Lakes; Graveyard Meadow; meadows at Hilton Lakes 4-6; the meadows at Lower Hopkins Lake; Grinnell Lake Meadows; upper and middle meadows at Laurel Lake; Silver Pass Lake meadows; Silver Pass Meadow (SIP6); north of Mono Rock (FOR1); and the meadows of Pioneer Basin above and near Mudd Lake. The localized direct effects of stock use are would be trampling of vegetation along trails, at access to campsites and stock holding areas, and in the associated meadows.

Long-term effects would be decreased vegetative productivity and vigor, with loss of the riparian vegetation needed to provide for watershed protection.

There would continue to be some localized loss of late-seral riparian vegetation especially at: Volcanic Knob meadows; Pocket Meadow; Mudd Lake meadows; lower Laurel Creek meadows; Silver Pass Lake meadows; Quail Meadow; Hopkins Bench Camp (upper meadows); Upper Graveyard meadows; Cold Creek meadows; Turk Meadow; Davis Lake meadows. There would continue to be localized altered riparian vegetation in these areas, with some cumulative decreases in vegetation adequate to provide for watershed protection.

Little grazing currently occurs in Little Lakes Valley, however there is likely to be continued direct and cumulative adverse effects related to trampling by hiker traffic throughout this analysis unit. Little or no grazing or even hiking use occurs and there would be little change in the Morgan Lakes area.

Hilton Creek: Continued localized direct effects at Turk Meadow and in the meadows near Davis Lake would include localized loss of vegetation where stock roll and dust themselves near designated campsites, loss of vegetation in stock holding areas, reduced vegetative vigor,

reduced productivity, and a decrease in vegetative cover. Indirect effects over the long-term would be a reduction of late-seral vegetative species and an increase in early-seral species and bare areas at these limited locations.

Effects to the meadows elsewhere in the Hilton Lakes areas could be limited to local and minor trampling in riparian areas along trails near Lakes 4 and 5.

There would continue to be adequate vegetation to provide for normal ecological processes.

Tamarack: There would continue to be limited grazing and trampling effects to riparian vegetation near and to the east of Dorothy Lake and at several isolated riparian areas along trails as stock accessed drinking water and at stream crossings. Much of the perennial grass portion, including approximately half of the meadow area, has recently died and the remnant sod continues being lost to wind erosion in the meadow at the outlet of Dorothy Lake.

The areas of lost vegetation and other bare areas in this meadow would be colonized by annual herbaceous vegetation over the long-term. There would continue to be adequate vegetation to provide for normal ecological processes.

Little Lakes Valley: Little grazing currently occurs in the Little Lakes Valley Analysis. There would be limited trampling effects to and loss of riparian vegetation near Marsh Lake and at several isolated riparian areas along trails as stock accessed drinking water and at stream crossings. There would be continued trampling damage to vegetation and a localized loss of vegetative cover and altered plant species composition along popular hiking trails such as adjacent to Marsh Lake, the east shore of Long Lake, along the west side of Chickenfoot Lake, and near the outlet of Gem Lake.

There would continue to be adequate vegetation to provide for normal ecological processes.

Morgan Lakes: No grazing is proposed in the Morgan Lakes Analysis Unit, little or no grazing currently occurs and the effects would be the same as for no grazing.

There would continue to be adequate vegetation to provide for normal ecological processes.

Pioneer Basin and Fourth Recess: The meadows in Pioneer Basin were closed to grazing in 1988 and current conditions would continue above Mudd Lake. There would likely be continued loss of riparian vegetation at multiple associated with erosion of the trail from Mudd Lake to the Lake at 10,900 feet elevation and at a few locations on the trail from Mudd Lake to Lake #2.

At Hopkins Bench Meadow (FOR8) the direct effects would be trampling of the vegetation in the meadow and trampling of the vegetation on the banks of the small tributary stream that must be crossed to access the campsite. Indirect effects would be localized decreased vegetative growth.

Long-term there would also be continued loss of riparian vegetation associated with the collapsing stream banks of Mono Creek at Hopkins Bench Camp, the associated headcut would continue to advance laterally as it and the associated gully are used by pack stock to access the creek for drinking water, resulting in a localized trampling related loss of riparian vegetation along the edges and below the developing gully. There would be limited loss of riparian vegetation along the small tributary stream in the short-term, expanding along the stream over the long-term. Over the short-term to long-term there would be a decrease in riparian vegetation adequate to mitigate the risk factors relating to Proper Functioning Condition. It is likely that there would be persistent cumulative adverse effects over the very long-term at this location.

Hopkins, Laurel and Second Recess: In the short-term there would be continued trampling and removal of vegetation and a reduction in vegetative cover near Lower Hopkins Lake, at Lower laurel Creek Meadows, and at Second Recess Meadows.

In the upper meadows and at Laurel Lake Meadows and Second Recess Meadows there would be a limited decrease in vegetative productivity, with localized decreases in mid-seral and low-seral vegetation cumulatively over the long-term to very long-term

Silver Peak: There would be continued localized alteration of vegetative species composition, with reduced cover of late-seral species associated with trails in the meadows at Silver Pass Lake (SIP11) in the short-term. The vegetation at Pocket Meadow (SIP4) adjacent to Mono Creek would be characterized by late-seral species on the terrace level under the lodge pole. The in stream bars would continue to be dominated by bare soils and early-seral species for the long-term. The meadows along the trail to Mott Lake (SIP5) currently receive little overnight use, although some dunnage drops occur there. The vegetation is currently dominated by late-seral plants; there would continue to be a localized loss of riparian vegetative species composition primarily due to trampling.

There would continue to be a loss of late-seral riparian vegetation in the meadow along the system trail above the switchbacks north of the Mott Lake Trail junction (SIP6) especially on the meadow terraces above the stream, on the stream banks, and at creek crossings in this meadow.

There would continue to be inadequate riparian vegetation to provide for ecological processes such as to mitigate the functioning condition risk factors over the long-term to very long-term at Silver pass Meadow.

Volcanic: Current conditions at Volcanic Knob Meadow include low use and limited trampling and rutting in the wetter riparian sites along the system trail and along the access to the snow survey cabin.

These conditions would likely continue as there would be continued administrative access to the snow survey site and otherwise it is likely that these areas would be used by an occasional hunting group. There would continue to be adequate riparian vegetation to provide watershed protection.

Graveyard: Current use by cattle appears to occur often at Graveyard Meadow and infrequently above Graveyard Meadow. Graveyard Meadow has extensive areas of altered vegetative species composition with reductions in late-seral riparian vegetation and increased mid-seral and low-seral vegetation, especially on the meadow terrace level, and on stream banks. There are also actively unstable stream banks and bare point and mid-stream bars with stock trails along the edges of actively collapsing banks. These conditions will continue over the long-term regardless of the level of pack stock grazing. Current pack stock use is low and is not expected to increase significantly over the long-term. There are some old erosion control structures on a tributary in the south side of the meadow that are failing, with an associated loss of riparian vegetation.

On benches between the lowermost Graveyard Lake and the junction with the Goodale Pass Trail is a moist to dry meadow system that is occasionally used by pack stock. There are little to no changes in vegetation species on these benches, and with current levels of grazing there would be little change. There would be some localized trampling and sod fragmentation near lower Graveyard Lake, mostly associated with dunnage drops.

The sites with loss of riparian vegetation and altered vegetative species in Graveyard, Middle Graveyard and through upper Cold Creek to the upper meadows below Goodale Pass would continue with or without pack stock grazing until and unless an active restoration program addressed the current and historic trail related affects.

There would be localized loss of riparian vegetation associated with the designated camps, stock holding areas, and grazing areas, especially along the grazing access trail in the center of the meadow and along that trail to the upper spring, at Quail Meadow and near the designated packer camp near the outlet of Lower Graveyard Lake. The majority of Quail Meadow would remain in late-seral vegetative status, with adequate riparian vegetation.

Cumulative Effects

The recovery from the widespread affects of historical and recent production livestock grazing will take decades in many locations. Commercial pack stock use has minimal effects compared to any continuing cattle grazing. However current levels of commercial pack stock use will continue to have a substantial synergistic effect only in some locations, such as in the Silver Pass, Hilton Creek, Little Lakes Valley, and Graveyard Analysis Units. Current levels of commercial pack stock grazing and use will have a noticeable but less substantial cumulative effect in the Mono Creek, Bear, and Pioneer Analysis Units.

There are some meadows, including Graveyard (see discussion above), meadows near the junction of the Graveyard Lake trail, and Silver Pass Meadow where there are long-term historical unstable watershed conditions and chronic processes such as instability along the associated creek. With these chronic existing conditions there is likely to be loss of riparian obligate vegetation, decreased stabilizer plant species, and increased mid-seral or early-seral vegetative condition. There is likely to not be adequate vegetation to provide for watershed protection with implementation of any alternative, as a result of the synergistic relationship between the historical and currently occurring processes. There would likely be continued substantial loss of riparian vegetation at Silver Pass Meadow (SIP6). There would continue to be altered riparian vegetation and inadequate riparian vegetation to provide for watershed protection in these areas until and unless a watershed restoration program is successfully implemented.

In Little Lakes Valley, hiker and angler compaction effects may have cumulative effect with pack stock use, but since commercial pack stock use is light in this area, it is only slight and local.

Grazing Resources – Alternative 2-Modified

Analysis

There would be approximately 2,025 stock nights of grazing available in this geographic area with implementation of Alternative 2-Modified. There would be continued localized effects similar to those described for Alternative 2, although at a slightly increased level over time and cumulatively at the popular destination locations including: near the Lower Graveyard Lake trail junction; near Davis Lake; Turk Meadow; Quail Meadow; near Mudd Lake; and the meadows near Hopkins Bench Camp. There could be new grazing effects such as localized loss of vegetative cover, alteration of vegetative species composition cumulative over time at Laurel Lake meadows below the lake and at Second Recess meadows.

Direct effects would be elimination of grazing related trampling of and removal of vegetation at areas recommended as not suitable for grazing or to not be grazed by commercial pack stock and at the additional locations recommended for rest to ensure recovery. There would be increases in vegetative production in the short-term, especially near springs and streams. Transition to late-seral vegetation would occur over the long-term in these ungrazed areas including: the meadows at Hopkins Bench Camp; Upper Graveyard meadows; meadows at Hilton Lakes 4-6; the meadows at Lower Hopkins Lake; Grinnell Lake meadows; upper and middle meadows at Laurel Lake; north of Mono Rock (FOR1); and the meadows of Pioneer Basin above Mudd Lake. Cumulatively there would be establishment of vegetation adequate to provide for watershed protection and decreased risk, especially if watershed and trail restoration work is accomplished.

No grazing is proposed for all of Little Lakes Valley, however there is likely to be continued direct and cumulative effects related to trampling by hiker traffic throughout this analysis unit.

There would likely be continued loss of riparian vegetation and continued inadequate vegetation to provide watershed protection at Graveyard Meadow; the lakeshore meadows of lower Graveyard Lakes; Silver Pass Meadow (SIP6) and the Dorothy Lake outlet meadows over the long-term.

There may be increased recruitment and growth of riparian and vegetative recovery over the long-term to very long-term at these locations, depending upon the effects of factors other than commercial pack stock, such as hikers at Lower Graveyard Lake, cattle grazing and trampling at Graveyard Meadow, and unstable stream banks at Silver Pass Meadow. Although little grazing, by cattle or pack stock occurs upstream of the junction of the Graveyard Lakes and Goodale Pass Trails and in the meadows between that junction and Graveyard Meadow, there is active erosion and loss of riparian vegetation associated with historical trails and uses. This instability and loss of riparian vegetation is likely to continue until an active restoration program is successfully implemented.

Hilton Creek: Some meadows assessed in the Hilton Creek watershed and several meadows in the Mono Creek watershed will experience direct effects of grazing. The direct effects in these meadows would be a localized loss of vegetation where stock roll and dust themselves near designated campsites, loss of vegetation due to trampling and manure accumulation in stock holding areas, reduced vegetative vigor, reduced productivity, and a decrease in vegetative cover. Indirect effects over the long-term would be a reduction of late-seral vegetative species and an increase in early-seral species and bare areas at these limited locations.

With implementation of the Alternative 2-Modified there may be limited direct effects, such as trampling of the vegetation and sod fragmentation at Turk Meadow and in the meadows near Davis Lake. Effects to the meadows elsewhere in the Hilton Lakes areas could be limited to isolated riparian areas along trails near Lakes 4 and 5.

Long-term effects would be overall increased vegetative cover along the trail between lakes 5 and 6 and limited trampling related loss of riparian vegetation in the meadows near Davis Lake and in Turk Meadow.

Tamarack: No grazing is proposed in the Tamarack Analysis Unit. There would continue to be limited trampling effects to riparian vegetation near and to the east of Dorothy Lake and at several isolated riparian areas along trails as stock accessed drinking water and at stream

crossings. Much of the perennial grass portion, including approximately half of the meadow area, has recently died and the remnant sod continues being lost to wind erosion in the meadow at the outlet of Dorothy Lake.

The areas of lost vegetation and other bare areas in this meadow would be colonized by annual herbaceous vegetation over the long-term; there may not be adequate riparian vegetation to provide for sustainability of ecological processes over the long-term. Elsewhere in the Tamarack Analysis Unit there would continue to be adequate vegetation to provide for watershed protection.

Little Lakes Valley: No grazing is proposed in the Little Lakes Valley Analysis and the effects of implementation of Alternative 2-Modified are the same as for the other alternatives. There would be limited trampling effects to and loss of riparian vegetation near Marsh Lake and at several isolated riparian areas along trails as stock accessed drinking water and at stream crossings. There would be continued trampling damage to vegetation and localized loss of vegetative cover and altered plant species composition along popular hiking trails such as adjacent to Marsh Lake, the east shore of Long Lake, along the west side of Chickenfoot Lake, and near the outlet of Gem Lake.

Morgan Lakes: No grazing is proposed in the Morgan Lakes Analysis Unit, effects of Alternative 2-Modified are the same as for no grazing.

Pioneer Basin, Fourth Recess: The meadows in Pioneer Basin were closed to grazing in 1988 and current conditions would continue above Mudd Lake. The effects in the meadows categorized as not suitable would be similar to no grazing; these include Upper Pioneer Basin, the Meadow north of Mono Rock, and the meadows in the Laurel Creek drainage above the lowermost meadows. At Mudd Lake, especially in the meadows immediately to the east, along the east shores and around to the southwest corner, in the short-term there would be a localized decrease in vegetative growth, and decreased vegetative cover.

Near Mudd Lake, and near Lower Laurel Creek meadows, there could be an increase in mid-seral and low-seral vegetation and increased bare areas cumulatively over the long-term. Cumulatively, over the long-term there may not be maintenance of adequate vegetation to provide watershed protection, especially in the moist to dry meadows to the east of Mudd Lake. There would likely be continued loss of riparian vegetation at multiple associated with erosion of the trail from Mudd Lake to the Lake at 10,900 feet elevation and at a few locations on the trail from Mudd Lake to Lake #2.

At Hopkins Bench Meadow (FOR8) in the short-term there would be localized decreased vegetative growth and in the long-term an increase in mid-seral and low-seral vegetation. Long-term there would be continued loss of riparian vegetation associated with the collapsing stream banks of Mono Creek, the associated headcut would continue to advance, resulting in loss of riparian vegetation along the developing gully. There would be limited loss of riparian vegetation along the small tributary stream in the short-term, expanding along the stream over the long-term. Over the very long-term late-seral riparian vegetation could become established on the headcuts and stream banks. Cumulatively there would continue to be inadequate vegetation to provide for watershed protection over the long-term.

Hopkins, Laurel and Second Recess: Over the short-term the existing riparian vegetation would fill in and restore the wetter areas of the meadows around Hopkins Lake.

Over the long-term riparian and moist meadow vegetation would increase in productivity and increase the vegetative cover in the current dusting sites and along the user-defined trails on the west side of Lower Hopkins Lake. In the upper meadows and at Laurel Lake Meadows, Second Recess Meadows, and near the designated camp and stock holding areas, there would be increased grazing use and over the short-term a limited decrease in vegetative productivity, with localized increases in mid-seral and low-seral vegetation over the long-term to very long-term.

Silver Peak: There would be continued localized alteration of vegetative species composition, with reduced cover of late-seral species associated with trails in the meadows at Silver Pass Lake (SIP11) in the short-term. The vegetation at Pocket Meadow (SIP4) adjacent to Mono Creek would be characterized by late-seral species on the terrace level under the lodge pole. The in stream bars would continue to be dominated by bare soils and early-seral species for the long-term. The meadows along the trail to Mott Lake (SIP5) currently receive little overnight use, although some dunnage drops occur there. The vegetation is currently dominated by late-seral plants; there would continue to be a localized loss of riparian vegetative species composition primarily due to trampling.

No grazing is proposed in the meadow along the system trail above the switchbacks north of the Mott Lake Trail junction (SIP6) on the meadow terraces above the stream and on the stream banks in this meadow.

Cumulatively there would be continued loss of late-seral vegetation and limited loss of vegetative cover on the stream banks at the upper and lower ends of Silver Pass Meadow as pack stock groups traveling through would continue to use these locations for resting and watering after climbing the switchbacks from the Mott Lake Trail Junction. Over the long-term these continued impacts could reduce or prevent the recovery of this meadow to a more desirable ecological condition.

Volcanic: Current conditions at Volcanic Knob Meadow include low use and limited trampling and rutting in the wetter riparian sites along the system trail and along the access to the snow survey cabin.

These conditions would likely continue as there would be continued administrative access to the snow survey site and it is unlikely that these areas would be used by more than occasional hunting groups.

Graveyard: Current use by cattle appears to occur often at Graveyard Meadow and infrequently above Graveyard Meadow. Graveyard Meadow has extensive areas of altered vegetative species composition with reductions in late-seral riparian vegetation and increased mid-seral and low-seral vegetation, especially on the meadow terrace level, and on stream banks. There are also actively unstable stream banks and bare point and mid-stream bars. These conditions will continue over the long-term regardless of the level of pack stock grazing. Current pack stock use is low and is not expected to increase significantly over the long-term.

On benches between the lowermost Graveyard Lake and the junction with the Goodale Pass Trail is a moist to dry meadow system that is occasionally used by pack stock. There are little to no changes in vegetation species on these benches, and with grazing there would be little change. There would be some localized trampling and sod fragmentation near lower Graveyard Lake, mostly associated with dunnage drops, which would likely increase with Alternative 3.

Rest from grazing will result in increased late-seral riparian vegetation needed to provide watershed protection at Upper Graveyard Meadow. Some of the sites associated with active erosion features that have historical loss of riparian vegetation and altered vegetative species in Upper Graveyard and through upper Cold Creek would continue with or without pack stock grazing until and unless an active restoration program resolves the current and historic trail and grazing related effects.

There would be localized loss of riparian vegetation associated trampling impacts near the designated camps, stock holding areas, and grazing areas, especially along the grazing access trail in the center of the meadow and along that trail to the upper spring, at Quail Meadow and near the designated packer camp near the outlet of Lower Graveyard Lake. The majority of Quail Meadow would remain in late-seral vegetative status, with adequate riparian vegetation.

Cumulative Effects

Because of resting Graveyard and Silver Pass Meadows, the cumulative effects of Alternative 2-Modified with existing historic and current livestock grazing effects would be less than Alternative 1.

Grazing Resources – Alternative 2

Analysis

There would be approximately 2,088 stock nights of grazing available in this geographic area with implementation of Alternative 2. locations in this geographic area where grazing is proposed and where localized direct effects, as detailed in the site-specific discussions in the Analysis Units section, of grazing and trailing would occur include: Volcanic Knob meadows; Pocket Meadow; Mudd Lake meadows; lower Laurel Creek meadows; Quail Meadows; Hopkins Bench Camp meadows; Upper Graveyard meadows; the meadows to the east of lower Graveyard Lakes; Cold Creek meadows; Turk Meadow; and Davis Lake meadows.

Direct effects at areas recommended as not suitable for grazing by commercial pack stock would be increases in vegetative production in the short-term, especially near springs and streams. Transition to late-seral vegetation would occur over the long-term in these unsuitable areas including: meadows at Hilton Lakes 4-6; the meadows at Lower Hopkins Lake; Grinnell Lake meadows; upper and middle meadows at Laurel Lake; north of Mono Rock (FOR1); and the meadows of Pioneer Basin above Mudd Lake.

No grazing is proposed for all of Little Lakes Valley. There is likely to be continued direct, indirect, and cumulative effects related to trampling by hiker traffic and camping throughout this analysis unit but especially around the lakeshores of the lakes between the trailhead and Chickenfoot Lake.

There would likely be continued loss of riparian vegetation and continued inadequate vegetation to provide watershed protection at Graveyard Meadow; at localized sites around the lakeshore meadows of lower Graveyard Lakes (due largely to hiker campsites and social trails); Silver Pass Meadow (SIP6) and, in the Tamarack Analysis Unit, the Dorothy Lake outlet meadows over the long-term. Cumulatively there may be increased recruitment and growth of riparian and vegetative recovery over the long-term to very long-term at these locations, depending upon the effects of factors other than commercial pack stock, such as hikers at Lower Graveyard Lake,

cattle grazing and trampling at Graveyard Meadow, continued loss of riparian vegetation at Dorothy Lake, and unstable stream banks and stock watering at Silver Pass Meadow. Although little grazing, by cattle or pack stock occurs upstream of the junction of the Graveyard Lakes and Goodale Pass Trails and in the meadows between that junction and Graveyard Meadow, there is active erosion and loss of riparian vegetation associated with historical trails and uses. This instability is likely to continue until an active watershed restoration program is implemented.

Hilton Creek: Some meadows assessed in the Hilton Creek watershed and several meadows in the Mono Creek watershed will experience the direct effects of grazing. The direct effects in these would be a localized loss of vegetation where stock roll and dust themselves near designated campsites, loss of vegetation in stock holding areas. Indirect effects would be reduced vegetative vigor, reduced productivity, and a decrease in vegetative cover. Cumulative effects over the long-term would be a localized reduction of late-seral vegetative species needed to provide watershed protection and an increase in early-seral species and bare areas at these limited locations.

In the locations recommended as un-suitable for grazing there would be elimination of the direct effects of grazing and increases in vegetative production, vigor and recruitment especially near springs and streams. Long-term there would be full development of the natural late-seral communities in these areas, including the meadows at Hilton Lakes 5 and 6.

With implementation of Alternative 2 there may be localized direct effects of grazing, trailing, and trampling at Turk Meadow and in the meadows near Davis Lake. Effects to the meadows elsewhere in the Hilton Lakes areas could be limited to isolated riparian areas along trails near Lakes 4 and 5. Long-term effects would be overall increased vegetative cover along the trail between lakes 5 and 6 and limited trampling related loss of riparian vegetation in the meadows near Davis Lake and in Turk Meadow.

Cumulatively, vegetative resources would likely remain within desired condition at these locations over the long-term with continued vegetation adequate to provide for watershed protection.

Tamarack: Little grazing currently occurs and no grazing is proposed in the Tamarack Analysis Unit. There would continue to be limited trampling effects to riparian vegetation near and to the east of Dorothy Lake and at several isolated riparian areas along trails as stock accessed drinking water and at stream crossings. Much of the perennial grass portion of this meadow, including approximately half of the meadow area, has recently died and the remnant sod continues being lost to wind erosion in the meadow at the outlet of Dorothy Lake.

The areas of lost vegetation and other bare areas in this meadow would be colonized by annual herbaceous vegetation and cumulatively there may not be adequate vegetation to provide watershed protection over the long-term. Elsewhere in the Tamarack Analysis Unit there would continue to be adequate vegetation to provide for watershed protection.

Little Lakes Valley: No grazing is proposed in the Little Lakes Valley Analysis. There would be limited trampling effects to and loss of riparian vegetation near Marsh Lake and at several isolated riparian areas along trails as stock accessed drinking water and at stream crossings as trailing stock trampled the stream bank vegetation. There would be continued trampling damage to vegetation and localized loss of vegetative cover and altered plant species composition along

popular hiking trails such as adjacent to Marsh Lake, the east shore of Long Lake, along the west side of Chickenfoot Lake, and near the outlet of Gem Lake.

Morgan Lakes: No grazing is proposed and little currently occurs in the Morgan Lakes Analysis Unit, effects of the Proposed Action are the same as for no grazing, with little change in resource conditions expected.

Pioneer Basin, Fourth Recess: The meadows in Pioneer Basin were closed to grazing in 1988 and current conditions would continue above Mudd Lake. There would likely be continued and increased loss of riparian vegetation along the trail from Mudd Lake to the lake at 10,900 feet elevation and at some locations along the trail to Lake 2 unless restoration is accomplished. The effects in the meadows categorized as not suitable would be similar to no grazing; these include Upper Pioneer Basin, the Meadow north of Mono Rock, meadows in the Laurel Creek drainage above the lowermost meadows, and Hopkins Lake Meadows.

At Mudd Lake, especially in the meadows immediately to the east, along the east shores and around to the southwest corner, in the short-term the direct effects of grazing and trailing along the lakeshore would be a localized decrease in vegetative growth, and decreased vegetative cover. Indirect effects in these areas would be a localized increase in mid-seral and low-seral vegetation and increased bare areas. Cumulatively there may not be maintenance of adequate riparian vegetation over the long-term to provide for watershed protection and there may be an increased risk of loss of watershed function during high flow events, especially in the moist to dry meadows to the east of Mudd Lake.

At Hopkins Bench Meadow (FOR8) in the short-term there would be localized decreased vegetative growth and in the long-term an increase in mid-seral and low-seral vegetation. Long-term there would be continued loss of riparian vegetation associated with the collapsing stream banks of Mono Creek, the associated headcut would continue to advance, resulting in a localized loss of riparian vegetation along the edges and below the developing gully. There would be limited loss of riparian vegetation along the small tributary stream in the short-term, expanding along the stream over the long-term.

Over the long-term to very long-term there may not be adequate late-seral riparian vegetation to provide watershed protection on the headcuts and stream banks.

Hopkins, Laurel and Second Recess: Over the short-term, without the direct effects of grazing and trampling of the vegetation, the existing vegetation would fill in and restore the wetter areas of the meadows around Lower Hopkins Lake. Over the long-term riparian and moist meadow vegetation would increase in productivity and increase the vegetative cover in the current dusting sites and along the user-defined trails on the west side of Lower Hopkins Lake. In the upper meadows and at Laurel Lake Meadows, Second Recess Meadows, and near the designated camp and stock holding areas, there would be increased grazing use and over the short-term would be a localized decrease in vegetative productivity, with localized increases in mid-seral and low-seral vegetation cumulatively over the long-term to very long-term.

There would continue to be adequate riparian vegetation to provide for watershed protection over the long-term.

Silver Peak: There would be continued localized direct effects of grazing, trailing, and trampling of vegetation, including alteration of vegetative species composition, with reduced cover of late-seral species associated with trails in the meadows at Silver Pass Lake (SIP11) in

the short-term. Over the long-term, with continued low levels of use expected, the vegetation at Pocket Meadow (SIP4) adjacent to Mono Creek would be characterized by late-seral species on the terrace level under the lodge pole. The in stream bars would continue to be dominated by bare soils and early-seral species for the long-term. The meadows along the trail to Mott Lake (SIP5) currently receive little overnight use, although some dunnage drops occur there.

No grazing is proposed in the meadow along the system trail above the switchbacks north of the Mott Lake Trail junction (SIP6) on the meadow terraces above the stream and on the stream banks in this meadow. The consequences in most of this meadow would be similar to Alternative 5 (no pack stock use) although with implementation of any pack stock use alternative (Alternatives 2, 3, and 4) there would be some additional localized trampling related loss of late-seral vegetation and loss of vegetative cover on the stream banks at the upper and lower ends of this meadow as pack stock groups traveling through, especially traveling from south to north, would continue to use these locations for resting and watering after climbing the switchbacks from the Mott Lake Junction.

There would be a localized and minor loss of riparian vegetative species composition primarily due to trampling but there would be adequate riparian vegetation over the long-term.

Volcanic: Current conditions at Volcanic Knob Meadow include low use and limited trampling and rutting in the wetter riparian sites along the system trail and along the access to the snow survey cabin. With the expected low levels of use by pack stock these conditions would likely continue as there would be continued administrative access to the snow survey site. It is unlikely that these areas would be used by more than occasional hunting groups.

There would continue to be adequate riparian vegetation for watershed protection at Volcanic Knob Meadow.

Graveyard: Current use by cattle does not appear to occur often above Graveyard Meadow and overnight use by pack stock is low in this area as well. Graveyard Meadow has extensive areas of altered vegetative species composition with reductions in late-seral riparian vegetation and increased mid-seral and low-seral vegetation, especially on the meadow terrace level, and on stream banks. There are also actively unstable stream banks and bare point and mid-stream bars. Current use by pack stock is low and is not expected to increase significantly over the long-term.

On benches between the lower Graveyard Lake and the junction with the Goodale Pass Trail is a moist to dry meadow system that is occasionally used by pack stock. There are little to no changes in vegetation species on these benches, and with grazing there would be little change. There would be some localized trampling and sod fragmentation near lower Graveyard Lake associated with dunnage drops.

The limited sites with loss of riparian vegetation and altered vegetative species in Middle Graveyard, Graveyard, and through upper cold Creek to the upper meadows below Goodale Pass would continue with or without pack stock grazing until an active restoration program is implemented.

There would be localized loss of riparian vegetation associated with trampling of vegetation at the designated camps, stock holding areas, and grazing areas, especially along the grazing access trail in the center of the meadow and along that trail to the upper spring at Quail Meadow and near the designated packer camp near the outlet of Lower Graveyard Lake.

Cumulatively the majority of this Analysis Unit would remain in late-seral vegetative status with adequate vegetation to provide for watershed protection.

Cumulative Effects

The cumulative effects of Alternative 2 with existing historic and continuing cattle grazing would be less than Alternative 1, but more than Alternatives 2-Modified, 3, 4, and 5.

Grazing Resources – Alternatives 3 and 4

Analysis

There would be approximately 2,025 stock nights of grazing available with implementation of Alternative 3 and 1,541 stock nights available with implementation of Alternative 4 in this geographic area. There would be continued localized effects similar to those described for Alternative 2, although at a slightly increased level over time and cumulatively at the popular destination locations including: near the Lower Graveyard Lake trail junction; near Davis Lake; Turk Meadow; Quail Meadow; near Mudd Lake; and the meadows near Hopkins Bench Camp. There could be new grazing effects such as localized loss of vegetative cover, alteration of vegetative species composition cumulative over time at Laurel Creek meadows below Laurel Lake and at Second Recess meadows.

Direct effects would be elimination of grazing related trampling of and removal of vegetation at areas recommended as not suitable for grazing or to not be grazed by commercial pack stock and at the additional locations recommended for rest to ensure recovery. There would be increases in vegetative production in the short-term, especially near springs and streams. Transition to late-seral vegetation would occur over the long-term in these ungrazed areas including: the meadows at Hopkins Bench Camp; Upper Graveyard meadows; meadows at Hilton Lakes 4-6; the meadows at Lower Hopkins Lake; Grinnell Lake meadows; upper and middle meadows at Laurel Lake; north of Mono Rock (FOR1); and the meadows of Pioneer Basin above Mudd Lake. Cumulatively there would be establishment of vegetation adequate to provide for watershed protection and decreased risk, especially if watershed and trail restoration work is accomplished.

No grazing is proposed for all of Little Lakes Valley, however there is likely to be continued direct and cumulative effects related to trampling by hiker traffic throughout this analysis unit.

There would likely be continued loss of riparian vegetation and continued inadequate vegetation to provide watershed protection at Graveyard Meadow; the lakeshore meadows of lower Graveyard Lakes; Silver Pass Meadow (SIP6) and the Dorothy Lake outlet meadows over the long-term. Cumulatively there may be increased recruitment and growth of riparian and vegetative recovery over the long-term to very long-term at these locations, depending upon the effects of factors other than commercial pack stock, such as hikers at Lower Graveyard Lake, cattle grazing and trampling at Graveyard Meadow, and unstable stream banks at Silver Pass Meadow. Although little grazing, by cattle or pack stock occurs upstream of the junction of the Graveyard Lakes and Goodale Pass Trails and in the meadows between that junction and Graveyard Meadow, there is active erosion and loss of riparian vegetation associated with historical trails and uses. This instability is likely to continue until an active watershed restoration program is implemented.

Hilton Creek: Some meadows assessed in the Hilton Creek watershed and several meadows in the Mono Creek watershed will experience direct effects of grazing. The direct effects in these meadows would be a localized loss of vegetation where stock roll and dust themselves near designated campsites, loss of vegetation due to trampling and manure accumulation in stock holding areas, reduced vegetative vigor, reduced productivity, and a decrease in vegetative cover. Indirect effects over the long-term would be a reduction of late-seral vegetative species and an increase in early-seral species and bare areas at these limited locations.

With implementation of the proposed action, there may be limited direct effects, such as trampling of the vegetation and sod fragmentation at Turk Meadow and in the meadows near Davis Lake. Effects to the meadows elsewhere in the Hilton Lakes areas could be limited to isolated riparian areas along trails near Lakes 4 and 5.

Long-term effects would be overall increased vegetative cover along the trail between lakes 5 and 6 and limited trampling related loss of riparian vegetation in the meadows near Davis Lake and in Turk Meadow.

Tamarack: No grazing is proposed in the Tamarack Analysis Unit. There would continue to be limited trampling effects to riparian vegetation near and to the east of Dorothy Lake and at several isolated riparian areas along trails as stock accessed drinking water and at stream crossings. Much of the perennial grass portion, including approximately half of the meadow area, has recently died and the remnant sod continues being lost to wind erosion in the meadow at the outlet of Dorothy Lake.

The areas of lost vegetation and other bare areas in this meadow would be colonized by annual herbaceous vegetation over the long-term; there may not be adequate riparian vegetation to provide for watershed protection over the long-term. Elsewhere in the tamarack Analysis Unit there would continue to be adequate vegetation to provide for watershed protection.

Little Lakes Valley: No grazing is proposed in the Little Lakes Valley Analysis and the effects of implementation of Alternative 3 are the same as for the other alternatives. There would be limited trampling effects to and loss of riparian vegetation near Marsh Lake and at several isolated riparian areas along trails as stock accessed drinking water and at stream crossings.

There would be continued trampling damage to vegetation and localized loss of vegetative cover and altered plant species composition along popular hiking trails such as adjacent to Marsh Lake, the east shore of Long Lake, along the west side of Chickenfoot Lake, and near the outlet of Gem Lake.

Morgan Lakes: No grazing is proposed in the Morgan Lakes Analysis Unit, effects of Alternative 3 are the same as for no grazing.

Pioneer Basin and Fourth Recess: The meadows in Pioneer Basin were closed to grazing in 1988 and current conditions would continue above Mudd Lake. The effects in the meadows categorized as not suitable would be similar to no grazing; these include Upper Pioneer Basin, the Meadow north of Mono Rock, meadows in the Laurel Creek drainage above the lowermost meadows, and Hopkins Lake Meadows. At Mudd Lake, especially in the meadows immediately to the east, along the east shores and around to the southwest corner, in the short-term there would be a localized decrease in vegetative growth, and decreased vegetative cover. In these areas, there would be an increase in mid-seral and low-seral vegetation and increased bare areas cumulatively over the long-term.

At Hopkins Bench Meadow (FOR8) in the short-term there would be localized decreased vegetative growth and in the long-term an increase in mid-seral and low-seral vegetation. Long-term there would be continued loss of riparian vegetation associated with the collapsing stream banks of Mono Creek, the associated headcut would continue to advance, resulting in loss of riparian vegetation along the developing gully.

At Hopkins Bench Camp there would be limited loss of riparian vegetation along the small tributary stream in the short-term, expanding along the stream over the long-term. Over the very long-term late-seral riparian vegetation could become established on the headcuts and stream banks. Cumulatively, over the long-term there may not be maintenance of adequate vegetation to provide watershed protection, especially in the moist to dry meadows to the east of Mudd Lake. There would likely be continued loss of riparian vegetation at multiple associated with erosion of the trail from Mudd Lake to the Lake at 10,900 feet elevation and at a few locations on the trail from Mudd Lake to Lake #2.

Hopkins, Laurel and Second Recess: Over the short-term the existing riparian vegetation would fill in and restore the wetter areas of the meadows around Hopkins Lake.

Over the long-term, riparian and moist meadow vegetation would increase in productivity and there would be increased vegetative cover in the current dusting sites and along the user-defined trails on the west side of Lower Hopkins Lake. In the upper meadows and at Laurel Lake Meadows, Second Recess Meadows, and near the designated camp and stock holding areas, there would be increased grazing use and over the short-term a limited decrease in vegetative productivity, with localized increases in mid-seral and low-seral vegetation over the long-term to very long-term.

Silver Peak: There would be continued localized alteration of vegetative species composition, with reduced cover of late-seral species associated with trails in the meadows at Silver Pass Lake (SIP11) in the short-term. The vegetation at Pocket Meadow (SIP4) adjacent to Mono Creek would be characterized by late-seral species on the terrace level under the lodge pole. The in stream bars would continue to be dominated by bare soils and early-seral species for the long-term. The meadows along the trail to Mott Lake (SIP5) currently receive little overnight use, although some dunnage drops occur there. The vegetation is currently dominated by late-seral plants; there would continue to be a localized loss of riparian vegetative species composition primarily due to trampling.

No grazing is proposed in the meadow along the system trail above the switchbacks north of the Mott Lake Trail junction (SIP6) on the meadow terraces above the stream and on the stream banks in this meadow. Consequences would be similar to no grazing, with some additional limited loss of late-seral vegetation and limited loss of vegetative cover on the stream banks at the upper and lower ends of this meadow as pack stock groups traveling through would continue to use these locations for resting and watering after climbing the switchbacks from the Mott Lake Trail Junction.

Over the long-term, these continued synergistic impacts together with the chronic impacts from the historical degradation could reduce or prevent the recovery of Silver Pass Meadow to a more desirable ecological condition.

Volcanic: Current conditions at Volcanic Knob Meadow include low use and limited trampling and rutting in the wetter riparian sites along the system trail and along the access to the snow survey cabin.

Existing conditions would likely continue as there would be continued administrative access to the snow survey site and it is unlikely that these areas would be used by more than occasional hunting groups.

Graveyard: Current use by cattle appears to occur often at Graveyard Meadow and infrequently above Graveyard Meadow. Graveyard Meadow has extensive areas of altered vegetative species composition with reductions in late-seral riparian vegetation and increased mid-seral and low-seral vegetation, especially on the meadow terrace level, and on stream banks. There are also actively unstable stream banks and bare point and mid-stream bars. These conditions will continue over the long-term regardless of the level of pack stock grazing. Current pack stock use is low and is not expected to increase significantly over the long-term.

On benches between the lowermost Graveyard Lake and the junction with the Goodale Pass Trail is a moist to dry meadow system that is occasionally used by pack stock. There are little to no changes in vegetation species on these benches, and with grazing there would be little change. There would be some localized trampling and sod fragmentation near lower Graveyard Lake, mostly associated with dunnage drops, which would likely increase with Alternative 3.

Rest from grazing will result in increased late-seral riparian vegetation needed to provide watershed protection at Upper Graveyard Meadow.

There would be localized loss of riparian vegetation associated trampling impacts near the designated camps, stock holding areas, and grazing areas, especially along the grazing access trail in the center of the meadow and along that trail to the upper spring, at Quail Meadow and near the designated packer camp near the outlet of Lower Graveyard Lake.

The majority of Quail Meadow would remain in late-seral vegetative status, with adequate riparian vegetation. Some of the sites associated with active erosion features that have historical loss of riparian vegetation and altered vegetative species in Upper Graveyard and through upper Cold Creek would continue with or without pack stock grazing until and unless an active restoration program resolves the current and historic trail and grazing related effects.

Cumulative Effects

The cumulative effects of Alternatives 3 and 4 would be similar to those of Alternative 2-Modified.

Grazing Resources – Alternative 5

Analysis

The riparian vegetation in the Mono Creek portion of this geographic area is currently affected by grazing and trailing related impacts at several locations. No grazing would result in increased vegetative recruitment, production, and vigor over the short-term and increases in late-seral vegetation over the long-term.

The Hilton Creek, Morgan Lakes, Little Lakes Valley, and Tamarack areas currently receive little grazing use, and no grazing would represent no significant change. The Hilton Lakes area

may see a substantial increase in hiker traffic and existing levels of hiker traffic would continue in Little Lakes Valley, resulting in some level of continued adverse trampling related impacts to the riparian vegetation, over the long-term, in these areas.

Hilton Creek: Currently little overnight stock holding or actual grazing use occurs in the Hilton Lakes Basin. With implementation of the no grazing alternative there would be continued vegetative recovery of riparian vegetation in the lower end of Turk Meadow near the old packer camp, including increased vegetative cover, as well as increased cover and vigor of the riparian vegetation at the springs and along the spring channels in the upper south end of Turk Meadow.

There would be increased vegetative vigor over the long-term in the meadows around Davis Lake and continued recovery of the riparian areas along the trail between Lakes 5 and 6. Cumulatively, over the long-term, these riparian areas would reach potential natural vegetative cover and composition. There would be limited reductions in vegetative alteration due to trampling, especially near Dorothy Lake and at the outlet and meadows around Davis Lake and to a lesser extent the meadow areas near Second Lake. The riparian vegetation would likely not be re-established at the many of the campsites over the long-term, due to anticipated increases in use by hikers.

Tamarack: There would be some limited recovery of riparian vegetation near the Dorothy Lake outlet and at scattered riparian or stream bank areas that are currently trampled while watering pack stock. Much of the perennial grass portion, including approximately half of the meadow area, has recently died and in the short-term the remnant sod would continue to be lost to wind erosion in the meadow at the outlet of Dorothy Lake.

The areas of lost vegetation and other bare areas in this meadow could be colonized by annual herbaceous vegetation over the long-term. There would likely continue to be adequate vegetation throughout the Tamarack Analysis Unit to provide for watershed protection over the long-term.

Little Lakes Valley: There would continue to be localized trampling and loss of riparian vegetation by hiker traffic in many of the riparian areas and meadows in the Little Lakes Valley Analysis Unit.

There would be some limited recovery of riparian vegetation near Marsh Lake, at the junction of the Ruby Lake and Mono Pass trails and at scattered riparian or stream bank areas that are currently trampled while watering pack stock. The effects would be visual apparent but there would be adequate vegetation to provide for watershed protection.

Morgan Lakes: There would continue to be limited and minor trampling and loss of riparian vegetation from hiker use in the riparian areas along the trail above Morgan Lakes.

Pioneer Basin and Fourth Recess: The meadows in Pioneer Basin were closed to grazing in 1988 and current conditions would continue. In the short-term there would be localized loss of riparian vegetation associated with active headcuts and erosion along trails above Mudd Lake and at Mudd Lake.

At Hopkins Bench Camp Meadow (FOR8), no grazing would result in increased vegetative growth and productivity, in the short-term. The riparian vegetation associated with the small tributary stream near the campsite would recover productivity and vigor in the short-term. There would be increased vegetative growth along the stream banks of Mono Creek, near the associated lateral headcuts in the lower meadow, and near the spring between the trail and the lower meadow over the long-term. There would be no grazing related impacts to the wet

meadow north of Mono Rock and the existing late-seral riparian vegetation would quickly fill in the bare and trampled areas. Substantial reductions in stock traffic along the main trail would result in reduced erosion and deposition and increased vegetative recruitment and establishment along the entire Mono Creek corridor.

Over the long-term, most of these would be stabilized by recruitment and establishment of riparian vegetation. Some of the trail sites with deeper incision may not recover vegetatively without restoration work and cumulatively over the long-term there could be reduced riparian vegetation and increased watershed risk factors. Cumulatively, over the long-term to very long-term there would be adequate vegetation to provide for watershed protection.

Hopkins and Laurel: There would be retention of each year's growth of vegetation throughout the Analysis Unit.

Over the short-term the existing riparian vegetation would fill in and restore the wetter areas of the meadows around Hopkins Lake. Over the long-term, late-seral riparian and moist meadow vegetation would increase in productivity and increase vegetative cover, especially at the dusting sites and along user-defined trails on the west side of Lower Hopkins Lake. The vegetation may not recover along some of the deeper trails over the long-term; however cumulatively there would be adequate vegetation to provide for watershed protection.

Silver Peak: There would be continued localized alteration of vegetative species composition associated with trails in the meadows at Silver Pass Lake (SIP11) in the short-term, as in this low resiliency areas the hiker traffic would continue to affect the vegetation. Late-seral vegetation for the site would become established in the majority of these locations over the long-term to very long-term.

The vegetation at Pocket Meadow (SIP4) adjacent to Mono Creek would be characterized by late-seral species on the terrace level under the lodge-pole pine forest within the long-term. The in-stream bars would continue to be dominated by bare soils and early-seral species for the long-term to very long-term.

The meadows along the trail to Mott Lake (SIP5) currently receive little overnight use, although some dunnage drops occur there. The vegetation is currently dominated by late-seral plants, with limited loss of riparian vegetative species composition due to trampling. With no grazing these areas would fill in with late-seral vegetation in the short-term.

The meadow along the system trail above the switchbacks north of the Mott Lake Trail junction (SIP6) has received repeated stock use throughout the summer. There is widespread altered vegetative species composition on the meadow terraces above the stream and on the stream banks in this meadow, with reduced late-seral riparian vegetation and increased mid-seral and early-seral vegetation. This vegetative alteration is associated with unstable and eroding stream banks, active headcuts, soil compaction, and a lowered water table. These conditions would persist in the main portion of the meadow for the long-term to very long-term.

Cumulatively, over the very long-term, there would be increased cover by mid-seral and then late-seral species over the very long-term. The east portion of this meadow has several spring and small spring channels where the vegetation is currently trampled, with fragmented sod and bare areas. There would be increases in late-seral riparian vegetation in these areas in the short-term, with recruitment and establishment of late-seral riparian vegetation over the long-term.

Volcanic: Current conditions at Volcanic Knob Meadow include low use and limited trampling and rutting in the wetter riparian sites along the system trail and along the access to the snow survey cabin. These conditions would likely continue as there would be continued administrative access to the snow survey site, with associated low levels of trampling in the adjacent wet meadow areas.

Cumulatively overall in the analysis unit there would continue to be adequate vegetation to protect the watershed.

Graveyard: This area is part of a cattle allotment. Use by cattle does not appear to occur often above Graveyard Meadow. Graveyard Meadow has extensive areas of altered vegetative species composition with reductions in late-seral riparian vegetation and increased mid-seral and early-seral vegetation, especially on the meadow terrace level, and along the stream banks. There are also actively unstable stream banks, bare point and mid-stream bars, trampled and fragmented sod in springs, and unstable erosion control structures along a tributary stream. These conditions will continue over the long-term to very long-term regardless of the level of pack stock grazing, until and unless a watershed restoration plan is implemented.

On benches between the lowermost Graveyard Lake and the junction with the Goodale Pass Trail is a moist to dry meadow system that is occasionally used by pack stock. There are little to no changes in vegetation species on these benches, and the with no grazing there would be little change, as most of the areas of affected vegetation would continue to exhibit the effects of continual hiker traffic and camping throughout the summer.

The limited sites with loss of riparian vegetation and altered vegetative species in Middle Graveyard and through upper cold Creek to the upper meadows below Goodale Pass would continue with or without pack stock grazing until and unless an active restoration program addresses the current and historic grazing and trail related affects.

Cumulative Effects

The cumulative effects of Alternative 5 would be beneficial since the historic and current cattle grazing and hiker use effects would have most chance of recovery.

Fens

Fens – Alternative 1

Most meadows would be open for grazing, except Pioneer Basin which has been closed for resource concerns.

Little Lakes Valley AU: This analysis unit is not currently used for grazing although it would be open for grazing in this Alternative. The four meadows with fens would be at very little risk for pack stock trampling, but one of the two fens in Marsh Meadow would remain degraded. Most impacts in this unit are from heavy hiker and angler use.

Fourth Recess AU: At North of Mono Rock meadow, grazing would be allowed and impacts would continue, so the spring impacts would continue and the area with fen characteristics would continue to be trampled. Third Recess Creek meadow would be open to grazing, but trail access is not good, so use may be somewhat restricted, but there would continue to be trampling damage.

Volcanic AU: Volcanic Knob meadow would continue to be open to grazing, but as there is no current use, very little impact to the areas with fen characteristics is expected.

Graveyard AU: All the meadows in the Graveyard drainage would be open to grazing by both cattle and pack stock. The meadows with fens do not appear to be used by either currently, although they were in the past. The existing spring headcuts below the fen in Goodale Pass Meadow puts this fen at risk and the degraded meadow conditions at the other two meadows would not improve. Use at Feather Lake would most likely remain light and the fen in good condition.

Hilton AU: Turk Meadow, East of Davis, and the outlet of Davis Lake would be open for grazing, but use would be expected to stay at current very low levels. The fens are currently in good condition, but at risk for some trampling.

Pioneer AU: There would be no grazing at Camp Meadow because of a closure, but trails are causing the hydrologic problems and they would be open for use. There would be no expected recovery of the hydrologic function of the meadow.

Second Recess AU: Second Recess is currently open to grazing, but only lightly used because the trail is not easily passable to stock. Until the trail is repaired, the fen is at only slight risk of impacts.

Bear AU: The meadow near Kip Camp is open for grazing, but has not been used recently, so the area with fen characteristics is in good condition and would be expected to continue that way.

Cumulative Effects

The cumulative effects of commercial pack stock use with historic and current pack stock grazing would be similar to those in Ansel Adams West. The previous closure of Pioneer Basin to commercial pack stock grazing would continue, allowing recovery of meadow conditions in that area.

Fens – Alternative 2 - Modified

Approximately 35 percent of the meadows will be open for grazing, and inadvertent trampling and grazing impacts to any unknown fens would be more likely in these meadows. If grazing use patterns change from the current situation, monitoring would be required to determine impact to the fens.

Little Lakes Valley AU: No grazing would be allowed in this AU, so the fens would be at very little risk of pack stock trampling. The dried out fen at Marsh Meadow would continue in degraded condition.

Fourth Recess AU: There would be no grazing in the North of Mono Rock meadow, allowing the fen to recover from trampling impacts. There would be limited grazing in the Third Recess Meadow, so there would be no expected change in the meadow conditions or fen impacts.

Volcanic AU: Volcanic Meadow would be open for grazing with a large number of stock nights available. If all these nights were used, the areas with fen characteristics would probably have negative effects and monitoring would be required, however, it is not expected that the meadow will have much increase in use.

Graveyard AU: Three meadows with fens would be open for grazing, with a total of approximately 400 stock nights capacity in the grazing zone. If grazed to this capacity, there would be negative impacts to the fens, particularly at Goodale Pass Meadow. None of these meadows has any recent reported grazing by pack stock although cattle may use them occasionally. Since some of the meadows in Silver Divide would be closed in this alternative it is possible that some use may be displaced here. Feather Lake would not be open to grazing, so the fen would remain in good condition.

Hilton AU: Grazing would be allowed at Turk Meadow with a large number of stock nights capacity compared to its current low use. Because there is heavy pack stock-supported use at Hilton Lake, there may be more use at Turk Meadow if allowed. This would increase the risk of impacts to the fen in the upper part of the meadow. At Davis outlet and East of Davis, limited grazing would be allowed, so there could be some fen impacts, but no downward trend would be expected.

Pioneer AU: No grazing or trail use would be allowed at Camp Meadow, so the hydrologic function, that supports the fen, could begin to recover.

Second Recess AU: Second Recess Meadow would be open to grazing, but there would be no access until the trail is repaired. If the maximum grazing were used, there would be negative effects to the areas with fen characteristics.

Bear AU: The meadow near Kip Camp would be closed to grazing, so the fen would remain in good condition.

Cumulative Effects

The cumulative effects of commercial pack stock use with historic and current pack stock grazing would be similar to those in Ansel Adams West. The previous closure of Pioneer Basin to commercial pack stock grazing would continue, allowing recovery of meadow conditions in that area.

Fens – Alternative 2

The effects to meadows with fens or fen characteristics would be the same as Alternative 2 - Modified, except that light grazing would be allowed at Middle Graveyard, so the fens would be at a slight risk of trampling.

Fens – Alternative 3

The effects to meadows with fens or fen characteristics would be the same as Alternative 2 – Modified. Middle Graveyard would be closed rather than rested with the same effect.

Fens – Alternative 4

The effects to meadows with fens or fen characteristics would be the same as Alternative 2 – Modified with the following exceptions.

- **Fourth Recess AU:** North of Mono Rock Meadow and Third Recess Meadow would be closed, so the areas with fen characteristics would recover from trampling effects.

- **Graveyard AU:** Middle Graveyard Meadow would be closed to grazing, so the fen would begin to recover. Upper Cold Creek Meadow would have a lower utilization standard, so there would be a slightly reduced risk of trampling to the fen.
- **Hilton AU:** Turk Meadow would be closed to grazing which would reduce the risk of pack stock impacts to almost nothing.

Fens – Alternative 5

The degraded conditions at Upper Cold Creek, North of Mono Rock, and Third Recess would improve by removal of pack stock trampling impacts. There would be no risk of commercial pack stock trampling to the fens.

Cumulative Effects

Because there would be no commercial pack stock grazing, the historic effects of grazing would be more likely to recover, except in areas with continuing cattle grazing.

Rare Plants

Rare Plants – Alternative 1

Of the nine populations of sensitive and watch list plants known from in or near this geographic unit, 1 is in a meadow open to grazing but no downward trend is expected, one is in a meadow where degraded vegetation composition conditions would continue, one is in a pasture, five are near trails open to all uses, and one is on a trail used only by hikers. Of the 17 meadows with habitat for sensitive species, 2 would have persistent conditions.

- **Hilton AU:** There would be no improvement in vegetation composition at Turk meadow and the fen/Blandlow's feather moss population at the top of the meadow would require monitoring if there is more than the current very low use in this meadow. There is no current use in the unnamed meadow with the Blandlow's feather moss population in the wilderness, but there is a third population at Rock Creek's lower pasture that is at slight risk from grazing. There would be no expected increase in pack stock use of the Hilton Creek trail, but the trail would be TC4, with a very high level of maintenance that could disturb the subalpine fireweed and Inyo beardtongue populations along the trail.
- **Fourth Recess AU:** There would be a minor downward trend in stream condition and vegetation composition at Hopkins/Bench Camp, putting habitat for Bolander's candle moss at risk. The Golden Lake hiker trail is not currently approved for pack stock use, so there would be no pack stock impacts to the Congdon's sedge population.
- **Silver Pass AU:** There would be no change expected in the degraded stream bank potential habitat of Bolander's candle moss at Pocket Meadow.
- **Graveyard AU:** The potential habitat for the west side riparian sensitive species will not recover at Graveyard Meadow due to the continuing cattle use. There would be no predicted improvement in the moderately degraded vegetation composition or slight hydrologic function changes at Quail Meadow where there is also potential habitat for these species. The Mono Creek Trail (Edison) would be TC3 and the PCT would be TC4 with expected high levels of use and maintenance. There could be minor trampling of

Mono Hot Springs evening primrose if use occurs early in the season. Grazing would be less likely to impact this species, unless stock wanders away from the meadow environment. The existing cheatgrass could spread in to the population of Mono Hot Springs evening primrose and degrade the habitat.

- **Bear AU:** The habitat for the west side riparian sensitive species at Kip Camp would remain in good condition, as long as the very low use levels of 2001-2003 continue. At the other meadows, no change would be expected. The Bear Creek Trail would be TC3 and the Bear Creek Cutoff TC2 in this alternative. The current moderate use would continue, but there is no camping or grazing currently in this area, so the current minimal impacts to the Mono Hot Springs evening primrose would probably continue.
- There would be very little impact to the rock outcrop potential habitat of Congdon's lewisia in the geographic unit.
- The populations of scalloped moonwort and Blandlow's feather moss at lower Rock Creek corral (outside of wilderness) have a slight risk of trampling. The stream in the meadow below the habitat is FAR, but the effects on the wetter hillsides is unknown.

Cumulative Effects

The cumulative effects of commercial pack stock use with historic and current pack stock grazing and hydrologic facilities would be similar to those in Ansel Adams West.

Rare Plants – Alternative 2 - Modified

Of the 8 populations of sensitive and watch list plants known from in or near this geographic unit, 1 is in a meadow closed to grazing, 1 is in a meadow where degraded conditions would continue, 1 is in a pasture, 4 are near trails open to all uses, and 1 is on a hiker use trail. Of the 17 meadows with habitat for sensitive species, 2 would have persistent or newly degraded conditions.

- **Hilton AU:** There would be a minor downward trend in meadow functions at Turk meadow if the meadow is used to capacity, but that appears unlikely, given the current very low use. The fen/Blandlow's feather moss population at the top of the meadow would have a 5 percent trampling limit, so monitoring would be required if stock use increases over current levels. The meadow with the second population of Blandlow's feather moss would not be in a grazing zone and so would have no expected pack stock impacts. The pasture would still be used, so the third population of Blandlow's feather moss would be subject to some impacts. There would be no expected increase in pack stock use of the Hilton Lakes trail outside the wilderness, and the trail would be TC3, with regularly scheduled maintenance every 20-30 years, so the population of Inyo beardtongue would be disturbed by trail work only rarely.
- **Fourth Recess AU:** There would be very limited grazing allowed at Bench Camp Meadow (for8), so there would be moderate improvement in stream condition, minor improvement in hydrologic function, and major improvement in vegetation condition, improving the potential habitat of Bolander's candle moss. The effects to Congdon's sedge would be the same as Alternative 1.

- **Silver Pass AU:** The effects to the potential habitat of Bolander’s candle moss would be the same as Alternative 1.
- **Graveyard AU:** The effects to the potential habitat of the west side sensitive riparian species and the Mono Hot Springs evening primrose would be the same as Alternative 1.
- **Bear AU:** There would be no grazing at Kip Camp, so the potential habitat for the west side riparian species would remain in good condition. Five other meadows with potential habitat are within grazing zones, so there could be some trampling impacts. In this Alternative both Bear Creek Trail and Bear Creek Cutoff would be TC3, so maintenance levels would be higher than in Alternative 1, but use would be similar. Because there are no current reported resource problems and the Mono Hot Springs evening primrose blooms very early in the season, there would be no more than minimal impacts to this species.
- The effect to the populations of Blandlow’s feather moss and scalloped moonwort at Lower Rock Creek Pack Station corral would be the same as Alternative 1.
- There would be very little impact to the rock outcrop potential habitat of Congdon’s lewisia in the geographic unit.

Cumulative Effects

The cumulative effects of commercial pack stock use with historic and current cattle and pack stock grazing and hydrologic facilities would be similar to those in Ansel Adams West.

Rare Plants – Alternative 2

The effects to rare plants would be the same as Alternative 2 – Modified except in the Hilton AU. The Hilton Creek Trail between Second and Third Lakes would be TC3, so the risk of trampling and maintenance impacts would be less than in Alternative 1, but more than Alternatives 2 – Modified, 4, and 5.

Rare Plants – Alternative 3

Of the nine populations of sensitive and watch list plants known from in or near this geographic unit, one is in a meadow closed to grazing, one is in a meadow where degraded conditions would continue, one is in a pasture, five are near trails open to all uses, and one is on a hiker use trail. Of the 17 meadows with habitat for sensitive species, 2 would have persistent or newly degraded conditions.

- **Hilton AU:** The effects to the populations of subalpine fireweed, Blandlow’s feather moss and Inyo beardtongue would be the same as Alternative 2.
- **Fourth Recess AU:** The effects to Congdon’s sedge and the potential habitat of Bolander’s candle moss would be the same as Alternative 1.
- **Silver Pass AU:** The effects to the potential habitat of Bolander’s candle moss would be the same as Alternative 1.
- **Graveyard AU:** The effects to the potential habitat of the west side sensitive riparian species would be the same as Alternative 1. Both the PCT and the Mono Creek Trail (Edison) would be TC3 with expected high levels of use and moderate levels of

maintenance. There could be minor trampling of Mono Hot Springs evening primrose if use occurs early in the season. Grazing would be less likely to impact this species, unless stock wanders away from the meadow environment.

- **Bear AU:** The effects to the potential habitat for the west side sensitive riparian species and the populations of Mono Hot Spring evening primrose would be the same as Alternative 2 - Modified.
- The effect to the populations of Blandlow's feather moss and scalloped moonwort at Lower Rock Creek Pack station corral would be the same as Alternative 1.
- There would be very little impact to the rock outcrop potential habitat of Congdon's lewisia in the geographic unit.

Cumulative Effects

The cumulative effects of Alternative 3 with historic and current cattle and pack stock grazing and dam facilities would be similar to Alternative 2 – Modified.

Rare Plants – Alternative 4

Of the nine populations of sensitive and watch list plants known from in or near this geographic unit, two are in meadows closed to grazing, one is in a pasture, three are near trails open to all uses, and three are on trails that would not be used by commercial pack stock. Of the 17 meadows with habitat for sensitive species, 1 would have persistent degraded conditions.

- **Hilton AU:** There would be no grazing allowed at Turk Meadow which would result in minor improvements in hydrologic function and stream condition. There would be very little risk of pack stock trampling to the fen/Blandlow's feather moss habitat at the top of the meadow. The effects to the other 2 populations of Blandlow's feather moss and Inyo beardtongue would be the same as Alternative 2 - modified. Because the section of Hilton Creek Trail between Second and Third Lakes would be TC2 NSCS, the risk of trampling and maintenance impacts to subalpine fireweed would be the least of any alternatives.
- **Fourth Recess AU:** The effects to Congdon's sedge and the potential habitat of Bolander's candle moss would be the same as Alternative 2 - Modified.
- **Silver Pass AU:** The effects to the potential habitat of Bolander's candle moss would be the same as Alternative 1.
- **Graveyard AU:** The effects to the potential habitat of the west side sensitive riparian species would be the same as Alternative 1. The effects to Mono Hot Springs evening primrose would be the same as Alternative 3.
- **Bear AU:** The effects to the potential habitat of the west side sensitive riparian species would be the same as Alternative 2 - Modified. The Bear Creek Trail would be NSCS in this Alternative and Bear Creek Cutoff would be TC2. There would be less use and maintenance than Alternatives 1, 2, and 3.
- The effect to the populations of Blandlow's feather moss and scalloped moonwort at Lower Rock Creek Pack station corral would be the same as Alternative 1.

- There would be very little impact to the rock outcrop potential habitat of Congdon's lewisia in the geographic unit.

Cumulative Effects

The cumulative effects of Alternative 4 with historic and current cattle and pack stock grazing and dam facilities would be similar to Alternative 2 – Modified.

Rare Plants – Alternative 5

Of the nine populations of sensitive and watch list plants known from in or near this geographic unit, two are in meadows closed to commercial pack stock grazing, one is in a pasture that may or may not be used depending on whether pack stock used is allowed outside the wilderness, five are near trails open to private pack stock and hikers, and one is a hiker use trail. Of the 17 meadows with habitat for sensitive species, 1 would have persistent or newly degraded conditions.

- **Hilton AU:** There would be no risk of commercial pack stock to the fen/Blandlow's feather moss habitat at Turk and the unnamed meadow. The pasture would not be used if there were no commercial pack stock permits at all, but would be used if only outside the wilderness use was allowed. The effects maintenance of the Hilton Creek Trail on the populations of Inyo beardtongue and subalpine would be the same as Alternative 2, but there would be no commercial pack stock impacts.
- **Fourth Recess AU:** The effects to Congdon's sedge and the potential habitat of Bolander's candle moss would be the same as Alternative 2 - Modified, except that all risk of pack stock trampling would be removed.
- **Silver Pass AU:** The effects to the potential habitat of Bolander's candle moss would be the same as Alternative 1, except that all risk of pack stock trampling would be removed.
- **Graveyard AU:** The effects to the potential habitat of the west side sensitive riparian species at Graveyard Meadow would be the same as Alternative 1. There would be moderate improvement in hydrologic condition and vegetation composition in Quail Meadow, improving the habitat for these species. The population of Mono Hot Springs evening primrose would not be affected by pack stock trampling or grazing, but would still be subject to the use and maintenance of the PCT and Mono Creek Trail, both TC3.
- **Bear AU:** The meadow at Kip Camp would be expected to maintain its current good condition, and there would be no risk of pack stock trampling. Pack stock would not use Bear Creek Trail or Bear Creek Cutoff and both would be TC2. Use and maintenance would be low on these trails, having the least impact on the population of Mono Hot Springs evening primrose of any of the alternatives.
- Although there would be no wilderness commercial pack stock use, there would probably still be use of the corral outside the wilderness and the effects to the populations of Blandlow's feather moss and scalloped moonwort at Lower Rock Creek Pack station corral would probably be similar to Alternative 1, although there may be reduced or no use.

- There would be slightly less risk of impact to the rock outcrop potential habitat of Congdon's lewisia in the geographic unit because there would be no commercial pack stock use.

Cumulative Effects

Because there would be no commercial pack stock grazing, the cumulative effects of Alternative 5 would be mostly beneficial improvement of the grazing resources.

Weeds

See Wilderness Scale discussion.

Cumulative Effects

The cumulative effects of historic and current cattle and pack stock grazing in this geographic unit would be similar to those in Ansel Adams West.

Campfires

See Wilderness Scale discussion.

Cumulative Effects

There are some campsites above the current campfire closure, so there would be some interactive effects with hikers in Alternatives 2-Modified, 2, and 3, as in Ansel Adams East and Fish Creek Geographic Units.

Bishop/Humphreys

Grazing Resources

Analysis

Overall vegetation conditions are within desired condition and vegetation is adequate to provide for watershed protection throughout this geographic area, with some local minor to moderate alteration of vegetative composition accompanied by current pack stock grazing and use at some locations such as Hutchinson Meadow, near Golden Trout lakes, Waterfall Camp, Moon Lake, and Elba Lake.

Grazing Resources – Alternative 1

Analysis

Reported grazing between 2001 and 2003 was 357 stock nights. The majority of riparian areas within analysis units in the Bishop and Humphreys geographic area have little or no observable riparian vegetation species alteration and with relatively low levels of use these conditions would not change with implementation of any alternative. The small number of key areas assessed with a well defined alteration of riparian vegetative species due to grazing is primarily localized sites in the French Canyon, Glacier Divide, and to a lesser extent the Pine Creek Analysis Unit. The direct effects of pack stock use at these locations would include trampling of vegetation,

decreased vegetative vigor, and localized reductions in late-seral vegetation and decreased plant cover, especially along trails and near campsites and stock holding areas.

Locations in this geographic area where grazing and trampling related effects to the vegetative resource would occur include: French Canyon below 10,700 feet in elevation; the meadows near Moon and Elba lakes; the upland in Humphreys Basin between Golden Trout Lakes and Desolation Lake; the meadows near Hutchinson Meadow; the wet meadows adjacent to Waterfall Camp; near Merriam Lake; and to a lesser extent French Canyon above 10,700 feet; near Upper Pine Lake; and at the inlet of Honeymoon Lake. Most of these locations with adverse effects, such as fragmented sod and decreased cover are associated with trampling of vegetation at campsites and along trails rather than actual grazing utilization.

Overall vegetation conditions are within desired condition and vegetation is adequate to provide for watershed protection throughout this geographic area with implementation of any alternative, with some local minor to moderate alteration of vegetative composition at locations such as Hutchinson Meadow, near Golden Trout lakes, Waterfall Camp, near Moon and Elba Lakes.

Gable, North Piute, Piute, and Horton: Little to no change would occur in riparian vegetation with implementation of any alternative. There may be limited and localized loss of riparian vegetation associated with trailing and trampling effects near the trail crossing of the creek above Sonny Boy mine and on the lakeshore meadows of Lower Horton Lake, at stock watering access points and along the trail to Grass Lake.

North Piute, Lamarck, Sabrina, Tyee, Treasure, and Bishop Creek: Little grazing use occurs and no grazing key areas are identified in these analysis units. There are few identified concerns with identified grazing areas and with little grazing use effects would be limited to those associated with trailing activities.

Granite Park: No grazing is proposed in the Granite Park Analysis Unit, none presently occurs and there would be little change in use or resource conditions with implementation of any alternative.

Pine Creek: There are small meadow complexes adjacent to the lakes in the Pine Creek watershed. These are currently little used for grazing; direct effects are at creek trail crossings and watering access locations. At these locations direct effects are trampling of stream banks and associated loss of vegetative cover. There would continue to be localized sites with hoof punching, sod fragmentation, and loss of riparian vegetation, primarily at stream crossings and near campsites around Honeymoon Lake and Upper Pine Lake.

Over the long-term, there would likely be adequate riparian vegetation to provide protection during flows events in these locations.

Glacier Divide: There would continue to be grazing, access to the stream for water, and trampling of vegetation in the area of Hutchinson meadow nearest the large packer camp. This local area would continue to be dominated by mid-seral to early-seral plant species with decreased vegetative cover for the short-term. Cumulatively there would continue to be local sites with mid-seral and low-seral vegetation in these areas over the long-term. There would continue to be decreased cover of riparian vegetation in limited sites along Piute Creek between Hutchinson Meadow and Summit Lake, especially near the campsites near the user trail to Packsaddle Lake and along the access trails on the north side of Golden Trout Lakes.

Over the long-term, there would likely be adequate riparian vegetation to provide protection during flows events in these locations. With all alternatives there would continue to be erosion from the old trail between the Packsaddle Lake tributary and Hutchinson Meadow, with associated loss of riparian vegetation until restoration work is accomplished.

Humphreys: There would be little or no change in vegetative conditions in most of Humphreys Basin. There would be direct effects of pack stock trailing and trampling of vegetation along the trail corridors.

Cumulatively there would be localized decreases in riparian vegetation and decreased vegetative cover in riparian areas along the existing trails, especially nearest the Golden Trout Lakes vicinity in the long-term. Cumulatively there may not continue to be adequate vegetation to provide for watershed protection over the long-term.

French Canyon: There would be localized decreases in riparian vegetation in French Canyon, above the junction of the trail to Elba Lake, primarily associated with stream crossings and stock access points at several small vernal pools. There would be localized decreases in riparian vegetation in the main portion of French Canyon, primarily associated with trampling and trail erosion related effects in springs and spring channels along the main French Canyon system trail. There would be little change in conditions in the moist to dry forest understory meadows with implementation of any alternative.

Over the long-term, there would be decreased productivity of the late-seral riparian vegetation and decreased vegetative cover in this wetland complex adjacent to Waterfall Camp. There would be localized loss of riparian vegetation and decreased vegetative cover along the small riparian areas due to trailing and trampling of vegetation near and along the access trails and to Merriam, Elba, Moon, Royce, and “L” lakes. There would be localized loss of riparian vegetation and decreased vegetative cover near the campsites and stock holding areas at Merriam Creek Junction, Waterfall Camp, Merriam, Elba, Moon, and “L” lakes. In the short-term there may be some increased direct effects and a long-term cumulative effect would be an increased risk of loss of wetland function.

Cumulative Effects

Because the historic effects of livestock grazing and pack stock use are mostly local in this geographic unit, the cumulative effects of the historic use with current pack stock use are very slight. The most obvious site of cumulative effects is Hutchinson Meadow, where there could be some additive effects of current commercial pack stock use.

Grazing Resources – Alternative 2-Modified

Analysis

There would be approximately 988 stock nights of grazing available with implementation of Alternative 2-Modified. The majority of riparian areas within analysis units in the Bishop and Humphreys geographic area have little or no observable riparian vegetation species alteration and these conditions would not change with implementation of any alternative. The portion of key areas assessed with a well defined alteration of riparian vegetative species are primarily local sites in the French Canyon, Glacier Divide, and to a lesser extent, Pine Creek Analysis Unit. Conditions at these areas would include continued trampling of and localized reductions in late-

seral vegetation and decreased plant cover, especially along trails and near designated campsites and stock holding areas.

Cumulatively these effects would be greater with implementation of Alternative 2 Modified at popular destinations such as the Waterfall Camp area of French Canyon, near and along Piute Creek downstream of Golden Trout lakes, and near Hutchinson Meadow. There would be increased use of designated sites and local reductions in vegetation and fragmentation of sod associated with trampling in sites and along access routes. Cumulatively there would likely continue to be adequate riparian vegetation to provide for watershed protection.

Gable, North Piute, Piute, and Horton: Little to no change would occur in riparian vegetation with implementation of any alternative. There may be limited loss of riparian vegetation due to trailing related trampling impacts near the trail crossing of the creek above Sonny Boy mine and on the lakeshore meadows of Lower Horton Lake, at stock watering access points and along the trail to Grass Lake, especially during high snow pack years.

North Piute, Lamarck, Sabrina, Tyee, Treasure, and Bishop Creek: Little grazing use occurs and no grazing is proposed in these analysis units. There would likely be no differences in effects between alternatives.

Granite Park: No grazing is proposed in the Granite Park Analysis Unit, none is proposed, and there would be no differences in effects between alternatives.

Pine Creek: There are small meadow complexes adjacent to the lakes in the Pine Creek watershed. Late-seral riparian vegetation would become more abundant as trail repair is accomplished and trampling impacts are reduced, however there would continue to be limited sites with hoof punching and loss of riparian vegetation, primarily at stream crossings and near designated campsites near Honey Moon Lake and Upper Pine Lake.

There would be adequate vegetation to provide for watershed protection.

Glacier Divide: The local area of Hutchinson meadow nearest the large packer camp and the stock holding areas at the designated campsite locations would continue to be trampled by pack stock accessing drinking water and would continue to be dominated by aster and other mid-seral to low-seral plant species and decreased vegetative cover for the short-term, there would continue to be limited sites with of mid-seral and low-seral vegetation in these areas over the long-term.

There would continue to be decreased cover of riparian vegetation in limited sites along Piute Creek between Hutchinson Meadow and Summit Lake, especially due to trampling and sod fragmentation near the designated campsites near the user trail to Packsaddle Lake and along the access trails on the north side of Golden Trout Lakes. With all alternatives there would continue to be erosion from the old trail between the Packsaddle Lake tributary and Hutchinson Meadow, with associated loss of riparian vegetation until restoration work is accomplished.

Humphreys: There would be little or no change in vegetative conditions in most of Humphreys Basin. There would be limited decreases in riparian vegetation associated with trailing and trampling of vegetation and sod.

Cumulatively there would be decreased vegetative cover in riparian areas along the existing trails, especially nearest the Golden Trout Lakes vicinity in the long-term. In this low resiliency

area there may not be adequate vegetation to continue to provide for watershed protection along these trails over the long-term.

French Canyon: There would be limited increases in riparian vegetation in upper French Canyon, above the junction of the trail to Elba Lake, primarily associated with stream crossings and stock access points a several small vernal pools. There would be limited decreases in riparian vegetation in the main portion of French Canyon, primarily associated with trampling and trail erosion related effects in springs and spring channels along the main French Canyon system trail and along the trails accessing the Moon Lake area.

There would be little change in conditions in the moist to dry forest understory meadows with implementation of any alternative.

There would be increased productivity of the late-seral riparian vegetation in the short-term and increased vegetative cover in this wetland complex adjacent to Waterfall Camp in the long-term. There would be limited loss of riparian vegetation and decreased vegetative cover along the small riparian areas near access trails to Merriam, Elba, Moon, Royce, and “L” lakes. There would be limited loss of riparian vegetation and decreased vegetative cover near the designated campsites and stock holding areas at Merriam Creek Junction, Waterfall Camp, Merriam, Elba, Moon, and “L” lakes.

Cumulative Effects

The cumulative effects of Alternative 2-Modified would be the same as those of Alternative 1.

Grazing Resources – Alternative 2

Analysis

There would be approximately 988 stock nights of grazing available with implementation of Alternative 2. The majority of riparian areas within analysis units in the Bishop and Humphreys geographic area have little or no observable riparian vegetation species alteration due to grazing activities and these conditions would continue with implementation of any alternative. The small percentage of areas with a well defined alteration of riparian vegetative species are primarily local sites in the French Canyon, Glacier Divide, and to a lesser extent Pine Creek Analysis Unit. Conditions at these areas would include continued localized reductions in late-seral vegetation and decreased plant cover, especially along trails and near designated campsites and stock holding areas. These conditions are mostly associated with the effects of trailing and campsites rather than grazing utilization.

The direct effects of implementation of Alternative 2 are grazing and trampling related effects as described for Alternative 1 and as detailed in the Analysis Unit section below, and could occur at: French Canyon below 10,700 feet in elevation; the meadows near Moon and Elba lakes; the upland in Humphreys Basin between Golden Trout Lakes and Desolation Lake; the meadows near Hutchinson Meadow; and near Merriam Lake.

There are several areas recommended as un-suitable for grazing. Effects at these would be local increases in vegetative production in the short-term.

Cumulative effects would include development of late-seral ecological conditions, especially near springs and streams. These localized effects would occur over the long-term in these areas

including: French Canyon above 10,700 feet; the fen adjacent to Waterfall Camp; near Upper Pine Lake; the inlet of Honey Moon Lake.

Some the areas identified as un-suitable are currently little used, including: meadows near Desolation Lake; meadows near Humphreys Lakes; meadows in the Granite Park area; near the outlet of Packsaddle Lake; and meadows in the Chalfant Lakes area. Cumulatively there would be little change from existing conditions or between alternatives in these locations.

Gable, North Piute, Piute, and Horton: Little to no change would occur in riparian vegetation with implementation of any alternative. There may be limited loss of riparian vegetation due to trampling of vegetation near the trail crossing of the creek above Sonny Boy mine and on the lakeshore meadows of Lower Horton Lake, at stock watering access points and along the trail to Grass Lake.

North Piute, Lamarck, Sabrina, Tyee, Treasure, and Bishop Creek: Little grazing use occurs and no grazing key areas are identified in these analysis units and there are no grazing related differences between alternatives.

Granite Park Analysis Unit: No grazing is proposed and little to no grazing currently occurs in the Granite Park Analysis Unit. There are no grazing related differences expected between alternatives.

Pine Creek: There are small meadow complexes adjacent to the lakes in the Pine Creek watershed. Late-seral riparian vegetation would become more abundant, however there would continue to be limited sites with hoof punching and loss of riparian vegetation, primarily associated with trailing related trampling of vegetation at stream crossings and near designated campsites near Honeymoon Lake and Upper Pine Lake.

There would likely continue to be adequate vegetation to provide for watershed protection.

Glacier Divide: The direct effects of grazing, including trampling of vegetation and sod fragmentation, would continue in the area of Hutchinson meadow nearest the large packer camp and in the stock holding areas at the designated campsite locations. These area would continue to be dominated by aster and similar mid-seral to low-seral plant species and would have decreased vegetative cover for the short-term. Cumulatively, there would continue to be local sites with of mid-seral and low-seral vegetation but overall there would be adequate vegetation to provide for watershed protection in these areas over the long-term.

There would continue to be decreased cover of riparian vegetation in limited sites along Piute Creek between Hutchinson Meadow and Summit Lake, especially near the designated campsites near the user trail to Packsaddle Lake and along the access trails on the north side of Golden Trout Lakes. With all alternatives there would continue to be erosion from the old trail between the Packsaddle Lake tributary and Hutchinson Meadow, with associated loss of riparian vegetation until restoration work is accomplished.

Humphreys: There would be little or no change in vegetative conditions in most of Humphreys Basin. There would be minor and local decreases in riparian vegetation and decreased vegetative cover in riparian areas associated with trailing use and trampling of vegetation along the existing trails, especially nearest the Golden Trout Lakes vicinity in the long-term.

There may not continue to be adequate vegetation to provide for watershed protection.

French Canyon: There would be local decreases in riparian vegetation in French Canyon, above the junction of the trail to Elba Lake, primarily associated with stream crossings and stock access points a several small vernal pools. There would be limited decreases in riparian vegetation in the main portion of French Canyon, primarily associated with trampling and trail erosion related effects in springs and spring channels along the main French Canyon system trail and along the trails accessing. There would be little change in conditions in the moist to dry forest understory meadows with implementation of any alternative.

Without the direct effects of grazing, such as trampling of the wetland vegetation, there would be increased growth and productivity of the late-seral riparian vegetation in the short-term and increased vegetative cover in this wetland complex adjacent to Waterfall Camp in the long-term. There would be limited loss of riparian vegetation and decreased vegetative cover along the small riparian areas near and due to trampling of vegetation along access trails to Merriam, Elba, Moon, Royce, and “L” lakes. There would be localized loss of riparian vegetation and decreased vegetative cover near the designated campsites and stock holding areas at Merriam Creek Junction, Waterfall Camp, Merriam, Elba, Moon, and “L” lakes. Cumulatively there would likely continue to be adequate riparian vegetation to provide for watershed protection in these areas.

Cumulative Effects

The cumulative effects of Alternative 2 would be the same as those of Alternative 1.

Grazing Resources – Alternatives 3 and 4

Analysis

There would be approximately 963 stock nights of grazing available with implementation of either Alternative 3 or Alternative 4. The majority of riparian areas within analysis units in the Bishop and Humphreys geographic area have little or no observable riparian vegetation species alteration and these conditions would not change with implementation of any alternative. The portion of key areas assessed with a well defined alteration of riparian vegetative species are primarily local sites in the French Canyon, Glacier Divide, and to a lesser extent, Pine Creek Analysis Units. Conditions at these areas would include continued trampling of and localized reductions in late-seral vegetation and decreased plant cover, especially along trails and near designated campsites and stock holding areas.

Cumulatively these effects would be greater with implementation of Alternative 3 at popular destinations such as the Waterfall Camp area of French Canyon, near and along Piute Creek downstream of Golden Trout lakes, and near Hutchinson Meadow. There would be increased use of designated sites and local reductions in vegetation and fragmentation of sod associated with trampling in sites and along access routes. Cumulatively there would likely continue to be adequate riparian vegetation to provide for watershed protection.

Gable, North Piute, Piute, and Horton: Little to no change would occur in riparian vegetation with implementation of any alternative. There may be limited loss of riparian vegetation due to trailing related trampling impacts near the trail crossing of the creek above Sonny Boy mine and on the lakeshore meadows of Lower Horton Lake, at stock watering access points and along the trail to Grass Lake, especially during high snow pack years.

North Piute, Lamarck, Sabrina, Tyee, Treasure, and Bishop Creek: Little grazing use occurs and no grazing is proposed in these analysis units. There would likely be no differences in effects between alternatives.

Granite Park: No grazing is proposed in the Granite Park Analysis Unit, none is proposed, and there would be no differences in effects between alternatives.

Pine Creek: There are small meadow complexes adjacent to the lakes in the Pine Creek watershed. Late-seral riparian vegetation would become more abundant as trail repair is accomplished and trampling impacts are reduced, however there would continue to be limited sites with hoof punching and loss of riparian vegetation, primarily at stream crossings and near designated campsites near Honey Moon Lake and Upper Pine Lake.

There would be adequate vegetation to provide for watershed protection.

Glacier Divide: The local area of Hutchinson meadow nearest the large packer camp and the stock holding areas at the designated campsite locations would continue to be trampled by pack stock accessing drinking water and would continue to be dominated by aster and other mid-seral to low-seral plant species and decreased vegetative cover for the short-term, there would continue to be limited sites with of mid-seral and low-seral vegetation in these areas over the long-term. Cumulatively there would continue to be adequate vegetation to provide for watershed protection.

There would continue to be decreased cover of riparian vegetation in limited sites along Piute Creek between Hutchinson Meadow and Summit Lake, especially due to trampling and sod fragmentation near the designated campsites near the user trail to Packsaddle Lake and along the access trails on the north side of Golden Trout Lakes. With all alternatives there would continue to be erosion from the old trail between the Packsaddle Lake tributary and Hutchinson Meadow, with associated loss of riparian vegetation until restoration work is accomplished.

Humphreys: There would be little or no change in vegetative conditions in most of Humphreys Basin. There would be limited decreases in riparian vegetation associated with trailing and trampling of vegetation and sod.

There would be decreased vegetative cover in riparian areas along the existing trails, especially nearest the Golden Trout Lakes vicinity in the long-term. In this low resiliency area there may not be adequate vegetation to continue to provide for watershed protection along these trails over the long-term.

French Canyon: There would be limited increases in riparian vegetation in upper French Canyon, above the junction of the trail to Elba Lake, primarily associated with stream crossings and stock access points a several small vernal pools. There would be limited decreases in riparian vegetation in the main portion of French Canyon, primarily associated with trampling and trail erosion related effects in springs and spring channels along the main French Canyon system trail and along the trails accessing the Moon Lake area.

There would be little change in conditions in the moist to dry forest understory meadows with implementation of any alternative.

There would be increased productivity of the late-seral riparian vegetation in the short-term and increased vegetative cover in this wetland complex adjacent to Waterfall Camp in the long-term. There would be limited loss of riparian vegetation and decreased vegetative cover along the

small riparian areas near access trails to Merriam, Elba, Moon, Royce, and “L” lakes. There would be limited loss of riparian vegetation and decreased vegetative cover near the designated campsites and stock holding areas at Merriam Creek Junction, Waterfall Camp, Merriam, Elba, Moon, and “L” lakes.

Cumulative Effects

The cumulative effects of Alternatives 3 or 4 would be the same as those of Alternative 1.

Grazing Resources – Alternative 5

Analysis

The majority of riparian areas within analysis units in the Bishop and Humphreys geographic area have little or no observable riparian vegetation species alteration and these conditions would continue with implementation of any alternative. The small percent of areas with a well defined alteration of riparian vegetative species are primarily located at localized sites in the French Canyon, Glacier Divide, and to a lesser extent, Pine Creek Analysis Units. Effects at these would be localized increases in vegetative production in the short-term, and development of late-seral ecological conditions, especially near springs and streams over the long-term.

There would continue to be altered vegetation near trails and campsites, and especially near the Golden Trout Lakes area due to low resiliency, slow recovery rates and continued hiker traffic. While there may not be adequate vegetation at some local sites, especially near hiker trails and campsites at Golden Trout Lakes, overall there would be adequate vegetation to provide for watershed protection.

Gable, North Piute, Piute, and Horton: Little to no change would occur in riparian vegetation with no grazing or use by commercial pack stock.

North Piute, Lamarck, Sabrina, Tyee, Treasure, Bishop Creek, and Granite Park: Little grazing use occurs and no grazing is identified in these analysis units. There are few identified concerns and little to no change would occur in riparian vegetation with implementation of any alternative.

Pine Creek: There are small meadow complexes adjacent to the lakes in the Pine Creek watershed. Late-seral riparian vegetation would become more abundant and would be restored on the limited and localized sites with hoof punching and loss of riparian vegetation, primarily at stream crossings and access routes to lakeshore campsites, especially at Upper Lake and Honeymoon Lake. Cumulatively there would be adequate vegetation to provide for watershed protection.

Glacier Divide: The area of Hutchinson meadow nearest the large packer camp and the stock holding areas at the designated campsite locations would continue to be dominated by mid-seral to early-seral plant species and decreased vegetative cover for the short-term. Late-seral riparian vegetation would increase and become dominate at these locations in the long-term to very long-term.

With all alternatives there would continue to be erosion from the old trail between the Packsaddle Lake tributary and Hutchinson Meadow, with associated loss of riparian vegetation

continuing until restoration work is accomplished. Cumulatively there would be adequate vegetation to provide for watershed protection.

Humphreys: There would be little or no change in vegetative conditions in most of Humphreys Basin. There would be limited increase in riparian vegetation and increased vegetative cover along the existing trails, especially nearest the Golden Trout Lakes vicinity in the long-term.

There may be some continued loss of vegetation along the trails, especially those nearest Golden Trout Lakes over the long-term and in this low resiliency area the cumulative impact may be inadequate vegetation to provide for watershed protection at some local sites along these trails.

French Canyon: With elimination of the direct effects of pack stock use, such as trampling of vegetation, there would be localized increases in riparian vegetation in upper French Canyon, primarily associated with stream crossings, stock access points, and at several small vernal pools. There would be local increases in riparian vegetation in the main portion of French Canyon, primarily associated with elimination of trampling and trail erosion related effects in springs and spring channels along the system trail and near the wetland complexes of springs, sphagnum, and very wet meadows at each tributary confluence. Cumulatively there would continue to be adequate vegetation to provide for watershed protection.

There would be little change in conditions in the moist to dry forest understory meadows with implementation of any alternative.

There would be localized increases in riparian vegetation and increased plant cover on granite shelves and benches above French Canyon, especially along trails accessing Elba, Moon, L, Merriam, and Royce Lakes and in the meadows near the designated campsite near Merriam Lake. There would be increased productivity of the late-seral riparian vegetation in the short-term and increased vegetative cover in the wetland complex adjacent to Waterfall Camp in the long-term. Cumulatively there would continue to be adequate vegetation to provide for watershed protection.

Cumulative Effects

The cumulative effects of Alternative 5 would be beneficial because there would be the most chance of recovery from historic effects and other ongoing uses.

Fens

Fens – Alternative 1

Most meadows would be open for grazing, so there is a risk of impacts to any unknown fens.

- **French AU:** Adjacent to Waterfall Camp would be open for grazing, which would continue the degraded condition of the fen. There would be grazing in the other 6 meadows with fens or fen characteristics, but the current good condition would probably continue if grazing continues at current levels. There is a large unused grazing capacity in French Canyon and if use increases, there could be impacts to the many wet areas with fen characteristics.
- **Bishop AU:** Hurd Lake Meadow is open to grazing, but there is no current use and no expected increase, so the area with fen characteristics would remain in good condition.

- **Lamarck AU:** Grass Lake is currently closed to grazing and would remain so, so there would be no change in the good condition of the fen.
- **Pine Creek AU:** East of Pine Creek Pass Meadow would be open for grazing, but there is no expected increase in grazing, so the good condition of the area with fen characteristics would continue.
- **Glacier Divide AU:** Packsaddle and below Packsaddle meadows would remain open for grazing, but current low reported use would continue and there would be no predicted change to fen conditions.

Cumulative Effects

Historic livestock grazing occurred in this geographic unit, but most of the meadows appear to be recovered from effects of this activity, so there would be very little cumulative interaction with current commercial pack stock grazing use. At Waterfall Camp, the negative effects are from previous pack stock use and could be worsened by continuing similar use.

Fens – Alternative 2 - Modified

- **French AU:** Adjacent to Waterfall Camp, Merriam Confluence, and French Canyon above 10,760 would be closed to grazing, so the fens would be protected, but there could still be inadvertent trampling of up to 5 percent. There would be limited grazing at Merriam Lake that would allow the good condition of the fen to be maintained. In the three other meadows with fen characteristics in French Canyon, grazing would be allowed and the capacity is high. The maximum stock nights would probably not be reached, but minor downward trends in meadow condition could occur as grazing numbers approached the capacity estimates.
- **Bishop AU:** Hurd Lake would be closed to grazing, so the area with fen characteristics would be protected.
- **Lamarck AU:** Grass Lake would be closed to grazing, so the fen would be protected.
- **Pine Creek AU:** East of Pine Creek Pass Meadow would be closed to grazing, so the area with fen characteristics would be protected.
- **Glacier Divide AU:** Packsaddle and Below Packsaddle Meadows would be closed to grazing, so the areas with fen characteristics would be protected.

Cumulative Effects

The cumulative effects would be similar to the effects of Alternative 1.

Fens – Alternative 2

The effects to the meadows with fens or fen characteristics would be the same as Alternative 2 - Modified.

Fens – Alternative 3

The effects to the meadows with fens or fen characteristics would be the same as Alternative 2 - Modified.

Fens – Alternative 4

The effects to the meadows with fens or fen characteristics would be the same as Alternative 2 - Modified.

Fens – Alternative 5

The condition of the fen at the meadow adjacent to Waterfall Camp would improve with the removal of the pack stock impacts.

Rare Plants

Rare Plants – Alternative 1

Of the nine populations of sensitive and watch list plants known from in or near this geographic unit, three are on or near a trail open to all uses, three are on trails with hiker use only, and three are in locations without known trails or pack stock use. Of the two meadows with habitat for sensitive species, one would have persistent or newly degraded conditions.

- **North Piute AU:** The documented slender moonwort population in Piute Canyon has not been relocated since the plant was collected in 1968, but since the habitat described is a “crevice along trail”, there is a very little risk that pack stock using the TC3 trail would damage any plants. No grazing or camping is likely in the area of the reported population, but there could be rare trail maintenance activity.
- **Horton AU:** The Longley Reservoir Trail would be approved for use, and there would be a small risk of pack stock trampling impacts to the population of Inyo beardtongue.
- **Bishop Creek AU:** The Chocolate Ruwau Loop would be TC3, open to pack stock use only to Bull Lake. The section of trail where there is a population of Congdon’s sedge would not be used by stock, so there would only be hiker use on this very steep and rocky section of trail and there would be a slight risk of hiker trampling to the population. There would be no pack stock or trail impacts to the populations above Saddlerock Lake.
- **Lamarck AU:** The Grass Lake Outlet Trail would not be a system trail nor approved for pack stock use, so there would be no pack stock effects to the Inyo beardtongue population. Other recreational use is currently incidental so there would be very little risk of damage to the population.
- **Sabrina AU:** The populations of Inyo beardtongue at Sabrina Lake outside the wilderness would be at risk of trampling by pack stock and other users of the Sabrina trail on the south side of the lake and of trampling by anglers and other recreational users of the trail on the north side of the lake. There is no known pack stock use of the areas near North Lake where there are Inyo beardtongue populations.
- **French AU:** There would be no expected change in the meadow condition or potential habitat for veined water lichen at Merriam confluence to Chevaux confluence meadow.
- **Glacier AU:** Hutchinson Meadow would remain in a moderately degraded condition (hydrology and stream), so there would be a risk of damage to the potential habitat for veined water lichen.

- There would be very few impacts to the potential habitat for Congdon's lewisia because it is rocky and would not receive much pack stock use. Trail impacts would mostly be limited to the tread, a minimal percentage of the habitat.

Cumulative Effects

Historic livestock grazing occurred in this geographic unit, but most of the meadows appear to be recovered from effects of this activity, so there would be very little cumulative interaction with current commercial pack stock grazing use. Historic use of Hutchinson Meadow as a Native American gathering place has contributed to its somewhat degraded condition and those effects could be prevented from recovery or continued by current commercial pack stock use.

Rare Plants – Alternative 2 - Modified

Of the nine populations of sensitive and watch list plants known from in or near this geographic unit, four would be on or near a trail open to all uses, two would be near trails open to hikers only, and three are in areas where there would be no trail or pack stock activity. Of the two meadows with habitat for sensitive species, neither would have persistent or newly degraded conditions.

- **North Piute AU:** The documented slender moonwort population in Piute Canyon has not been relocated the plant was collected in 1968, but since the habitat described is a "crevice along trail," there is a very little risk that pack stock using the trail could trample an individual plant. No grazing or full service camping would be allowed in the area of the reported population.
- **Horton AU:** The Longley Reservoir Trail would be TC2, and there would be a small risk of pack stock trampling impacts to the population of Inyo beardtongue.
- **Bishop Creek AU:** The section of the Chocolate/Ruwau Loop Trail from the inlet of Bull Lake to Ruwau would be closed to commercial pack stock, so there would be no risk of pack stock trampling or grazing impacts to the population of Congdon's sedge. The Trail would be TC2, so maintenance effects would be minimal.
- **Lamarck AU:** The Grass Lake Outlet Trail would be TC2, Not Recommended for Commercial Stock. The population of Inyo beardtongue would not be impacted by pack stock, but there would be more maintenance and possibly more hikers that could increase risks of trampling or soil disturbance.
- **Sabrina AU:** The impacts to the Inyo beardtongue at Sabrina Lake would be the same as Alternative 1.
- **French AU:** The meadow between Merriam confluence and Chevaux confluence would be open for grazing, and if it is used to capacity there would be some downward trend in vegetation composition, but hydrologic and stream conditions would not change. The potential habitat for veined water lichen would probably remain in good condition.
- **Glacier AU:** Hutchinson Meadow would have a reduced number of stock from its current use, so there would be expected improvement to hydrologic and stream condition, improving the condition of the potential habitat for veined water lichen.

- The effects to the potential habitat for Congdon’s lewisia would be the same as Alternative 1.

Cumulative Effects

The cumulative effects of Alternative 2-Modified would be the same as those of Alternative 1.

Rare Plants – Alternative 2

The effects to rare plants would be the same as Alternative 2 – Modified.

Rare Plants – Alternative 3

Of the nine populations of sensitive and watch list plants known from in or near this geographic unit, three are in remote areas with no trail or pack stock impacts, four would be on or near a trail open to all uses, two would be on hiker only trails. Of the two meadows with habitat for sensitive species, neither would have persistent or newly degraded conditions.

- **North Piute AU:** Effects to slender moonwort would be the same as Alternative 2 - Modified.
- **Horton AU:** Effects to Inyo beardtongue would be the same as Alternative 2 - Modified.
- **Bishop Creek AU:** The effects to Congdon’s sedge on the Chocolate-Ruwau Trail would be the same as Alternative 2 – Modified.
- **Lamarck AU:** The impacts to the population of Inyo beardtongue would be the same as Alternative 2 - Modified.
- **Sabrina AU:** The impacts to the Inyo beardtongue at Sabrina Lake would be the same as Alternative 1.
- **French AU:** The impacts to the potential habitat for veined water lichen at Merriam confluence to Chevaux confluence would be the same as Alternative 2 - Modified.
- **Glacier Divide AU:** The impacts to the potential habitat for veined water lichen at Hutchinson Meadow would be the same as Alternative 2 - Modified.
- The effects to the potential habitat for Congdon’s lewisia would be the same as Alternative 1.

Cumulative Effects

The cumulative effects of Alternative 3 would be the same as those of Alternative 1.

Rare Plants – Alternative 4

Of the nine populations of sensitive and watch list plants known from in or near this geographic unit, four would be on or near a trail open to all uses, two would be on hiker only trails, and three would be in locations with no expected pack stock or trail activity. Of the two meadows with habitat for sensitive species, neither would have persistent or newly degraded conditions.

- **North Piute AU:** The effects to the population of slender moonwort would be the same as Alternative 2 - Modified.

- **Horton AU:** Effects to Inyo beardtongue would be the same as Alternative 2 - Modified.
- **Bishop Creek AU:** The effects of pack stock use on Congdon's sedge would be the same as Alternative 2 - Modified. The Chocolate/Ruwau Trail would be TC1 and NSCS near the population of Congdon's sedge, so maintenance effects would be unlikely.
- **Lamarck AU:** The Grass Lake Outlet trail would be TC1, NRCS, so there would be no pack stock impacts, and very little use or maintenance would be expected. There would be a very small risk of trampling or soil disturbance to the population of Inyo beardtongue.
- **Sabrina AU:** The impacts to the Inyo beardtongue at Sabrina Lake and near North Lake would be the same as Alternative 1.
- **French AU:** The effects to the potential habitat of veined water lichen would be the same as Alternative 2 - Modified.
- **Glacier Divide AU:** There would be a 30 percent utilization standard for Hutchinson Meadow, so there would be fewer stock than in Alternatives 2 - Modified and 3, which would make recovery of the meadow hydrologic function and stream condition slightly more likely, improving the condition of the potential habitat for veined water lichen.
- The effects to the potential habitat of Congdon's sedge would be the same as Alternative 1.

Cumulative Effects

The cumulative effects of Alternative 4 would be the same as those of Alternative 1.

Rare Plants – Alternative 5

Of the nine populations of sensitive and watch list plants known from in or near this geographic unit, six would be on or near a trail open to hikers and private pack stock and three would be in areas with no trails. Of the two meadows with habitat for sensitive species, neither would have persistent or newly degraded conditions.

- **North Piute AU:** The Piute Canyon trail would still be used by other wilderness users and be maintained as a TC3, but there would be no risk of pack stock impacts.
- **Horton AU:** The Longley Reservoir Trail would be TC2, but there would be no risk of pack stock effects.
- **Bishop Creek AU:** The effects to Congdon's sedge would be the same as Alternative 4.
- **Lamarck AU:** The effects to Inyo beardtongue would be the same as Alternative 1.
- **Sabrina AU:** The impacts to the Inyo beardtongue at Sabrina Lake and North Lake could possibly be increased if there were displaced wilderness pack stock use of those areas for day rides. Any new day ride routes would have to have Forest Service approval.
- **French AU:** There would be no risk of commercial pack stock impacts in the meadow between Merriam confluence and Chevaux confluence, but it would be open to private pack stock use. The condition of the potential habitat for veined water lichen should remain good.

- **Glacier Divide AU:** There would be improvement in the hydrologic and stream conditions at Hutchinson Meadow, but it would probably get use from private pack stock.
- There would be no risk of commercial pack stock impacts to the potential habitat of Congdon's lewisia, but there would be a very slight risk of impacts from private pack stock and hikers.

Cumulative Effects

Because there would be no commercial pack stock use in Alternative 5, there would be very minimal cumulative effects of trail management activity with historic uses.

Weeds

See Wilderness Scale discussion.

Cumulative Effects

There are some non-native plants at existing pack stations and trailheads, so commercial pack stock and trail maintenance personnel could act as vectors for these currently existing weeds.

Campfires

See Wilderness Scale discussion.

Cumulative Effects

Because many of the campsites used in this unit are above 10,000 feet, the effects of bringing charcoal or firewood in to the wilderness would be similar to those in Ansel Adams East.

Florence/Bear

Grazing Resources

Overall vegetation conditions are within desired condition and vegetation is adequate to provide for watershed protection throughout this geographic area, with some local minor to moderate alteration of vegetative composition accompanied by current pack stock grazing and use at some locations such as Bear Creek, Upper Bear Creek, Senger Creek, Shooting Star Meadow, Sallie Keys and Boot lakes Meadows, Rose Lake Meadow, Rose Marie Meadow, Hilgard Meadow, and Lou Beverly Lake Meadow. There is repeated stock use in the meadows at Hellhole, Jackass, Poison, Double, and Blayney Meadows repeated use and there could be cumulative adverse affects at those locations, especially considering the synergistic adverse effects of ongoing stock use with uses such as water diversions and altered flows.

There is expected to be little difference in grazing related effects between different alternatives over most of the Analysis Units in the Florence/Bear Geographic Area. The productivity and estimated number of stock nights available are well within current and anticipated use levels. Most analysis units within this geographic area are not often used for overnight trips, most use is to drop off dunnage; the pack stock then returns to the trailhead. There is an occasional, but relatively rare, traveling trip, originating from the east side that would stop overnight at 3 to 4 locations. These trips usually stop at camps on Bear Creek, Sallie Keys Lake, and Rosemarie Meadow and sometimes at Lou Beverly Lake, Shooting Star Meadow, or Hilgard Meadow.

There could be a minor increase in these traveling trips with implementation of some alternatives due to restrictions elsewhere, such as over Silver Pass and in Fish Creek, however there is adequate carrying capacity in the Florence/Bear Geographic Area to absorb the levels of increases that are likely to occur.

Effects should be limited to localized minor to moderate trampling and related decreases in vegetation associated with areas of stock concentration, with some severe and localized trampling and vegetation loss at stock camps. Effects will be minimized with adequate monitoring of key and critical areas and adaptation each year through the Annual Operating Plan. Locations that do receive overnight grazing use include Bear Creek, Upper Bear Creek, Senger Creek, Shooting Star Meadow, Sallie Keys and Boot lakes Meadows, Rose Lake Meadow, Rose Marie Meadow, Hilgard Meadow, and Lou Beverly Lake Meadow.

Grazing Resources – Alternative 1

Analysis

The high reported grazing between 2001 and 2003 was 999 stock nights. The estimated productivity and potential maximum grazing conservatively available is approximately 5,500 stock nights, so the existing use is well below the estimated carrying capacity. Overall it is unlikely that there will be a substantial difference in consequences to the grazing resource in this geographic area with implementation of any of the alternatives being considered. Most of the key area meadows assessed in the Florence/Bear geographic area exhibit minor or moderate localized altered vegetative species composition, most of these will continue to be in satisfactory condition regardless of the alternative implemented. Some of the key areas assessed do have well defined alteration of vegetative species composition including; Hilgard, Rosmarie, and Shooting Star Meadows. They would continue to have altered vegetation composition with Alternative 1. Some locations, identified as critical areas, such as “Big Fen” Meadow are currently receiving little to no grazing use and with other areas available, there should not be an increase in use with implementation of Alternative 1.

All Analysis Units: There are several key areas in this geographic area where localized grazing and trampling related direct effects would occur in the short-term including: the meadows near Sallie Keys Lakes; Lower Blayney Meadow; Double Meadow; Shooting Star Meadow; Hilgard Meadow; Rosemarie Meadow; Rose Lake Meadow; “Water Trail” meadow; the meadows near Lou Beverly Lake, Jackass Meadow; Poison Meadow; Double Meadow, and Hellhole Meadow. These areas would be directly affected locally by trailing and the associated, minor to moderate, trampling of vegetation. There would be a localized decrease of riparian vegetation, some areas of fragmented sod, and increased mid-seral vegetation mostly associated with stock camps and trails.

There would continue to be localized alteration of vegetative species, and some reduced vegetative cover, due to trampling of vegetation, removal of vegetation by grazing animals, and sod fragmentation, especially near designated camps at Rosemarie Meadows, Hilgard Meadows, Rose Lake, Bear Creek, and to a lesser extent at Shooting Star Meadow and the meadows near Sallie Keys and Boot Lakes. There would continue to be trailing related trampling and trail erosion along the trail through Shooting Star Meadow as stock accessed the campsite, which is on the opposite side of the meadow from the system trail. There could be localized direct effects

including trailing related trampling of vegetation and stream bank alteration that may persist from year-to-year at Lower Blayney Meadow.

There could be little difference in the effects of different alternatives at Lou Beverly Lake. There could be little difference between alternatives in the short-term and limited alteration of vegetative species composition with reduced cover, also to a limited extent, at Water Trail Meadow.

There would likely continue to be adequate vegetation to provide for watershed protection overall in this Geographic Area. However, there several of the meadows where long-term unstable watershed conditions indicate that there is likely to be at least a portion of each meadow continuing to degrade as a result of ongoing processes, including at Rosemarie and Hilgard meadows where unstable stream banks and active headcuts would likely continue to contribute to a chronic loss of riparian vegetation.

There would be localized impacts to riparian vegetation at the meadows at Jackass, Hellhole, Double, Blayney, and Poison meadows. There may be a localized loss of late-seral vegetation and decreased vegetative cover on in-stream bars and along stream banks over the long-term at these sites with inadequate vegetation to provide for watershed protection. Over the long-term, there may not be adequate vegetation to provide for watershed protection in the meadows at Jackass, Hellhole, Poison, Double, and Blayney, especially when considering the chronic and synergistic cumulative effects of commercial pack stock grazing uses, other grazing uses, flow regulation, water diversion, and upstream private land uses.

Overall, there would continue to be adequate late-seral riparian vegetation to provide for watershed protection at most locations in this geographic area.

Cumulative Effects

The meadows at Hellhole, Jackass, Poison, Double, and Blayney Meadows receive pasture use and have had high historic use, so there could be cumulative adverse affects at those locations, especially considering the synergistic adverse effects with uses such as water diversions and altered flows. Overall, the effects of historic grazing effects are slight, so the cumulative effects with Alternative 1 are small.

Grazing Resources – Alternative 2-Modified

Analysis

There would be approximately 5,549 stock nights of grazing available in the geographic area with implementation of Alternative 2-Modified. The effects of implementation of Alternative 2-Modified will be similar to those predicted for Alternative 1. There are meadows with characteristics such as special aquatic features, or resource concerns such poorly located trail crossings, including Big Fen Meadow, Sallie Key Lakes to Boot Lake Meadows, the Lou Beverly inlet camp Meadow, Orchid Lake, and Rose Meadow, which require careful assessment of the effects of implementation of different alternatives and will require careful stock management and monitoring if a grazing alternative is selected.

All Analysis Units: The direct effects of the grazing that would be authorized under Alternative 2-Modified in the meadows at Blayney Meadow, Jackass, Hellhole, Poison, and Double Meadow are likely to be increased trampling at localized sites within these meadows, such as adjacent to

gates, stream bank trampling at favored watering and crossing locations, and a loss of riparian vegetation on instream bars. These effects may be visually noticeable, however, with frequent monitoring to ensure compliance with applicable standards the cumulative effects could be that resources at these locations meet or trend toward desired conditions, depending upon the effects of water diversion and flow regulation.

There are two areas, Upper Hilgard Branch Meadows and Big Fen Meadow, recommended as not suitable for grazing which would be protected from grazing under Alternatives 2, 2-Modified, 3, 4, and 5. Without the trailing and trampling direct effects of grazing, these areas would see more certain maintenance of high-seral vegetative status in the short-term, and continuing through the long-term; however, due to the low levels of current use, this maintenance of late-seral vegetation would also be likely, if not as certain with Alternative 1.

There will continue to be localized alteration of vegetation species, and some reduced vegetative cover, especially near designated camps at Rosemarie Meadows, Hilgard Meadows, Rose Lake, Shooting Star Meadow, and to a lesser extent at Sallie Keys Lake and Boot Lake area. There could be little difference in the effects of different alternatives at Lou Beverly Lake. There could be little difference between alternatives in the short-term and limited alteration of vegetative species composition with reduced cover, also to a limited extent, at Water Trail Meadow and Big Fen Meadow.

There would be localized impacts to riparian vegetation at the meadows at Jackass, Hellhole, Double, Blayney, and Poison meadows. There may be a localized loss of late-seral vegetation and decreased vegetative cover on in-stream bars and along stream banks over the long-term at these sites with inadequate vegetation to provide for watershed protection. Cumulatively, over the long-term, there may not be adequate vegetation to provide for watershed protection in the meadows at Jackass, Hellhole, Poison, Double, and Blayney, especially when considering the chronic and synergistic cumulative effects of commercial pack stock grazing uses, other grazing uses, flow regulation, water diversion, and upstream private land uses.

Cumulative Effects

The cumulative effects of Alternative 2-Modified would be similar to those of Alternative 1.

Grazing Resources – Alternative 2

Analysis

There would be 1,827 stock nights of grazing available in this geographic area with implementation of Alternative 2. The effects of implementing Alternative 2 in the Florence/Bear Geographic area would be similar to those predicted for Alternative 2-Modified for the majority of the Florence/Bear Geographic Area. There are two areas, Upper Hilgard Branch Meadows and Big Fen Meadow, recommended as not suitable for grazing which would be protected from grazing under Alternatives 2, 2-Modified, 3, 4, and 5.

All Analysis Units: Without the trailing and trampling direct effects of grazing, these areas would see more certain maintenance of high-seral vegetative status in the short-term, and continuing through the long-term, this maintenance of late-seral vegetation would be likely, but not as certain with Alternative 1.

As for Alternative 2-Modified, there would be localized impacts, including trampling of instream bars and reduced late-seral riparian vegetation at the pastures at Jackass, Hellhole, Double, Blayney, and Poison meadows, with overall vegetative conditions remaining within vegetative desired condition at these sites over the short-term. Indirect effects may be a localized loss of late-seral vegetation and cumulatively chronic decreased vegetative cover on in-stream bars and along stream banks over the long-term at these sites. Over the long-term, there may not be adequate vegetation to provide for watershed protection in the meadows at Jackass, Hellhole, Poison, Double, and Blayney, especially when considering the chronic and synergistic cumulative effects of commercial pack stock grazing uses, other grazing uses, flow regulation, water diversion, and upstream private land uses.

Cumulative Effects

The cumulative effects of Alternative 2 would be similar to those of Alternative 1, except there would be less grazing at the meadows used as pastures, so there would be fewer effects.

Grazing Resources – Alternatives 3 and 4

Analysis

All Analysis Units: The effects of implementing either Alternative 3 or Alternative 4 would be similar to those for Alternative 2-Modified. With Alternative 3 there could be increased direct effects in the meadows at Blayney Meadow, Jackass, Hellhole, Poison, and Double Meadow relative to Alternative 4. There would also be increased indirect effects such as increased trampling at localized sites within these meadows, stream bank trampling at favored watering and crossing locations, and a loss of riparian vegetation on instream bars. These effects may be visually noticeable, however, with frequent monitoring to ensure compliance with applicable standards the cumulative effects could be that resources at these locations meet or trend toward desired conditions, depending upon the effects of water diversion and flow regulation.

There would be approximately 5,549 stock nights of grazing available with implementation of Alternative 3 and 1,882 stock nights with Alternative 4. Overall, the effects of implementation of Alternative 3 and Alternative 4 would be indistinguishable from those predicted for Alternative 2-Modified. With Alternative 3 there would be increased risks of localized impacts to riparian vegetation at the meadows at Jackass, Hellhole, Double, Blayney, and Poison meadows relative to Alternative 4. With Alternative 3 There may be a localized loss of late-seral vegetation and decreased vegetative cover on in-stream bars and along stream banks over the long-term at these sites with inadequate vegetation to provide for watershed protection.

Over the long-term, there may not be adequate vegetation to provide for watershed protection in the meadows at Jackass, Hellhole, Poison, Double, and Blayney, especially when considering the chronic and synergistic cumulative effects of commercial pack stock grazing uses, other grazing uses, flow regulation, water diversion, and upstream private land uses with either Alternative 3 or Alternative 4.

Cumulative Effects

The cumulative effects of Alternatives 3 are similar to those of Alternative 2-Modified and those of Alternative 4 are similar to those of Alternative 2.

Grazing Resources – Alternative 5

Analysis

Most of the meadows assessed in the Florence/Bear exhibit well little or no altered vegetative species composition, these will continue in late-seral vegetative status. Approximately one-third of the key areas assessed have well defined alteration of vegetative species composition, including Hilgard, Rosemarie, and Shooting Star Meadows. There are also meadows with resource concerns such as poorly located trail crossings including Big Fen Meadow, Sallie Key Lakes to Boot Lake Meadows, the Lou Beverly inlet camp Meadow, Orchid Lake, and Rose Meadow.

All Analysis Units: With no grazing there will be decreased trampling of vegetation and an increase in vegetative cover at these locations, although continued hiker traffic will maintain existing conditions over most of the trail segments. There may not be recovery of the unstable banks and active headcuts at Hilgard Meadow and Rosemarie Meadow over the long-term to very long-term, even without grazing related impacts.

Overall, throughout this geographic area there would be adequate vegetation over the long-term to provide for watershed protection at most locations.

The increases in riparian vegetation will improve conditions such as at widened stream crossings and at trampled spring areas over the long-term, although continued use by private stock and hikers would limit recovery at these locations. There will continue to be localized alteration of vegetation species, and some reduced vegetative cover, especially near camps used by private stock parties at Rosemarie Meadows, Hilgard Meadows, Rose Lake, and to a lesser extent at Sallie Keys and Boot Lakes.

There may continue to be erosion and loss of vegetation along and on tributaries to the secondary trail at Rosemarie Meadow over the long-term to very long-term, with or without use by commercial stock. There would be localized impacts to riparian vegetation at the meadows at Jackass, Hellhole, Double, Blayney, and Poison meadows. There may be a localized loss of late-seral vegetation and decreased vegetative cover on in-stream bars and along stream banks over the long-term at these sites with inadequate vegetation to provide for watershed protection, depending upon water diversions and flow regulation. Cumulatively, over the long-term, there may not be adequate vegetation to provide for watershed protection in the meadows at Jackass, Hellhole, Poison, Double, and Blayney, especially when considering the chronic and synergistic cumulative effects of other grazing uses, flow regulation, water diversion, and upstream private land uses.

Cumulative Effects

The cumulative effects of Alternative 5 would be beneficial because there would be a higher chance of recovery of historic grazing effects.

Fens

Fens – Alternative 1

Italy AU: Upper Hilgard Meadow would be open for grazing, but grazing numbers would probably be very low, to the fen would continue to be in good condition.

Sallie Keyes AU: Big Fen Meadow would be open for grazing, but the fen would continue to be in good condition if the current lack of grazing continues.

Cumulative Effects

Historic livestock, hydropower facilities, and grazing current pasture use are major factors in the somewhat degraded condition of the meadows in this unit and commercial pack stock use could delay or prevent recovery in meadows not affected by the dams. In those meadows, the effect of commercial pack stock is minimal compared to the effects of the dams on hydrologic function.

Fens – Alternative 2 - Modified

Neither of the known fens in this geographic unit would be open to grazing use.

Italy AU: Upper Hilgard Meadow would be closed to grazing, so the fen would be protected from pack stock trampling impacts.

Sallie Keyes AU: Big Fen Meadow would be closed to grazing, so the fen would be protected from pack stock trampling impacts.

Cumulative Effects

Cumulative effects of Alternative 2-Modified would be similar to those of Alternative 1, although possibly slightly less intense.

Fens – Alternative 2

The effects to the meadows with fens or fen characteristics would be the same as Alternative 2 - Modified.

Fens – Alternative 3

The effects to the meadows with fens or fen characteristics would be the same as Alternative 2 - Modified.

Fens – Alternative 4

The effects to the meadows with fens or fen characteristics would be the same as Alternative 2 - Modified.

Fens – Alternative 5

There would be no risk of commercial pack stock impacts to fens.

Rare Plants

Rare Plants – Alternative 1

Of the ten populations of sensitive and watch list plants known from in or near this geographic unit, four are on or near trails open to all uses, one may have impacts from wandering grazing stock, three would not be affected by trails or stock (one may be affected by pipeline maintenance), and two would be in meadows open to grazing (one near a hot spring). Of the 51

meadows with habitat for sensitive species, 5 would have persistent or newly degraded conditions.

- **Hooper AU:** There would be no trail impacts to the Mono Hot Springs evening primrose near Jackass Meadow, but there may be stray pack stock from the grazing at there. The Hooper Diversion trail would be TC1, so there would be very little use or maintenance on the trail and risks to the population of Mono Hot Springs evening primrose would be very small. Any spread of cheatgrass from the around Florence Lake could have a negative impact on the habitat for the Mono Hot Springs evening primrose. There would be no change in the degraded stream and hydrologic function conditions, so there would be a risk to the population of Yosemite ivesia and habitat for the sensitive riparian species at Jackass and Hell Hole meadows. There would be no impacts to the population of gray-leaved violet because of its inaccessibility.
- **East Florence AU:** The Florence Lake Trail would be TC3 and continue to be used by pack stock, hikers, and 4WD vehicles accessing private property. Most use is probably after the flowering and seed set of the Mono Hot Springs primrose, but there is a small risk of trampling or spreading of cheatgrass seeds with use and maintenance of this trail. There are duplicate trails where hikers have developed routes away from the 4WD road/trail, so there is a very wide trail impact zone in this area. Impacts from the pack stock grazing Double Meadows and roaming through the primrose populations would be minimal because of timing. The populations of Mono Hot Springs evening primrose on the north side of Florence Lake would not be affected by any trail or pack stock activity, but could be affected by weed (cheatgrass) expansion.
- **Dutch/Boulder AU:** There would be somewhat less use of the Florence Lake trail than in East Florence AU, so there would be even less risk to the Mono Hot Springs evening primrose. The Thompson Lake Trail would be TC1, so the reported downed trees blocking the trail may prevent the trail from being used for a long time, protecting the population of Mono Hot Spring evening primrose. Any spread of cheatgrass from the around Florence Lake could have a negative impact on the habitat for the Mono Hot Springs evening primrose.
- **Ward Mountain AU:** The effects to the Mono Hot Springs evening primrose would be similar to those in Dutch/Boulder.
- **Sallie Keyes AU:** There would be no expected improvement in the vegetation composition at Shooting Star Meadow, which could maintain a degraded condition of the potential habitat for west side sensitive riparian species. There would be a risk of trampling to the population of Prairie wedge grass and the potential habitat of the west side riparian species at Blayne and Double Meadows due to continued use as a pasture, but no downward trends in meadow or stream function. At Blayne Hot Springs, there may be effects to the Prairie wedge grass from non-pack stock supported recreational use of the hot springs.
- **Italy AU:** The degraded conditions at Hilgard Meadow would continue, putting the potential habitat for veined water lichen at risk.

- There would be very few impacts to the potential habitat for Congdon's lewisia because it is rocky and would not receive much pack stock use. Trail impacts would mostly be limited to the tread, a minimal percentage of the habitat.

Cumulative Effects

In the area around Florence Lake, there are many sources of impact to Mono Hot Springs evening primrose other than commercial pack stock use, including 4WD access to private property, a pipeline on the north side of the lake, and most importantly, the construction of the dam itself. Possibly because it is an annual plant and blooms early, the populations appear to be doing well despite the additive effects of these activities and uses.

Historic livestock grazing, hydropower facilities and current pasture use have all affected the potential habitat of riparian sensitive species, and effects of current commercial pack stock use is minimal compared with the those existing effects.

Rare Plants – Alternative 2 - Modified

Of the ten populations of sensitive and watch list plants known from in or near this geographic unit, four are on or near a trail open to all uses, one may have impacts from wandering grazing stock, three would not be affected by trails or stock (one may be affected by pipeline maintenance), and two would be in meadows open to grazing (one near a hot spring). Of the 51 meadows with habitat for sensitive species, 5 would have persistent or newly degraded conditions.

- **Hooper AU:** The impacts to the Mono Hot Springs evening primrose near Jackass Meadow and gray-leaved violet would be the same as Alternative 1. The Hooper Diversion Trail would be TC2, so there would be a slightly higher risk of maintenance impacts to the population of Mono Hot Springs evening primrose on that trail. There would be significantly higher stock numbers allowed at Jackass Meadow in this Alternative, so the degraded conditions would possibly get worse, degrading the habitat of the Yosemite mousetail and the potential habitat for the west side sensitive riparian species. The degraded conditions would continue at Hell Hole Meadow. There would be a risk of wandering stock impacts to the Mono Hot Springs evening primrose.
- **East Florence AU:** The effects to the populations of Mono Hot Springs evening primrose would be the same as Alternative 1. The effects to the riparian habitat at Blayney meadows would be similar to Alternative 1.
- **Ward Mountain AU:** Impacts from the Florence Lake Trail to Mono Hot Springs evening primrose would be the same as Alternative 1.
- **Dutch/Boulder AU:** The Thompson Lake Trail would be TC2, so the downed trees would probably be removed, increasing the slight risk of trampling to the population of Mono Hot Springs evening primrose.
- **Sallie Keyes AU:** The impacts to the Prairie wedge grass would be the same as Alternative 1.
- **Italy AU:** The effects to the potential habitat of veined water lichen in Hilgard meadow would be the same as Alternative 1 (degraded conditions continue).

- The effects to the potential habitat of Congdon’s lewisia would be the same as Alternative 1.

Cumulative Effects

The cumulative effects of Alternative 2-Modified with historic livestock grazing, hydropower facilities, and current pasture use are similar to those of Alternative 1, but at slightly less intensity.

Rare Plants – Alternative 2

The effects to rare plants would be the same as Alternative 2 – Modified.

Rare Plants – Alternative 3

Of the ten populations of sensitive and watch list plants known from in or near this geographic unit, four are on or near a trail open to all uses, one may have impacts from wandering grazing stock, three would not be affected by trails or stock (one may be affected by pipeline maintenance), and two would be in meadows open to grazing (one near a hot spring). Of the 51 meadows with habitat for sensitive species, 5 would have persistent or newly degraded conditions.

- **Hooper AU:** The effects to the Mono Hot Springs evening primrose on the Hooper Diversion trail and the grey-leaved violet would be the same as Alternative 2 - Modified. The effects to riparian habitats at Jackass and Hell Hole would be the same as Alternative 2 - Modified.
- **East Florence:** The effects to the populations of Mono Hot Springs evening primrose would be the same as Alternative 1.
- **Dutch/Boulder AU:** The effects to the populations of Mono Hot Springs evening primrose would be the same as Alternative 2 - Modified.
- **Ward Mountain AU:** The effects to the populations of Mono Hot Springs evening primrose would be the same as Alternative 1.
- **Sallie Keyes AU:** The degraded conditions would continue at Shooting Star Meadow and could possibly worsen at Blayney Meadow because of an increase in the stock numbers, so the risks to the population of Prairie wedge grass and the potential habitat of the west side sensitive riparian species would continue.
- **Italy AU:** The effects to the potential habitat of veined water lichen at Hilgard Meadow would be the same as Alternative 1 (continued degraded conditions).
- The effects to the potential habitat of Congdon’s lewisia would be the same as Alternative 1.

Cumulative Effects

The cumulative effects of Alternative 3 with historic grazing, hydropower facilities, and current pasture use would be the same as Alternative 2-Modified.

Rare Plants – Alternative 4

Analysis

Of the ten populations of sensitive and watch list plants known from in or near this geographic unit, four are on or near a trail open to all uses, one may have impacts from wandering grazing stock, three would not be affected by trails or stock (one may be affected by pipeline maintenance), and two would be in meadows open to grazing (one near a hot spring). Of the 51 meadows with habitat for sensitive species, 5 would have persistent or newly degraded conditions.

- **Hooper AU:** Jackass Meadow would not be used as a pasture for commercial stock use, but some grazing would be allowed and Forest Service stock would probably continue to use it, so there would be a lower risk of impacts to the populations of Yosemite mouse-tail, the nearby population of Mono Hot Springs evening primrose, and the potential habitat for the west side sensitive riparian species than Alternatives 1, 2 – Modified, 2, and 3. Both Jackass and Hell Hole Meadows would continue to have degraded conditions, mostly due to hydrologic effects related to the Florence Dam. The impacts to the population of grey-leaved violet would be the same as Alternative 1.
- **East Florence AU:** The effects to the populations of Mono Hot Springs evening primrose would be the same as Alternative 2 - Modified.
- **Ward Mountain and Dutch/Boulder AUs:** The effects to Mono Hot Springs evening primrose would be the same as Alternative 1.
- **Sallie Keyes AU:** There would be no change to the degraded conditions at Shooting Star and Lower Blayne Meadows, continuing the risk to the population of Prairie wedge grass and the potential habitat for the west side sensitive riparian species.
- **Italy AU:** Although there would be a 30 percent utilization level and fewer stock nights at Hilgard Meadow, the degraded conditions of the meadow and the potential habitat for veined water lichen would continue.
- The effects to the potential habitat of Congdon's lewisia would be the same as Alternative 1.

Cumulative Effects

The cumulative effects of Alternative 4 with historic grazing, hydropower facilities, and current pasture use would be the same as Alternative 2-Modified.

Rare Plants – Alternative 5

Of the ten populations of sensitive and watch list plants known from in or near this geographic unit, three are in areas with no threats from pack stock or trail activities, although one is along a pipeline, four are on or near a trail open to all uses, one is near a meadow that may have pack stock use, and one is in a meadow near a hot spring. Of the 51 meadows with habitat for sensitive species, 3 would have persistent or newly degraded conditions.

- **Hooper AU:** Jackass Meadow would most likely still be used by Forest Service and private pack stock, so the risk of impacts to the populations of Yosemite mouse-tail and

nearby Mono Hot Springs evening primrose and to the potential habitat of the west side sensitive riparian species would be less than the other alternatives. The hydrologic condition of Jackass and Hell Hole meadows may not recover because most of the effects are from the Florence dam. The effects to the population of grey-leaved violet would be the same as Alternative 1.

- **East Florence AU:** The Florence Lake Trail would be TC3 and there would still be hiker, private pack stock and 4WD vehicle use, but overall, there would be slightly less risk of trampling or weed spreading to the populations of Mono Hot Springs evening primrose. There would be no risk of commercial pack stock impacts to the Prairie wedge grass population, although other recreational uses would continue.
- **Dutch/Boulder and Ward Mountain AU:** The impacts to the populations of Mono Hot Springs evening primrose would be similar to those in Hooper AU.
- **Sallie Keyes AU:** There could be slight improvement in the conditions at Lower Blayney, which would improve the habitat of Prairie wedge grass and potential habitat for the west side sensitive riparian species.
- **Italy AU:** There could be minor improvements to the stream condition at Hilgard Meadow, but no improvement in the hydrologic condition is expected, so there would be a risk to the potential habitat of veined water lichen.
- There would be no risk of commercial pack stock trampling to the potential habitat of Congdon's lewisia, but there would still be hiker and private pack stock use.

Cumulative Effects

The cumulative effects of Alternative 5 with historic grazing, hydropower facilities, and current pasture use would be the slightly less Alternative 2-Modified, since current use is fairly insignificant compared to the effects of historic and other current uses.

Weeds

See Wilderness Scale discussion.

Cumulative Effects

The cumulative effects of hydropower facilities, OHV use, and other recreational uses would be similar to that in Ansel Adams West Geographic Unit.

Campfires

See Wilderness Scale discussion.

Cumulative Effects

The cumulative effects of backpackers with commercial pack stock use would be similar to that in Mono Creek/Rock Creek Geographic Unit.

John Muir Southeast

Grazing Resources

Analysis

Current overnight use and grazing use is low throughout the John Muir Southeast geographic area. The majority of the use passes through the national Forest portion of the John Muir Wilderness Area for a few hours between the trailhead and the Sequoia Kings Canyon National Park Boundary. The majority of the riparian areas, while not assessed, are believed to be in good condition. These areas are currently not affected by commercial pack stock grazing and little difference is expected with implementation of any alternative.

Grazing Resources – Alternative 1

Analysis

There were 9 stock nights of grazing use reported in this geographic area between 2001 and 2003. There would be little change from current conditions with implementation of any alternative, with the possible exception of some increased trampling and related reductions in riparian vegetation at Anvil Camp with implementation of Alternatives 2, 2-Modified, and 3.

All Analysis Units: There is one known location, the Windy Gap area, with observable areas of altered vegetative species composition, due to trailing impacts such as trampling of vegetation and sod fragmentation and associated erosion along a trail that is along the meadow gradient at the south edge of the meadow. Overnight and grazing uses may also occur occasionally at Sawmill Meadow. Camping and grazing of pack stock is currently prohibited at Anvil Camp on the Shepard Pass Trail.

Little grazing use occurs in this geographic area and there would be little change and few noticeable effects regardless of the alternative selected. There would continue to be a prohibition of camping with stock and grazing at Anvil Camp. There could be limited and temporary trampling of riparian vegetation at Sawmill Meadow and other isolated locations in the Sawmill, Shingle Mill Bench, and Birch Creek areas associated with light use by either commercial or non-commercial pack stock users during hunting season some years. These effects are not likely to be repeated in any one year or to persist over the long-term at any one location.

At Windy Gap there would be decreased riparian vegetation over the short-term and then decreased riparian vegetation and decreased ground cover over the long-term to very long-term. At Windy Flat there would likely not be adequate riparian vegetation to provide for watershed protection over the very long-term unless a watershed restoration project was implemented.

There would likely continue to be adequate vegetation to provide for normal ecological processes and watershed protection such as providing for biodiversity, dissipation of energy, filtering of sediment, and retention of water at most locations throughout this geographic area.

Cumulative Effects

Because there are few areas with persistent historic effects and light commercial pack stock use, the cumulative effects of any alternative in this geographic unit would be slight.

Grazing Resources – Alternative 2-Modified

Analysis

There would be 45 stock nights of grazing available in this geographic area. Current reported grazing use is low throughout this geographic area. The majority of the riparian areas are believed to be in good condition. These areas are currently not affected by commercial pack stock grazing and little difference is expected with implementation of any alternative. There is one location, Windy Flat with observable areas of altered vegetative species composition and active erosion associated with trailing along the gradient of the meadow.

All Analysis Units: Little grazing use occurs in this geographic area and there would be little change regardless of the alternative selected. With resumption of pack stock camping there would be localized trampling and loss of riparian vegetation and decreased vegetative cover near Anvil Camp in the short-term. Over the long-term, there may be a decline in late-seral riparian vegetation and an increase in mid-seral and earl-seral vegetation at Anvil Camp as stock cross the small meadow to access the stream for drinking water. These effects of allowing camping with no grazing may eventually result in the need to require packing additional feed resulting in increased stock use and decreased vegetative cover near the designated stock holding area at Anvil Camp. There could be limited and temporary trampling of riparian vegetation at Sawmill Meadow and other isolated locations in the Sawmill, Shingle Mill Bench, and Birch Creek areas associated with light use by either commercial or non-commercial pack stock users during hunting season some years. These effects are not likely to persist over the long-term at any one location. At Windy Gap there would be increased riparian vegetation and ground cover over the long-term to very long-term; however, there would likely not be adequate vegetation to provide for watershed protection over the very long-term.

Grazing is not allowed at Windy Gap; however, the erosion and loss of vegetation would likely continue over the long-term unless watershed restoration work is accomplished. There could be some increased use and associated related direct and cumulative effects of trampling of vegetation at Sawmill Meadow and at Anvil Camp. Most visitors to this geographic area will not notice any difference in conditions, at any scale, including site-specific with implementation of Alternative 2 Modified relative to other alternatives.

There would likely continue to be adequate vegetation to provide for normal ecological processes and watershed protection such as providing for biodiversity, dissipation of energy, filtering of sediment, and retention of water at most locations throughout this geographic area.

Cumulative Effects

The cumulative effects of Alternative 2-Modified would be the same as those of Alternative 1.

Grazing Resources – Alternative 2

Analysis

There would be 45 stock nights of grazing available in this geographic area. Current reported grazing use is light throughout this geographic area. The majority of the riparian areas are believed to be in good condition. These areas are currently not affected by commercial pack stock grazing and little difference is expected with implementation of any alternative. There is

one location with observable areas of altered vegetative species composition, at the Windy Flat and Gap area. There could be increased use and direct effects near the designated campsite at Anvil Camp with implementation of Alternative 2.

All Analysis Units: Little grazing use occurs in this geographic area and there would be little change or few noticeable effects regardless of the alternative selected. With resumption of pack stock camping there would be localized trampling and loss of riparian vegetation and decreased vegetative cover near Anvil Camp in the short-term. There could be limited and temporary trampling of riparian vegetation at Sawmill Meadow and other isolated locations in the Sawmill, Shingle Mill Bench, and Birch Creek areas associated with light use by either commercial or non-commercial pack stock users during hunting season some years. These effects are not likely to persist over the long-term at any one location.

Over the long-term, there may be a decline in late-seral riparian vegetation and an increase in mid-seral and earl-seral vegetation at Anvil Camp. At Windy Flat there would be increased riparian vegetation and ground cover over the long-term to very long-term, but there would likely not be adequate vegetation to stabilize the headcuts and protect the watershed for the very long-term. Cumulatively there would likely continue to be adequate vegetation to provide for normal ecological processes and watershed protection such as providing for biodiversity, dissipation of energy, filtering of sediment, and retention of water at most locations throughout this geographic area.

Cumulative Effects

The cumulative effects of Alternative 2 would be the same as those of Alternative 1.

Grazing Resources – Alternatives 3 and 4

Analysis

There would be 45 stock nights of grazing available in this geographic area with implementation of Alternative 3 and none available with implementation of Alternative 4. Current reported grazing use is very light throughout this geographic area. The majority of the riparian areas are believed to be in good condition. These areas are currently not affected by commercial pack stock grazing and little difference is expected with implementation of any alternative. There is one location, Windy Flat with observable areas of altered vegetative species composition and active erosion associated with trailing along the gradient of the meadow. There could be some increased use and associated related direct and cumulative effects of trampling of vegetation at Sawmill Meadow and at Anvil Camp under Alternative 4. Most visitors to this geographic area will not notice any difference in conditions, at any scale, including site-specific with implementation of Alternative 3 relative to other alternatives.

All Analysis Units: Little grazing use occurs in this geographic area and there would be little change regardless of the alternative selected. With resumption of pack stock camping there would be localized trampling and loss of riparian vegetation and decreased vegetative cover near Anvil Camp in the short-term. Over the long-term, there may be a decline in late-seral riparian vegetation and an increase in mid-seral and earl-seral vegetation at Anvil Camp as stock cross the small meadow to access the stream for drinking water. These effects of allowing camping with no grazing may eventually result in the need to require packing additional feed resulting in increased stock use and decreased vegetative cover near the designated stock holding area at

Anvil Camp. There could be limited and temporary trampling of riparian vegetation at Sawmill Meadow and other isolated locations in the Sawmill, Shingle Mill Bench, and Birch Creek areas associated with light use by either commercial or non-commercial pack stock users during hunting season some years. These effects are not likely to persist over the long-term at any one location.

Grazing is not recommended at Windy Gap; however, the erosion and loss of vegetation would likely continue over the long-term unless watershed restoration work is accomplished. At Windy Gap there would be increased riparian vegetation and ground cover over the long-term to very long-term; however, there would likely not be adequate vegetation to provide for watershed protection over the very long-term. Cumulatively there would likely continue to be adequate vegetation to provide for normal ecological processes and watershed protection such as providing for biodiversity, dissipation of energy, filtering of sediment, and retention of water at most locations throughout this geographic area.

Cumulative Effects

The cumulative effects of Alternative 3 or 4 would be the same as those of Alternative 1.

Grazing Resources – Alternative 5

Analysis

Little grazing use occurs in this geographic area, and there would be little change in conditions with no pack stock use. At Windy Flat there would be increased riparian vegetation and ground cover over the long-term to very long-term; however recovery of the deeper incision and headcuts may not occur without watershed restoration work.

All Analysis Units: There may be some limited trampling of riparian vegetation at Anvil Camp, Sawmill Meadow, and other isolated locations primarily in the Sawmill, Shingle Mill Bench, and Birch Creek areas associated with light use by private stock parties during hunting seasons in some years. Cumulatively, over the long-term there would be adequate vegetation to provide for watershed protection.

Grazing is not recommended at Windy Flat; however, the erosion and loss of vegetation would likely continue over the long-term unless watershed restoration work is accomplished. At Windy Flat there would be increased riparian vegetation and ground cover over the long-term to very long-term; however, there would likely not be adequate vegetation to provide for watershed protection over the very long-term. Cumulatively there would likely continue to be adequate vegetation to provide for normal ecological processes and watershed protection such as providing for biodiversity, dissipation of energy, filtering of sediment, and retention of water at most locations throughout this geographic area.

Cumulative Effects

The cumulative effects of Alternative 5 would be similar to those of Alternative 1, since the effects are slight, although Alternative 5 would have the most beneficial cumulative effects of all the alternatives.

Fens

There are no known fens in this geographic unit and grazing use is very low, so there would be little risk to any unknown fens.

Rare Plants

Rare Plants – Alternative 1

Of the 31 populations of sensitive or watch list plants in this geographic unit, 10 populations are in remote locations and would not be impacted by pack stock or trails and 21 are along trails (17 open to pack stock use): 7 TC4 trails (4 are hiker only), 6 TC3 trails, 5 TC2 trails, 1 TC1 trail, and 2 use trails. This alternative has the highest trail classes of any alternative and so the use and maintenance impacts to populations on or near trails would be the highest. Even with these trail classes however, there would be very few impacts expected, since use stays mostly on the trail tread and most destinations are in the National Park.

Taboose and Sawmill AUs: The Taboose and Sawmill Trails would be TC3, so use, maintenance activities and the small risks to the populations of Raven's milkvetch, Inyo beardtongue, and alpine jewel-flower would be highest of any of the alternatives. There would be no effects to the Inyo beardtongue inaccessible to trails.

Kearsarge AU: There will continue to be access to Bench Lake via the Matlock to Bench Lake use trail, and on the Flower to Bench use trail. The populations of Mt. Whitney draba and Sharsmith's stickseed near Bench Lake would be at very minimal risk of impacts from client use of the area, but stock would not access the population. The other population would not be affected by pack stock use, regardless of alternative. The Grand Group Trail would be TC2 and there is very little current use, so there would be a low risk of impact to the population of Sharsmith's stickseed near the terminus of the trail. The Golden Trout Lake Trail would be TC2 and open for pack stock use, so the population of alpine jewelflower along the trail would be at a small risk of pack stock trampling and possibly some maintenance activity. The population of alpine jewel flower at Heart Lake is not directly accessible to pack stock, so there would only be a risk of hiker impacts. Camping could affect the populations of Mt. Whitney draba, alpine jewel-flower, and Sharsmith's stickseed near Bench and Heart Lakes, although most of the packer-supported and hiker use is accessing Sequoia-Kings Canyon NP. Since these plants grow in rock outcrops, the risk of damage is slight. The lower section of the Shepherd Pass trail would be TC2, so the populations of Dedecker's clover would be at a slight risk of pack stock and maintenance impacts. The marble rock mat population would not be affected by trail use or maintenance.

Shepherd AU: both sections of the Shepherd Pass trail would be TC2, so the populations of Father Crowley's lupine and Sharsmith's stickseed would be at a slight risk of pack stock and maintenance impacts.

Whitney AU: there would continue to be no commercial pack stock allowed, so the impacts to the populations of Mt. Whitney draba and Sharsmith's stickseed would be heavy hiker use and maintenance of the Mt. Whitney Trail at TC4.

North Fork of Lone Pine AU: There would be no pack stock or trail effect to the population of Sharsmith's stickseed.

North Fork of Big Pine AU: Both sections of the North Fork Big Pine Creek Trail would be TC4, with high levels of maintenance and use. The impacts to Father Crowley's lupine and Inyo beardtongue would probably be similar to the current situation and there would be a risk of some plants being trampled near the trail, but no risk to the populations as a whole.

South Fork of Big Pine AU: Both sections of the South Fork Big Pine Creek Trail would be TC3, probably with current use levels and moderate maintenance levels. There would be a minimal risk of off trail impacts to the Inyo beardtongue and Father Crowley's lupine populations

Baxter AU: The Baxter Pass Trail would be TC3 with some risk of pack stock use and trail maintenance activity effects on the population of Dedecker's clover along the trail.

Cottonwood AU: The Cottonwood Lakes Trail would be TC4, with high levels of use and maintenance. The trail ends near the populations of sweet-smelling monardella and Sharsmith's stickseed and there would continue to be social trails in the area of the population. No packing in of firewood would be allowed, so there would be no increased risk of disease, weeds, or damage to the subalpine vegetation. The populations of Sharsmith's stickseed on rock outcrops would not be affected by pack stock or trail actions. Camping and fishing use in the Cottonwood Lakes Basin may affect the populations of sweet-smelling monardella and Sharsmith's hackelia near Lakes 4 and 5.

Cumulative Effects

The Rex Montis Mine in Kearsarge AU operated for some years and there is currently a mine clean-up project at the site. These mining operations usually have only a local effect but it is long-term and the actual level of impact depends on the individual operation. There is very little commercial pack stock use near the mine, so there would be no cumulative effect.

Hiker and backpacker trampling would contribute to commercial pack stock effects in the Cottonwood Basin and along heavily traveled trails such as the Kearsarge Pass trail.

Rare Plants – Alternative 2 - Modified

Of the 31 populations of sensitive or watch list plants in this geographic unit, 10 populations are in remote locations and would not be impacted by pack stock or trails and 21 are along trails (14 open to pack stock use): 4 hiker only TC4 trails, 2 TC3 trails, 11 TC2 trails (2 NSCS), 1 TC1 NSCS trail, and 3 use trails.

Taboose and Sawmill AUs: The Taboose and Sawmill Trails would be TC2, so use, maintenance activities and the small risks to the populations of Raven's milkvetch, Inyo beardtongue, and alpine jewel-flower would be lower than Alternative 1, but higher than Alternatives 4 and 5. There would be no effects to the Inyo beardtongue inaccessible to trails.

Kearsarge AU: The risk to the Mount Whitney draba populations would be similar to Alternative 1, but the Flower to Bench use trail would not be used. Since this is duplicate access, there would probably be no change in use from Alternative 1. The effects to the population of Sharsmith's stickseed would be the same as Alternative 1. The Golden Trout Lake Trail would be TC2 and NSCS, so there would be no pack stock impacts to the population of alpine jewelflower, but there could be some maintenance activities. Impacts to the population of alpine

jewelflower at Heart Lake would be the same as Alternative 1. Impacts to the populations of Dedecker's clover and marble rock mat would be the same as Alternative 1.

Shepherd AU: Only the lower section of the Shepherd Pass trail would be TC2 and the last half mile would be TC1. There may be less pack stock and hiker use in this case, so the populations of Father Crowley's lupine and Sharsmith's stickseed would be at a slightly lower risk of pack stock and maintenance impacts than in Alternative 1.

Whitney AU: The effects to the populations of Mt. Whitney draba and Sharsmith's stickseed would be the same as Alternative 1.

North Fork of Lone Pine AU: There would be no pack stock or trail effect to the population of Sharsmith's stickseed.

North Fork of Big Pine AU: The lower section of the North Fork Big Pine Creek Trail would be TC3 and the upper 1.3 miles would be TC2, with moderate levels of maintenance, but probably use similar to the current situation. The impacts to Father Crowley's lupine and Inyo beardtongue would probably be similar to Alternative 1, but maintenance impacts would be less likely.

South Fork of Big Pine AU: The lower section of the South Fork Big Pine Creek Trail would be TC2 and the upper 1.2 miles would be TC1, possibly at somewhat lower use and maintenance levels than currently. The risk to Inyo beardtongue and Father Crowley's lupine would be marginally smaller than in Alternative 1.

Baxter AU: The Baxter Pass Trail would be TC1 and NSCS, so there would be no risk of pack stock impacts and maintenance would be unlikely. There could be some risk of hikers leaving the trail to avoid obstacles and trampling the Dedecker's clover, since there would be very little maintenance.

Cottonwood AU: The Cottonwood Lakes Trail would be TC3, but the use would probably remain similar to current use and the effects to the populations of sweet-smelling monardella and Sharsmith's stickseed would probably be similar to Alternative 1. However, the sweet-smelling monardella may be negatively affected by the increased illegal removal of downed wood that may result from non-packer supported users observing packer campfires, or by introduction of plant diseases or weeds carried in on the wood. The populations of Sharsmith's stickseed on rock outcrops would not be affected by pack stock or trail actions.

Cumulative Effects

Cumulative effects of Alternative 2-Modified would be slightly less than those of Alternative 1.

Rare Plants – Alternative 2

The effects of Alternative 2 would be the same as those of Alternative 2-Modified.

Rare Plants – Alternative 3

Of the 31 populations of sensitive or watch list plants in this geographic unit, 10 are in remote locations and would have no trail or pack stock impacts and 21 would be along trails: 4 hiker only TC4 trails 2 TC3 trails, 11 TC2 trails (2 NSCS), 1 TC1 NSCS trail, and 2 near use trails.

Taboose and Sawmill AUs: Effects to Raven’s milkvetch and Mt. Whitney draba would be the same as those described in Alternative 2 - Modified. There would be no effects to the Inyo beardtongue inaccessible to trails.

Kearsarge AU: The effects to the population of Sharsmith’s stickseed would be the same as Alternative 1. The effects to the population of alpine jewelflower along the Golden Trout Lake Trail would be the same as Alternative 2 - Modified. The impacts to the population of alpine jewelflower at Heart Lake would be the same as Alternative 1. The impacts to Dedecker’s clover and marble rock mat would be the same as Alternative 1.

Shepherd AU: The effects to Father Crowley’s lupine and Sharsmith’s stickseed would be the same as Alternative 1.

Whitney AU: The effects to the populations of Mt. Whitney draba and Sharsmith’s stickseed would be the same as Alternative 1.

North Fork of Lone Pine AU: There would be no pack stock or trail effect to the population of Sharsmith’s stickseed.

North Fork of Big Pine AU: The effects to Father Crowley’s lupine and Inyo beardtongue would be the same as Alternative 2 - Modified.

South Fork of Big Pine AU: Both sections of the South Fork Big Pine Creek Trail would be TC2, probably with use levels and maintenance levels similar to current use. There would be a small risk of off trail impacts to Inyo beardtongue and Father Crowley’s lupine.

Baxter AU: The effects to the population of Dedecker’s clover would be the same as Alternative 2 - Modified.

Cottonwood AU: The effects to sweet-smelling monardella would be the same as Alternative 2 - Modified. The populations of Sharsmith’s stickseed on rock outcrops would not be affected by pack stock or trail actions.

Cumulative Effects

Cumulative effects of Alternative 3 would be slightly less than those of Alternative 1.

Rare Plants – Alternative 4

Of the 31 populations of sensitive or watch list plants in this geographic unit, 10 are in remote locations and would have no trail or pack stock impacts and 21 would be along trails (9 open to pack stock): no TC4 trails, 6 TC3 trails (4 hiker only), 8 TC2 trails (4 NSCS), 4 TC1 NSCS trails, and 2 use trails.

Taboose AU: The Taboose Trail would be TC2 and NSCS, so there would be no commercial pack stock use, and maintenance activities would most likely be less often than with pack stock use. There would be very small risks to the populations of Raven’s milkvetch, Inyo beardtongue, and alpine jewel-flower. There would be no effects to the Inyo beardtongue inaccessible to trails.

Sawmill AU: The Sawmill Trail would be TC1 and NSCS, so there would be no commercial pack stock use, very little general use, and most likely no maintenance activities. The only risk to the population of Raven’s milkvetch would be hikers going around any trail blockages and possibly trampling the plants.

Kearsarge AU: The effects to the populations of Mt. Whitney draba would be the same as Alternative 2 - Modified. The effects to the population of Sharsmith's stickseed would be the same as Alternative 1. The Golden Trout Trail would be TC1 and NSCS, so the population of alpine jewelflower along the trail would have no pack stock impacts and probably no maintenance activity. The impacts to alpine jewelflower at Heart Lake would be the same as Alternative 1. The impacts to Dedecker's clover and marble rock mat would be the same as Alternative 1.

Shepherd AU: The effects to Father Crowley's lupine and Sharsmith's stickseed would be the same as Alternative 2 - Modified.

Whitney AU: The Mt. Whitney Trail would be TC3, so there would be less likelihood of trail maintenance impacts on the populations of Mt. Whitney draba and Sharsmith's stickseed, but hiker use would probably remain high.

North Fork of Lone Pine AU: There would be no pack stock or trail effect to the population of Sharsmith's stickseed.

North Fork of Big Pine AU: The effects to Father Crowley's lupine and Inyo beardtongue would be the same as Alternative 2 - Modified.

South Fork of Big Pine AU: Both sections of the South Fork Big Pine Creek Trail would be TC1 and NSCS, so there would be no pack stock effects and essentially no maintenance effects to the populations of Inyo beardtongue and Father Crowley's lupine along the trail.

Baxter AU: The effects to the population of Dedecker's clover would be the same as Alternative 2 - Modified.

Cottonwood AU: The Cottonwood Lakes Trail would be TC3, but the use would probably remain similar to current use and the effects to the populations of sweet-smelling monardella and Sharsmith's stickseed would probably be similar to Alternative 1. There would be no firewood packed in from outside the wilderness. The populations of Sharsmith's stickseed on rock outcrops would not be affected by pack stock or trail actions.

Cumulative Effects

Cumulative effects of Alternative 4 would be slightly less than those of Alternative 1.

Rare Plants – Alternative 5

Of the 31 populations of sensitive or watch list plants in this geographic unit, 13 are in remote locations and would have no trail or pack stock impacts and 18 would be along trails (none open to pack stock): 4 TC4 trails, 3 TC3 trails, 9 TC2 trails, and 2 TC1 trails.

- **Taboose AU:** Effects to the populations of Raven's milkvetch, Inyo beardtongue, and alpine jewel-flower would be the same as Alternative 4. There would be no effects to the Inyo beardtongue inaccessible to trails.
- **Sawmill AU:** The Sawmill Trail would be TC2 but without commercial pack stock, so there would be small risks to the population of Raven's milkvetch of hikers going around trail blockages, but they would be less likely to be removed than in Alternative 4.

- **Kearsarge AU:** There would be no pack stock impact to either population of Mt. Whitney draba. There would be no pack stock impacts to the populations of Sharsmith's stickseed. The Golden Trout Trail would be TC2, so the impacts to the alpine jewelflower along the trail would be the same as Alternative 2 - Modified. The impacts to alpine jewelflower at Heart Lake would be the same as Alternative 1. The impacts to Dedecker's clover and marble rock mat would be the same as Alternative 1, but there would be no pack stock use on Shepherd Pass trail.
- **Shepherd AU:** The effects to Father Crowley's lupine and Sharsmith's stickseed would be the same as Alternative 2 - Modified, except that there would be no commercial pack stock use.
- **Whitney AU:** The effects to the populations of Mt. Whitney draba and Sharsmith's stickseed would be the same as Alternative 1.
- **North Fork of Lone Pine AU:** There would be no pack stock or trail effect to the population of Sharsmith's stickseed.
- **North Fork of Big Pine AU:** There would be no pack stock effects to Father Crowley's lupine and Inyo beardtongue, and the trail maintenance effects would be the same as Alternative 2 - Modified.
- **South Fork of Big Pine AU:** There would be no pack stock effects to the Inyo beardtongue and Father Crowley's lupine, but the lower part of South Fork Big Pine Creek Trail would be TC2 and the upper TC1, so the risk of effects from trail maintenance is slightly higher than Alternative 4.
- **Baxter AU:** The effects to the population of Dedecker's clover would be the same as Alternative 2 - Modified.
- **Cottonwood AU:** The effects to the sweet-smelling monardella would be limited to hiker and trail maintenance on the Cottonwood Lakes Trail, which would be TC3. The populations of Sharsmith's stickseed on rock outcrops would not be affected by pack stock or trail actions.

Cumulative Effects

The cumulative effects of Alternative 5 would be less than the other alternatives since there would be no commercial pack stock use.

Weeds

See Wilderness Scale discussion.

Cumulative Effects

The presence of weeds at most trailheads (unknown source) is a source of weed seed for all vectors, including hikers and pack stock, both private and commercial. The effect depends on the total number of users.

Campfires

See Wilderness Scale discussion.

Cumulative Effects

Because much of the backpacker use in this geographic unit is travel into SEKI, there would be only slight cumulative impact with packer use of firewood above the existing closure, even though most of the campsites are above the closure.

John Muir Southwest

Grazing Resources

Analysis

Current reported grazing use is low throughout the John Muir Southwest geographic area. The majority of the riparian areas are believed to be in good condition. There are some meadows that have observable areas of altered vegetative species composition, including Big Maxson and Upper Falls. These areas are little affected by current commercial pack stock grazing, little to no changes in pack stock use is expected, and little difference is expected with implementation of any alternative. There would continue to be adequate riparian vegetation to provide for watershed protection in these areas.

Grazing Resources – Alternative 1

Analysis

The overall high reported grazing use was 212 stock nights between 2001 and 2003 in this geographic area.

All Analysis Units: There would be limited trailing related sod fragmentation and associated loss of riparian vegetation in the McGuire Lakes, Meadowbrook, Fall Creek, and Fleming Lake areas. These limited and localized effects would continue over the long-term. Most visitors would likely not notice these effects, which would not exceed standards, although the effects could be monitored over time at these locations.

There would likely continue to be adequate riparian vegetation to provide for watershed protection in these locations.

Cumulative Effects

Because there are few areas with persistent historic effects and light commercial pack stock use, the cumulative effects of any alternative in this geographic unit would be slight.

Grazing Resources – Alternative 2-Modified

Analysis

There would be 1,832 stock nights of grazing available in this geographic area with implementation of Alternative 2-Modified.

All Analysis Units: Current reported grazing use is light throughout this geographic area. The majority of the riparian areas are believed to be in good condition. There are some meadows that have observable areas of altered vegetative species composition, including Big Maxson and Upper Falls. These areas are currently not affected by commercial pack stock grazing and little

difference is expected with implementation of any alternative. There would be limited trailing related trampling and sod fragmentation and associated loss of riparian vegetation in the McGuire Lakes, Meadowbrook, Fall Creek, and Fleming Lake areas.

Overall, use will probably remain below the estimated capacity. Most visitors to this geographic area will not notice any difference in conditions, at any scale with implementation of Alternative 3 relative to other alternatives. Cumulatively, over the long-term there would likely to be adequate vegetation overall in most locations to provide for watershed protection.

Cumulative Effects

The cumulative effects of Alternative 2-Modified would be the same as those of Alternative 1.

Grazing Resources – Alternative 2

Analysis

There would be 1,832 stock nights of grazing available with implementation of Alternative 2 in this geographic area. Current reported grazing use is light throughout this geographic area. The majority of the riparian areas are believed to be in good condition.

All Analysis Units: There are some meadows that have observable areas of altered vegetative species composition, including Big Maxson and Upper Falls. These areas are currently not affected by commercial pack stock grazing and little difference is expected with implementation of any alternative.

There would be limited trailing related sod fragmentation and associated loss of riparian vegetation in the McGuire Lakes, Meadowbrook, Fall Creek, and Fleming Lake areas. This limited effect would continue over the long-term.

Overall, use will probably remain below the estimated capacity. Most visitors to this geographic area will not notice any difference in conditions, at any scale with implementation of Alternative 3 relative to other alternatives. Cumulatively, over the long-term there would likely to be adequate vegetation overall in most locations to provide for watershed protection.

Cumulative Effects

The cumulative effects of Alternative 2 would be the same as those of Alternative 1.

Grazing Resources – Alternatives 3 and 4

Analysis

There would be 1,832 stock nights of grazing use available in this geographic area with implementation of either Alternative 3 or 4. Current reported grazing use is light throughout this geographic area. The majority of the riparian areas are believed to be in good condition.

All Analysis Units: There are some meadows that have observable areas of altered vegetative species composition, including Big Maxson and Upper Falls. These areas are currently not affected by commercial pack stock grazing and little difference is expected with implementation of any alternative.

Overall, use will probably remain below the estimated capacity. Most visitors to this geographic area will not notice any difference in conditions, at any scale with implementation of Alternative 3 relative to other alternatives.

There would be limited trailing related trampling and sod fragmentation and associated loss of riparian vegetation in the McGuire Lakes, Meadowbrook, Fall Creek, and Fleming Lake areas. This limited effect would continue over the long-term but would not result in inadequate vegetation to provide protection to the watershed.

Overall, use will probably remain below the estimated capacity. Most visitors to this geographic area will not notice any difference in conditions, at any scale with implementation of Alternative 3 relative to other alternatives. Cumulatively, over the long-term there would likely to be adequate vegetation overall in most locations to provide for watershed protection.

Cumulative Effects

The cumulative effects of Alternative 3 or 4 would be the same as those of Alternative 1.

Grazing Resources – Alternative 5

Analysis

Current reported grazing use is light throughout this geographic area. There would be no grazing by commercial pack stock with implementation of Alternative 5. The majority of the riparian areas are believed to be in good condition.

All Analysis Units: There are some meadows that have observable areas of altered vegetative species composition, including Big Maxson and Upper Falls, likely due to historical impacts. These areas are currently not affected by commercial pack stock grazing and little difference is expected with implementation of any alternative.

There would be increased recruitment and establishment of vegetation in the long-term on the mid-stream and point bars at Big Maxson Meadow. There would be increased riparian vegetative cover in the short-term to long-term in the McGuire Lakes, Meadowbrook, Fall Creek, and Fleming Lake areas. These effects would continue over the long-term to very long-term.

Overall, use will probably remain below the estimated capacity. Most visitors to this geographic area will not notice any difference in conditions, at any scale with implementation of Alternative 3 relative to other alternatives. Cumulatively, over the long-term there would likely to be adequate vegetation overall in most locations to provide for watershed protection.

Cumulative Effects

The cumulative effects of Alternative 5 would be most beneficial of all, although only slightly different from the other alternatives, since historical effects are light.

Fens

Fens – Alternative 1

- **Big Maxson AU:** There would be no improvement in the stream condition at Meadowbrook, but the fens are in good condition with slight trampling impacts. If

grazing continues at the present low stock numbers, the fens would remain in good condition, but if numbers increase, there would be increased risks to the fens.

- **Spanish AU:** There is no current grazing reported from the area, so the fen (*Meesia uliginosa*) would continue in its current unknown but probably good condition. If grazing increased there would be trampling risks to the fen.

Cumulative Effects

The effects of historic grazing are a factor in meadow condition in this geographic unit, however there is very little commercial pack stock grazing use and few reports of degraded conditions, so any cumulative effect would be slight.

Fens – Alternative 2 - Modified

Approximately 12 percent of the meadows will be open for grazing, and inadvertent trampling and grazing impacts to any fens would be more likely in these meadows.

- **Big Maxson AU:** The effects to the fens at Meadowbrook would be the same as Alternative 1.
- **Spanish AU:** The meadow with the fen would not be open for grazing, so the fen would be at essentially no risk of pack stock effects.

Cumulative Effects

The cumulative effects of historic grazing with commercial pack stock use would be even smaller than in Alternative 1 because of the critical area protection standards.

Fens – Alternative 2

The effects to the meadows with fens or fen characteristics would be the same as Alternative 2 - Modified.

Fens – Alternative 3

The effects to the meadows with fens or fen characteristics would be the same as Alternative 2 - Modified.

Fens – Alternative 4

The effects to the meadows with fens or fen characteristics would be the same as Alternative 2 - Modified.

Fens – Alternative 5

The fen at Meadowbrook would continue to have private pack stock use, and the stream condition would not be expected to improve. At Spanish Lake, there would be no expected change in the fen (*Meesia*) condition.

Cumulative Effects

There would be no commercial pack stock grazing, so no cumulative effects with historic uses.

Rare Plants

Rare Plants – Alternative 1

Of the three populations of sensitive and watch list plants known from in or near this geographic unit, two are inaccessible with no threats and one is in a meadow with no reported use. There is habitat for six other sensitive and watch list plants of rock outcrop or upland habitats that is at very low risk of impacts. Of the approximately 178 meadows with habitat for sensitive species, 1 would have persistent or newly degraded conditions because of private pack stock use.

Pack stock use in this geographic unit is very light in general, so there is only a very slight risk to the riparian sensitive plants and potential habitat. No change in meadow conditions would be expected if grazing continued at current levels in the meadows with potential habitat for the west side sensitive riparian species.

- **Rodgers AU:** There would be no pack stock impacts to the population of Tulare County bleeding heart because of its remote location, not accessible by trails.
- **Spanish AU:** There would be very little risk of impacts to the population of *Meesia uliginosa* near Spanish Lake due to low use.
- **Crown Basin AU:** There would be no pack stock impacts to the population of Kettle Dome buckwheat because of its remote location, not accessible by trails.
- There is very low use in the potential habitat for the six species of sensitive and watch list plants in the Kings River watershed, and the risk of pack stock or trail impacts is low in the rock outcrop and upland habitats of these species. At Big Maxson Meadow, private pack stock but not commercial pack stock is using the meadow and the hydrologic condition would not improve as long as the private pack stock grazing continues. This puts the habitat for the west side sensitive riparian species at risk.

Cumulative Effects

Historic livestock grazing contributed to any degraded conditions in this geographic unit, but the current light pack stock use would probably not interfere with meadow recovery.

Rare Plants – Alternative 2 - Modified

Of the three populations of sensitive and watch list plants known from in or near this geographic unit, two are inaccessible and there would be no threats and one is in a meadow with no reported commercial pack stock use. There is habitat for six other sensitive and watch list plants of rock outcrop or upland habitats that is at very low risk of impacts. Of the approximately 178 meadows with habitat for sensitive species, 1 would have persistent or newly degraded conditions because of private pack stock use.

- **Rodgers AU:** The effects to the population of Tulare County bleeding heart are the same as Alternative 1.
- **Spanish AU:** There is no designated grazing zone, so there would be no risk of grazing impacts to the population of *Meesia uliginosa*.
- **Crown Basin AU:** The effects to the population of Kettle Dome buckwheat are the same as Alternative 1.

- The effects to the potential habitat for other sensitive species would be the same as Alternative 1. Only 4 of the 178 meadows with potential habitat for the west side sensitive riparian species would be in grazing zones and no downward trends in hydrologic function or stream conditions would be predicted.

Cumulative Effects

The cumulative effects of Alternative 2-Modified with existing historic livestock grazing effects would be minimal since grazing use is very light.

Rare Plants – Alternative 2

The effects of Alternative 2 would be the same as Alternative 2-Modified.

Rare Plants – Alternative 3

Of the three populations of sensitive and watch list plants known from in or near this geographic unit, two are inaccessible and there would be no threats and one is in a meadow with no reported use. There is habitat for six other sensitive and watch list plants of rock outcrop or upland habitats that is at very low risk of impacts. Of the approximately 178 meadows with habitat for sensitive species, 1 would have persistent or newly degraded conditions because of private pack stock use.

- **Rodgers AU:** The effects to the the Tulare County bleeding heart population, would be the same as Alternative 1.
- **Spanish AU:** The effects to the *Meesia uliginosa* population in Spanish AU would be the same as Alternative 1.
- **Crown Basin AU:** The effects to the population of Kettle Dome buckwheat would be the same as Alternative 1.
- The effects to the potential habitat for the other sensitive plants would be the same as Alternative 2 - Modified.

Cumulative Effects

The cumulative effects of Alternative 3 with historic grazing effects would be the same as Alternative 2-Modified.

Rare Plants – Alternative 4

- **Rodgers AU:** The effects to the population of Tulare County bleeding heart would be the same as Alternative 1.
- **Spanish AU:** The effects to the population of *Meesia uliginosa* would be the same as Alternative 2 - Modified.
- **Crown Basin AU:** The effects to the populations of Kettle Dome buckwheat would be the same as Alternative 1.
- The effects to the potential habitat of the other sensitive plants in the geographic unit would be the same as Alternative 2 - Modified.

Cumulative Effects

The cumulative effects of Alternative 4 with historic grazing effects would be the same as Alternative 2-Modified.

Rare Plants – Alternative 5

Of the three populations of sensitive and watch list plants known from in or near this geographic unit, two are inaccessible and there would be no threats and one is in a meadow with no reported use. There is habitat for six other sensitive and watch list plants of rock outcrop or upland habitats which are at very low risk of impacts. Of the 178 meadows with habitat for sensitive species, 1 would have persistent or newly degraded conditions due to private pack stock use.

- **Rodgers AU:** The effects to the population of Tulare County bleeding heart in would be the same Alternative 1, except that there would be no risk of pack stock impacts at all.
- **Spanish AU:** The effects to the population of *Meesia uliginosa* would be the same as Alternative 2 - Modified, except that there would be no risk of pack stock impacts at all.
- **Crown Basin AU:** The effects to the population of Kettle Dome buckwheat would be the same as Alternative 1, but there would be no risk of commercial pack stock impacts at all.
- There would be no pack stock impacts to the west side riparian sensitive species' potential habitat in this geographic unit.

Cumulative Effects

Since there would be no commercial pack stock grazing, there would be no cumulative effects with historic grazing uses.

Weeds

See Wilderness Scale discussion.

Cumulative Effects

There are some existing weeds at the pack station that uses this area, so pack stock could act as vectors for those weeds, however use is very light and the effect would be slight.

Campfires

See Wilderness Scale discussion.

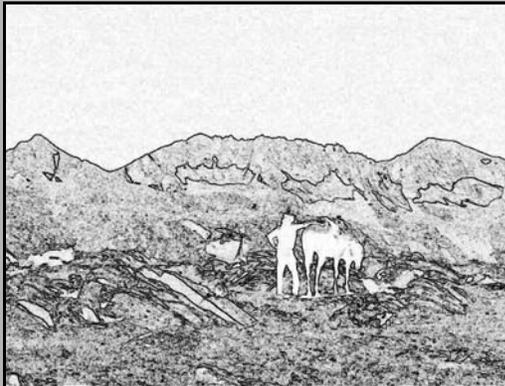
Cumulative Effects

Because commercial pack stock use is very light, the cumulative effect of allowing charcoal or firewood to be brought to locations above existing campfire closures would be minimal in this geographic unit.

Civil Rights and Environmental Justice

A specific consideration of equity and fairness in resource decision-making is encompassed with the concerns of environmental justice. As required by Executive Order 12898, all federal actions must consider potentially disproportionate effects on minority or low-income communities. Principles for considering environmental justice are outlined in Environmental Justice Guidance under the National Environmental Policy Act (Council on Environmental Quality 1997). Those principles were considered in this analysis. The Socio-Economic portion of this chapter considered the demographics of the affected areas of the project area, including minorities and low-income populations. There are no adverse environmental effects relating to an environmental justice issue.

There is no evidence to believe that minority or low-income groups will be adversely or disproportionately affected by the alternatives that have been presented in this document.



Chapter 5 List of Contributors and Consultation

Chapter 5– List of Contributors and Consultation

List of Contributors

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Senator Dianne Feinstein
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Congressman John Doolittle
Congressman Buck McKeon
Congressman Devin Nunes
Congressman George Radanovich

Elected Officials – State

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Senator Dave Cox
Senator Jeff Denham
Senator W.M. "Pete" Knight
Senator Charles Poochigian
Assemblyman Dave Cogdill
Assemblyman Tim Leslie
Assembly Member Bill Maze
Assembly Member Michael Villines

Federal Agencies

Advisory Council on Historic Preservation
Environmental Protection Agency, Office of Environmental Review and Region 9 Office
Federal Aviation Administration, Northwest Region
National Marine Fisheries Service
U.S. Army Corps of Engineers
U.S. Department of Energy
U.S. Department of the Agriculture

- Sequoia National Forest

U.S. Department of the Interior:

- Office of Environmental Policy and Compliance
- U.S. Fish and Wildlife Service
- National Park Service (Devil's Postpile National Monument, Sequoia/Kings Canyon National Park, and Yosemite National Park)

Tribal

Big Pine Paiute Tribe of Owens Valley
Big Sandy Rancheria
Bishop Paiute Indian Tribal Council
Bridgeport Paiute Indian Colony
Cold Springs Rancheria
Dunlap Band of Mono Indians
Fort Independence Community of Paiute Indians
Kern Valley Indian Council

Mono Lake Indian Community
North Fork Mono Tribe
North Fork Rancheria of Mono Indians
Paiute Shoshone Indians/Lone Pine Community
Picayune Rancheria
Table Mountain Rancheria
Timbisha Shoshone Tribe
Utu Utu Gwaitu Paiute Tribe
Walker River Paiute Tribe

State Agencies

Air Resources Board
California Department of Fish and Game
California Department of Water Resources
California State Water Resources Control Board
Great Basin Unified ACPD
Kings River Conservation District
Lahontan Regional Water Quality Control Board
San Joaquin Valley Air Pollution Control District
California State Historic Preservation Officer

Counties

Inyo County Board of Supervisors
Fresno County Board of Supervisors
Madera County Board of Supervisors
Mariposa County Board of Supervisors
Mono County Board of Supervisors
Tulare County



United States
Department of
Agriculture

Forest Service

Pacific Southwest
Region

Inyo and Sierra
National Forests

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Trail and Commercial Pack Stock Management In the Ansel Adams and John Muir Wildernesses

**Final
Environmental Impact Statement**

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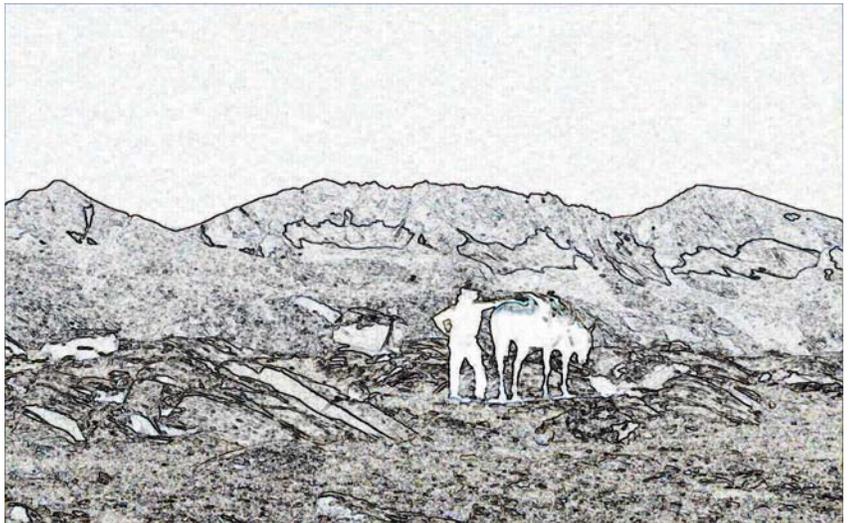
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Inyo and Sierra National Forests



Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses

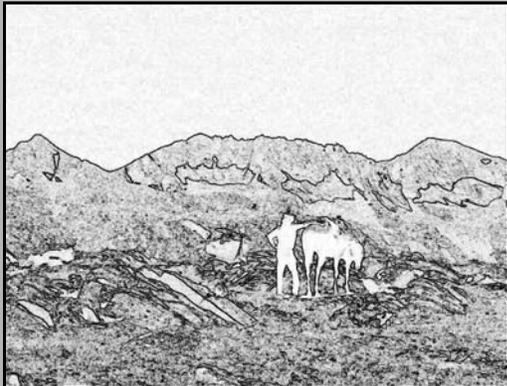
Final Environmental
Impact Statement



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APPENDICES

DECEMBER 2005



Appendix A Glossary

Appendix A – Glossary

Allowable Use: The degree of utilization considered desirable and attainable on various specific parts of a grazing area or zone considering the present resource condition, management objectives, and management level.

Area of Potential Effect (APE): The geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking (36 CFR 800.16[d]).

Beneficial uses: The natural and human uses of surface water defined in the Water Quality Control Board Basin Plans. These beneficial uses must be maintained and water quality objectives and best management practices (BMPs) are designed to protect beneficial uses.

Best Management Practices (BMP): A practice or combination of practices that are the most effective and practical means of preventing or reducing water pollution from non-point sources.

Biological Assessment: A “Biological Evaluation” specifically prepared for formal consultation with the U. S. Fish and Wildlife Service when a “May Affect” determination is concluded for a project on any Federally listed Threatened or Endangered Species per the legal requirements found in Section 7 of the Federal Endangered Species Act of 1976 as amended.

Biological Evaluation: A documented Forest Service review of Forest Service programs or activities in sufficient detail to determine how an action or proposed action may affect any Federally listed threatened, endangered, or proposed species, or Forest Service sensitive species.

Candidate Species: Plant and animal taxa considered for possible addition to the Federal list of Endangered and Threatened Species. These are taxa for which the U. S. Fish and Wildlife Service has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposal to list, but issuance of a proposed rule is currently precluded by higher priority listing actions.

Carrying Capacity: The maximum stocking rate possible without damaging vegetation or related resources. May vary from year-to-year on the same area due to fluctuating forage production.

Composition: The relative amount (usually percent) of one plant species or one community type in relation to other species or community types in a given area.

Consultation: The process of seeking, discussing, and considering the views of other participants, and, where feasible, seeking agreement with them regarding matters arising in the Section 106 process. The Secretary’s *Standards and Guidelines for Federal Agency Preservation Programs* provide further guidance (36 CFR 800.16[f]).

Consultation also takes place between federally recognized American Indian Tribes, groups, organizations, and individuals under Section 106 and a suite of other laws and executive orders. It is also a process used to determine whether a proposed action may affect listed species or critical habitat.

Council: The Advisory Council on Historic Preservation or a Council member or employee designated to act for the Council (36 CFR 800.16[g]).

Critical Area: An area that is evaluated separately from the remainder of the management zone because it contains special or unique values. Critical areas may be treated with special consideration due to inherent site factors, including size, location, condition, values, or significant potential conflict among uses. Critical areas in this analysis are unsuitable for stock entry, although some inadvertent negligible entry occurs.

Day Rides: Day rides involve clients riding stock, accompanied by a guide, for periods of a day or less. No overnight equipment is involved.

Dunnage Trips: Trips in which packers using pack stock carry equipment and supplies for clients who are hiking to a pre-arranged destination, and/or pre-arranged re-supplies for clients on long duration trips. The packer does not stay with clients.

Ecological (Seral) Status: The present state of vegetation of an ecological site in relation to the potential natural community for the site. Ecological status is independent of use. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a community resemble that of the potential natural community. The four ecological status classes correspond to 0-25, 26-50, 51-75, and 76-100 percent similarity to the potential natural community and are called early-seral, mid-seral, late-seral, and potential natural community, respectively.

Effect: (Cultural resources) Alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register (36 CFR 800.16[i]).

Endangered Species: A Federally listed species which in danger of extinction throughout all or a significant portion of its range.

FAR: Functional at Risk Proper Functioning Condition rating, should include a trend indicator (upward, downward, or not apparent).

Fen: Riparian habitat where peat (undecomposed/partially decomposed plant material) accumulates faster than it decomposes in groundwater-fed, perennially saturated areas.

Full Service Trips: Full service trips involve a guide, cook, or other paid employees of the operator that accompany the clients for the duration of the trip. The full time packer or packers that stay with the party during the duration of the trip handle stock for the riders including saddling, packing the mules, trip planning, animal care, equipment repairs, safety briefings, and possibly trail work to clear trails of debris or obstacles.

Grazing Zone: An identified area of land in which grazing may be authorized.

Headcut: A break in slope at the top of a gully or section of gully that forms a “waterfall,” which in turn causes the underlying soil to erode and the gully to expand uphill. This scarp may migrate upstream (headward), leading to stream incision. In high elevation Sierra Nevada Meadows, these headcuts often migrate into trails or natural swales, creating new stream channels.

Historic Property: Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to

and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria. The term eligible for inclusion in the National Register includes both properties formally determined as such in accordance with regulations of the Secretary of the Interior and all other properties that meet the National Register criteria. (36 CFR 800.16[l]).

Hydrologic Function (meadows and wetlands): Meadow hydrologic function is defined by the following factors: (1) The ability of the soil in a meadow to withstand intake, retain and transmit water (USDA Forest Service, 1995); (2) The ability of the meadow to dissipate energies associated with overland flow from adjacent sites and to improve flood water retention; and (3) The ability of the meadow to maintain a water table capable of supporting its Potential Natural Vegetation (PNV). PNV is defined as the plant community that would become established if all successional sequences were completed without human interference under the present environmental and floristic conditions, including those created by man.

Informal consultation: An optional process that includes all discussions and correspondence between the U.S. Fish and Wildlife Service and a Federal agency, prior to formal consultation, to determine whether a proposed Federal action may affect listed species or critical habitat. This process allows the Federal agency to utilize the Service's expertise to evaluate the agency's assessment of potential effects or to suggest possible modifications to the proposed action which could avoid potentially adverse effects. If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required. (Except when the Service concurs that a proposed action is not likely to adversely affect listed species or designated critical habitat.)

Interdisciplinary Team: A team of varied land use and resource specialists formed to provide a coordinated, integrated information base for overall land use planning and management.

Key Area: A portion of rangeland selected because of its location, grazing or browsing value, or use. It serves as a monitoring and evaluation point for range condition, trend, or degree of grazing use.

Management Indicator Species (MIS): A wildlife species whose population and trend in a certain habitat type indicates the population and trend of other species that are also dependent on that habitat type.

National Register: The National Register of Historic Places maintained by the Secretary of the Interior (36 CFR 800.16[q]). This is a list of historic properties.

National Register Criteria: The criteria established by the Secretary of the Interior for use in evaluating the eligibility of properties for the National Register (36 CFR part 60). (36 CFR 800.16[r])

Nondegradation Objective (Water Quality): An objective in the Lahontan Regional Water Quality Control Board Basin Plan (1994). It requires that, "Whenever the existing quality of water is better than the quality of water established in the Basin Plan as objectives, such existing quality shall be maintained unless appropriate findings are made under the policy."

Not Recommended For Stock (NRFS): An advisory for private equestrians that the conditions of a particular trail may be notably awkward and/or especially risky for use by pack and saddle stock.

Not Suitable For Commercial Stock (NSCS): (See **Trail Suitability**)

Pathogen: An agent that causes disease, especially a living microorganism such as a bacterium, protozoa, or fungus.

PFC (Proper Functioning Condition): Protocol for assessing stream conditions. A stream is at proper functioning condition if it has adequate vegetative, landform or large woody debris present to dissipate stream energy associated with high water flow, with stable streams and ability to filter sediment.

Prehistoric Site: Physical cultural remains created by past activities of indigenous peoples.

Programmatic Agreement: A document that records the terms and conditions agreed upon to resolve the potential adverse effects of a Federal agency program, complex undertaking or other situations (36 CFR 800.16[T]).

Range Readiness: The state of relative soil dryness and plant development in a location at which soils will support the weight and movement of livestock without being displaced, compacted or otherwise damaged and the stage of plant development at which the plants will sustain grazing impacts without loss of vigor or productivity. Rangeland is generally ready for grazing when soil has become firm after winter and early spring precipitation, and when plants have reached the defined stage of growth at which grazing may begin under a specific management plan without long-lasting damage.

Rare Plants: Plant species listed as Sensitive or Watch List on the Sierra and Inyo National Forests.

Recreation Category: Refers to the strategy for managing recreation use in the Ansel Adams, John Muir and Dinkey Lakes Wildernesses. Three recreation categories describe the desired condition for these wildernesses. Recreation Category 1 is to be managed for low use and the most pristine conditions. Recreation Category 2 is for concentrated use along trail corridors and at popular destinations and dispersed use at low to moderate levels off the main trail corridors. Recreation Category 3 is for higher levels of use concentrated and managed intensively; these are typically popular destinations close to the trailheads. A full description of these categories can be found in the 2001 Wilderness Plan for the Ansel Adams, John Muir and Dinkey Lakes Wildernesses.

Resource Ratings or Overall Resource Rating (Trails): Refers to numerical rating assigned to a trail segment after field evaluation of current impacts and potential effects due to risk factors. Ratings are on a scale of 0-5, with 0 representing very low concern, highly stable with no notable effects; while a rating of 5 indicates severe/extensive concerns with severe resource impacts and high risk factors. Further definitions of each rating are in the project record.

Riparian: Referring to or relating to areas adjacent to water or influenced by free water associated with streams or rivers.

Riparian Conservation Area: Areas adjacent to water bodies and wetlands and have specific standards and guidelines established in the Sierra Nevada Forest Plan Amendment. These areas are usually defined as the area within 300 feet of a perennial stream, spring, or wetland, and within 100 feet of an ephemeral or intermittent stream.

Risk Factors (Trails): Refers to conditions on the ground—usually naturally occurring—which potentially affect the stability of the trail and associated resources. Common risk factors include

exceedingly steep slopes, loose soils, riparian or meadow habitat, proximity and connectivity to streams or surface water. Other risk factors have a human component, such as excessively steep trail grades, insufficient design and lack of structures, or high trail use.

Sedimentation: The process of depositing sediment. Here, the term indicates sediment deposition into surface water.

Sensitive Species: Those plant and animal species identified by a Regional Forester for which population viability is a concern as evidenced by: 1) significant current or predicted downward trends in population numbers or density and 2) significant current or predicted downward trends in habitat capability that would reduce a species existing distribution.

Seral-status: Plant community stage depicting the relative position on a classical successional pathway (see Ecological Status).

Sod fragmentation: Broken vegetative cover or soil. Minor sod fragmentation might remove some vegetation, while severe sod fragmentation would break the soil to the rooting depth of vegetation.

Soil compaction: An increase in the density of soil, usually as a result of humans or animals walking on the soil surface. Compaction alters the soil structure so that it has less pore space, lower infiltration rates, and lower permeability.

Soil productivity: The capacity of soil to support plant growth. Soil productivity depends on soil nutrient levels, soil structure, climate, and water availability.

Special Aquatic Feature: Water-related features other than streams or rivers, including lakes, wet meadows, fens, wetlands, vernal pools and springs (as defined in the SNFPA 2004).

Spot Trip: Trips in which clients ride stock to a destination with a guide, supported with pack stock for equipment and gear. The riding stock, pack stock and guide do not stay with the party.

Stabilizer Plants: Plant species that become established along edges of streams. Although they generally require wet conditions for establishment they may persist in drier conditions once firmly established. They have commonly have some combination of strong, cord-like, rhizomes, deep fibrous roots, coarse leaves, strong root crowns, and are effective in buffering streambanks against the erosive forces of moving water and trapping sediment to build stream banks. Examples include sedges (*Carex utriculata*, *Carex nebrascensis*) and Willow (*Salix spp*).

State Historic Preservation Officer (SHPO): The official appointed or designated pursuant to section 101(b)(1) of the National Historic Preservation Act to administer the State historic preservation program or a representative designated to act for the State historic preservation officer (36CFR 800.17[V]).

Stock Night: One horse or mule placed on a unit of land for the purpose of grazing available forage at any time during a 24-hour period. Expressed as a stock night because packers often place stock on a given grazing area overnight.

Stocking Rate: The number and types of animals placed on a unit of land for a specified period of time.

Stream bank sloughing: When a stream bank breaks vertically, and a portion of the bank falls into the stream. This process can occur naturally on outer bends of normally eroding streams, or

can occur as a result of stream bank trampling, vegetation loss, and soil compaction along the stream bank.

Stream incision: Erosion of either the stream bed or banks or both, where the stream is vertically separated from the former floodplain due to stream bed lowering. Where there is active erosion within the bed of a stream or river channel, the bed may be steadily lowered, creating relatively higher banks up onto the adjoining floodplain or terrace. The banks become increasingly steepened and unstable as this erosion is active at the toe of the slope. Streambed collapse and erosion occurs, and the channel commonly widens in conjunction with bed lowering.

Suitability: The appropriateness of applying certain resource management practices to a particular area of land as determined by an analysis of the economic and environmental consequences and alternative uses foregone.

Suitable Area: An area in which an interdisciplinary team has determined that grazing and or stock entry may be allowed with appropriate mitigations and standards.

System Trail: Trails that are wholly or partially within, or adjacent to and serving the National Forests, and that are included in the forest development transportation plan (Forest trail inventory).

Threatened Species: A Federally listed species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Trail Classes: A designation assigned to each trail on the Forest trail inventory that defines the typical characteristics and intended development and management levels for each trail. Four classes are appropriate within wilderness areas. Trail Class 1 trails are the lowest development and typically the most lightly used managed trails. Trail Class 2 and 3 trails are increasingly developed on a continuum leading to Trail Class 4 trails, which are the most highly developed and typically serve extremely high numbers of trail users. These are further described in Chapter 2 of this document.

Trail Deferred Maintenance (Sometimes called “Backlog Maintenance): Maintenance that has not been performed—generally due to financial constraints—which leaves the trail in a substandard or degraded condition. Commonly refers to the added costs needed to return the trail to its intended standard.

Trail Maintenance (also Annual Maintenance): Recurring work performed to ensure the continued stability and availability of trails for use at the designated standard. May be performed annually or at intervals more frequent or exceeding annual. Typically includes clearing of obstacles, cleaning drainage structures, incidental repair and replacement of trail structures to ensure trail integrity and stability.

Trail Reconstruction: Major repairs and replacement of much of a trail’s infrastructure, to return a trail to its original standard or to improve a trail to its intended development level.

Trust Responsibility: Generally a set of principles and concepts outlining the responsibilities of the U.S. Government to act as the trustee of Indian people and Indian owned assets. The U.S. Government, through the President, has certain responsibilities to protect Indian property and rights, Indian lands, and resources. Fulfilling or redeeming a trust responsibility, can be reflected or demonstrated as a matter of action; a stream that was protected, a site that was maintained

intact, a property right that has been left unaffected by a Federal action. The writing of an environmental document is not an example of fulfilling a trust duty.

Trail Suitability: A determination of the appropriateness of commercial stock on individual system trails. This determination is based upon one or a combination of factors including the stability of the trail and associated resources, the presence of risk factors which would likely lead to instability without excessive trail development, considerations of destination capability, and desired conditions. Trails which are determined to be inappropriate for such use are designated “Not Suitable for Commercial Stock” (NSCS).

Unavailable Areas: Areas that are outside of grazing zones and are therefore closed to grazing.

Unsuitable Area: An area in which an interdisciplinary team has determined it is not appropriate for grazing or entry by any stock. All of these areas are closed to grazing.

Use Trail: A non-system trail (not on Forest trail inventory), either distinct and readily followed or intermittent, which provides access to lesser-used destinations, such as campsites, viewpoints, or remote areas not served by system trails. Use trails are most commonly formed by repeated travel by either hikers or equestrians. This can also refer to former trails or roads, of which use has decreased to the point that no management as a system trail is needed.

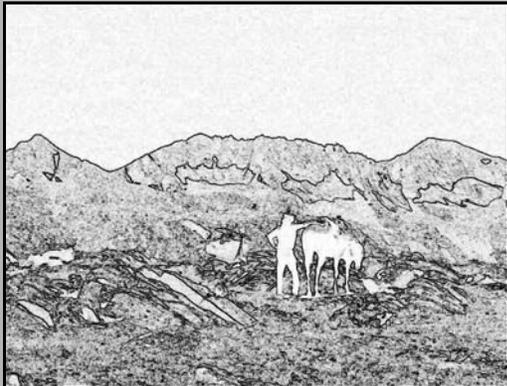
Watch List Plants: Species that are locally rare, are of special interest, such as cactus or orchids, are widely disjunct from the main distribution of the species, are largely endemic to the Forests, or species for which very little, if any, information is available but existing information may indicate some cause for concern.

Water Table (or Groundwater Table): The top surface of the zone where the soil is saturated with water. Above this surface, the pore space in the soil is filled mainly with air.

Weeds: Plants non-native to California, as listed in the Jepson Manual (Hickman, 1993).

Wetlands: Those areas that are inundated by surface or ground water with frequency sufficient to support, and under normal circumstances do or would support a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Generally includes swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flat, and natural ponds.

* Grazing and rangeland related definitions are adapted for this project from the Glossary in the Rangeland Analysis and Planning Guide, (USFS, Pacific Southwest Region, 1997), and the additional Glossary contained in Chapter 3, Sampling Vegetation Attributes, Interagency Technical Reference, ITR, BLM/RSD/ST-96/002+1730, in the Rangeland and Analysis Guide, and “Monitoring the Vegetation resources in Riparian Areas” by Alma H. Winward (April, 2002).



Appendix B Literature Cited

Appendix B – Literature Cited

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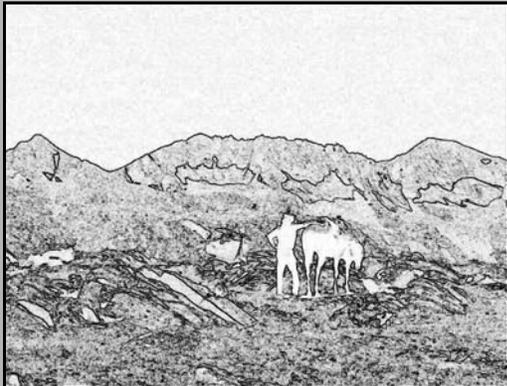
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Appendix C Response to Comment

Appendix C Response to Comment

Introduction

The Draft EIS was available for public review and comment from March 29, 2005, to June 15, 2005. During the comment period, the Forest Service heard from 429 individuals, agencies, interest groups, and elected officials. The agency received approximately 205 individual letters and 224 form letters. Organized response campaigns accounted for more than 50% of the responses received during the public comment period.

Public responses submitted on the Trail and Commercial Pack Stock Management in the Ansel Adams/John Muir Draft EIS were documented and analyzed using a process called content analysis. This is a systematic method of compiling and categorizing all of the public viewpoints and concerns submitted during the official comment period for the Draft EIS. Content analysis helps the Forest Service clarify, adjust, or incorporate additional technical information in preparation of the Final EIS.

All of the comment letters were numbered, read, and logged into a spreadsheet. Each letter was read with individual comments taken out of the letter and organized into a response to comment document. The comments were summarized into public concerns and forwarded to the appropriate specialist who provided a response to the concern raised. All of these public concerns and responses are reassembled into this final response to comment document. Over 300 public concerns were identified from the public's comment letters. In many cases, the public concerns below are summarized from the public's comment letters. In other cases, the public comment letter is directly quoted in the public concern statement. The project record also contains an annotated version of this response to comment including the full comment from the public's comment letter. Each comment also includes a response number or numbers. This number refers to the public comment letter that contained the comment. The project record contains a list of the names and addresses of the individuals, groups, and agencies that commented on the Draft EIS.

I. Process and Planning

Pack Stock Use in Wilderness

General, Continue pack stock use in the wilderness

Public Concern #1: *Pack Stock use in the wilderness should not be reduced/should continue:*

- *Because the damage the animals do to the trails is no more significant than the numbers of people coming in to the area or other uses on public lands. (response #10, 24, 244, 337, 351, 374, 375)*
- *Because there is a historic value to pack stock and stations in the wilderness. (response # form letter A, 10, 26, 27, 32, form letter F, 48, 80, 162, 240, 248, 286, 291, 374)*

- *Because the proposal discriminates against packers and the public that uses their services (response # form letter A, 32, 217, 320)*
- *Because wilderness should be open to all users, not just hikers (response #14, 18, 165)*
- *Because commercial packers are good at practicing leave no trace and often protect the wilderness better than other users. (response #17, 34, 39, form letter F, 43, 73, 217, 271, 277 309, 320, 418, 419)*
- *Because commercial packers help many people facilitate access to the wilderness that would otherwise not be able to make it on their own e.g., handicapped/elderly (response #1, 3, 7, 10, 19, 24, 26, 34, 39, form letter F, 43, 55, 71, 76, 78, 79, 80, 104, 154, 157, 162, 181, 188, 189, 190, 217, 228, 244, 248, 269, 271, 277, 281, 291, 295, 309, 331, 337, 351, 366, 415)*
- *Because commercial packers help to keep trails open for other wilderness users (response #23)*
- *Because most people can not afford to keep their own pack stock for these types of trips (response #23, 248, 382)*
- *Because commercial packers provide support for a number of activities in the wilderness including trail work/maintenance, scientific research, search and rescue, anti-poaching efforts, habitat restoration etc... (response #26, form letter F, 154, 190, 217, 290, 340)*
- *Because excluding commercial pack stock in some areas only leads to a concentration of use in other areas (response #26)*
- *Because restrictions on commercial pack stock will eventually lead to restrictions on private stock (response #27, 273)*
- *Because there should be room in the wilderness for various user groups. (response #form letter F, 43, 63, 283)*
- *Because all studies done in the John Muir, Ansel Adams, and Dinkey Lakes Wilderness areas have determined that the Wilderness as a whole are functioning ecologically better than as the time of the Wilderness designation in 1964. (response #form letter F)*
- *Because the Forest Service has not been able to directly attribute resource concerns to commercial pack station on and in trails, camps, and meadows closed to pack station use, but open for other use. (response #form letter F)*
- *Because there is a demand for these services (response #46)*
- *Because with the significantly changing ethnic and age related demographics, it is imperative that commercial packing remain alive and affordable to the American public. (response #form letter F)*
- *Because as the population increases, demand for packing services will also likely increase. (response #48)*
- *Because closing some areas to commercial pack stock will increase use in other areas, leading to more closures (response #73)*
- *Because commercial pack stock provide an important tie between people and the land. (response #75, 281)*

- *Because today's professional horse outfitters are our modern day guides still continuing the same traditions. (response #55)*
- *Because pack strings are responsible for much of the trails and infrastructure in the wilderness (response #156, 340)*
- *Because commercial pack stations allow several generations of a family to enjoy the wilderness (response #159)*
- *Because commercial operators can help to keep wilderness users safe (response #165)*
- *Because the DEIS provides no compelling evidence that would support the removal of commercial pack stock from the wilderness. (response #168)*
- *Because of the economic benefits of pack stations to the communities around the wilderness areas. (response # 190, 233)*
- *Because increased regulations will push the price of these trips to a level at which they are unaffordable to the average person. (response # 233)*
- *Because commercial packers provide an important educational service to the public in terms of teaching leave-no-trace, wilderness skills, wilderness ethics, and western heritage to clients. (response # 162, 277, 280, 295, 307)*
- *Because taxpayers have a right to enjoy the areas that are supported by their tax dollars. (response # 281, 388)*
- *Because the government has no right to restrict publicly owned property. (response # 288, 289)*
- *Because the restrictions are a violation of the Constitutional rights of the people of the United States. (response # 285)*
- *Because packing is a great recreational activity that improves physical and mental health. (response # 290)*
- *Because a vocal minority of the public should not dictate public land policy (response # 295, 326, 329, 348, 357, 397, 418)*
- *Because the needs assessment in Appendix D of the document has proven the need for commercial services in the wilderness (response # 423)*

Public Concern #2: *Commercial pack stock use of the wilderness should continue at current levels with the appropriate oversight (response #4, 308)*

Public Concern #3: *The Forest Service should work with the packers to develop a flexible and adaptive management strategy that will allow the continued operation of these historic businesses while protecting the resources which create the demand for this service in the first place. (response #44, form letter F)*

General, Discontinue/limit commercial pack stock use in the wilderness

Public Concern #4: *Commercial pack stock should not be permitted in the wilderness*

- *Because of the impacts of these animals to wilderness resources (response #2, 30, 96, 245, 261, 263, 319, 356, 398)*
- *Because the intention of wilderness is not to support for-profit businesses that cater to people unable or unwilling to meet wilderness on its own terms (response # 319)*
- *Because for those that want to use commercial packers to access the backcountry, there are other options already available (e.g., national parks) (response # 356, 371)*
- *Because a disproportionate amount of resources go to repairing trails that are damaged by stock (response # 356)*

Response to Public Concerns #1-4: Many comments were received that provided reasons as to why commercial packing should continue in the Ansel Adams and John Muir Wildernesses. Likewise, a number of comments were received that advocated a reduction or outright removal of these activities from the wilderness. The intent of the EIS is to disclose the environmental effects of the proposed project and display the trade-offs between the different alternatives.

Alternatives 1-4 analyze the effects of varying levels of commercial pack stock use with various control mechanisms. Alternative 5 analyzes the environmental effects of eliminating commercial pack stock in the Ansel Adams and John Muir Wildernesses.

Public Concern #5: *The number of commercial pack stock in the wilderness should not be allowed to increase over time. (response #36, 191)*

- *Because as the population of California increases, the demand on the wilderness will increase (response #65)*
- *Because commercial pack use is not compatible with other users (response #66, 93, 172, 254, 257, 284, 299)*
- *Because this use is damaging to resources in the wilderness (response #70, 99, 158, 171, 172, 178, 182, 187, 209, 211, 212, 215, 247, 249, 254, 257, 299, 305, 306, 313, 316, 368, 370, 386, 393)*
- *Because the overall wilderness experience is diminished by large commercial pack groups (response # 305, 306, 312, 386)*
- *Because stock animals damage trails and because of dust, smell, sight, and sound adversely affect the experience of other users (response # 312, 316, 353, 386, 393)*
- *Because water resources and meadows are damaged by pack animals (response # 305, 353, 370, 378, 381, 393)*
- *Because stock animals do far more damage to the wilderness hikers (response # 306, 400)*
- *Because commercial pack stations facilitate the access of large groups into areas that should be used only by smaller groups (response #99)*
- *Because wilderness areas should serve as refuges from civilization (response # 310, 312, 386, 390)*
- *Because future generations should have an opportunity to enjoy these wilderness areas undamaged (response # 313)*

- *Because the noise and accouterments associated with commercial pack parties are not compatible with wilderness (response # 316, 353)*
- *Because of the amount of debris left behind in the wilderness from these parties (response # 316, 353, 393)*
- *Because commercial packing is an ill-informed historical activity that should be (and mostly is) obsolete. (response # 367)*
- *Because the argument that commercial pack stock provide access for people who couldn't otherwise access the wilderness does not reflect reality. I (response # 367)*
- *Because stock are often left unattended to roam freely, both damaging the environment and adversely affecting the wilderness experience of others (response #370)*
- *Because horses are not natural to the High Sierra environment (response # 390)*

Response: The environmental document will analyze various levels of commercial pack stock along with different control mechanisms to help offset the environmental effects of this activity. The ideal use is that which meets the public need for the services and protects the wilderness character of the area. Whether this use level is more or less than some point in the past is not the issue we are examining, rather it is the extent that needed services can be provided while at the same time preserving wilderness character.

Public Concern #6: *Overnight holding of stock in the wilderness should not be permitted. (response # 201)*

Response: Analysis of the effects of overnight holding of stock can be found throughout Chapter 4. The wilderness, hydrology and vegetation sections describe effects to these resources at campsites and by grazing.

Public Concern #7: *Commercial pack stock services should only be made available to clients who truly need them (handicapped/other special populations). (response #form letter C, form letter E, 209, 257)*

Response: See response to Public Concern #5

Equity

Public Concern #8: *The commercial packers and non-commercial users should be treated equally in the wilderness areas. (response # form letter C, form letter E, 33, form letter B, 54, 65, 7098, 99, 105, 109, 175, 182, 209, 220, 247, 284, 417)*

Response: The Preferred Alternative in the FEIS allocates use to commercial pack stock operators based on destination quotas. They would no longer be a part of the daily trailhead quota. Consequently there will be no competition for access between the pack stations and other users. In addition several site specific restrictions will be implemented to manage commercial pack stock such as grazing limits, and designated stock camps. While these management controls may be perceived as treating users differently, they are deemed appropriate based on differential user impacts and necessary to meet wilderness objectives.

Public Concern #9: *The Forest Service should not let one user group degrade the wilderness experience (including the trail system) for other users (response # 178).*

Response: The Preferred Alternative and all the other alternatives in the FEIS comply with the goals and objectives set forth by law, regulation, Forest Plans and more specifically the 2001 Wilderness Plan. An analysis of the impacts of the commercial pack stock on the trail system is located in the Environmental Consequences section (DEIS pg. IV-30).

Public Concern #10: *The current permit/quota system unfairly denies noncommercial users access to particular trails through trailhead quotas while commercial users have rarely been denied. (response # 196)*

Response: Further analysis of the access equity issue and analysis of quota availability can be found in the Chapter 3 “Wilderness” section of the Final EIS. Data shows that commercial and non-commercial quotas fill at a comparable rate. There is no indication that since 2001 the general public has been turned away while the commercial pack station client has not. Wilderness Plan trailhead quota numbers were fully implemented in 2004. Therefore, it is only reasonable to compare quota numbers from 2004. In 2004, with few exceptions there were very few differences in access and availability. See discussion in Chapter 3.

Regardless of who gets turned away because of quota limitations, the objective laid out clearly in the preferred alternative is to maintain certain conditions. Amount of use is only one piece of maintaining conditions, and is arguably more of a social issue than a resource issue. The frequency or occurrences of filling quotas is one of many pieces of information that inform decision makers.

Legal Considerations

Public Concern #11: *The DEIS should address consistency with the ADA as any reduction or elimination of stock packing is a violation of the ADA. (response # 188, 267)*

Response: There is no additional information provided in the comment (case law, specific statutes in the law) that would indicate that the reduction or elimination of commercial pack stock is a violation of the Americans with Disabilities Act (ADA).

Furthermore, ADA does not directly apply to programmatic plans such as this. ADA or related statutes may apply to subsequent actions taken to implement the management direction.

Public Concern #12: *The Forest Service should recognize that RS-2477 is a valid claim to public right of way and that a pack animal or vehicle of any type merely passing over a long time existing route is considered minimum maintenance according to the law. (response #37, 259)*

Response: RS-2477 is a law from the mid-1800s and is quite complex. It involves the rights of individuals to use roads constructed prior to the reservation of lands for public purposes. This project is proposing to establish a trail system in the Ansel Adams and John Muir Wildernesses as well as set levels and locations for commercial pack stock use. The provisions contained in RS-2477 are not being violated by the actions proposed in this project.

Legal Considerations, Wilderness Act

Public Concern #13: *The Forest Service is violating the Wilderness Act*

- *Because these are designated wilderness areas, the Forest Service has the obligation to manage them in such a way that their wilderness character is not impaired. (response #102, 230)*

- *Because the very presence of stock animals in wilderness areas is a violation of the Wilderness Act. (response #169)*
- *Because outfitting and guiding are commercial activities and commercial activities are prohibited in wilderness except “to the extent necessary for activities which are proper for realizing the recreation or other wilderness purposes of the areas.” (Wilderness Act). (response # 172, 185)*

Response: The purpose and need (Chapter 1) clearly states the agency’s intention to follow the legal constraints of the Wilderness Act. It is clear that one of the public’s primary concerns associated with commercial pack stock in the wilderness is the consistency of this activity with the intent of the Wilderness Act. In light of this, Chapter 4 “Wilderness” examines the effects to wilderness character by alternative and concludes that only Alternative 1 “No Action” could be construed to not meet the legal threshold for wilderness character. The Record of Decision further clarifies how the decision-makers consider the legal requirements of the Wilderness Act and how their selected management direction will meet these legal requirements.

Public Concern #14: *The Forest Service should retain the historical uses of the 1964 and 1984 Wilderness Acts that preserve historical uses of the land especially packing and commercial grazing. (response #37, 80, 259)*

Response: The agency does not interpret the Wilderness Act to mean that 1964 conditions and uses will not be subject to management. Forest Service policy states “Each wilderness should be at least as wild in the future as at the time of classification. Resource impacts shall be decreased or held constant. Conditions shall always be improved in situations where degradation exceeds wilderness resource criteria as defined by the designating legislation.” (FSH 2309.19 21.1) The agency intends to “preserve wilderness character” provide an enduring resource of wilderness and protect these areas as wilderness over time. However, the agency, in formulating its alternatives has considered the values of historical uses. Many references to historical uses and baseline conditions in 1964 can be found in the “Commercial Pack Stock Operations” section in Chapter 3 and the “Wilderness” section of Chapter 4.

Public Concern #15: *The Wilderness Act does not allow a balancing of economic benefits and preservation of wilderness character. (response # 196)*

Response: The alternatives are not written with the intent of balancing the economic desires of commercial pack stations with the preservation of wilderness character. The formulation of alternatives is driven by the Purpose and Need for action and the public issues that are brought forward and significant to the decision. Alternatives provide different means to manage packstations: some more restrictive and some more direct. The underlying goal is to manage wilderness character, of which recreation use and enjoyment is one consideration. The public did identify economics as an issue that should be considered in the decision (see Chapter 1 – Issues), and for that reason it is considered and addressed in the analysis.

Public Concern #16: *The Forest Service is misinterpreting the definition of wilderness by claiming that the absence of pack stock will cause a loss in wilderness character. (response #196)*

Response: In Chapter 4, “Wilderness Resource” wilderness character is examined using four elements from the 1964 Wilderness Act (untrammled; naturalness; undisturbed; opportunities for solitude and primitive and unconfined recreation). The discussion addresses how one element

of wilderness character may be impaired while others are being met or achieved. This discussion of wilderness character qualities does not conclude that commercial pack stock categorically will create a loss of wilderness character. This comment takes the statement out of context. There are some elements, specifically “unconfined and primitive recreation”, that would be diminished or impaired as a result of some of the proposed management direction in the alternatives.

Public Concern #17: *The Wilderness Act does not allow for the elevation of solitude over other wilderness values (e.g., public recreational use of the wilderness). (response # 198)*

Response: See response to Public Concern #16. Four elements from the Wilderness Act were used to examine the effects to wilderness character. Opportunities for solitude were only one of these. The analysis does not value or weigh this quality over the others. The methodology section of Chapter 4 “Wilderness” has been modified to clarify how the analysis utilizes the concept wilderness character.

Public Concern #18: *The Proposed Actions violate the Wilderness Act by limiting the freedom and flexibility of commercial pack stations and their clients (response # 275)*

Response: The Wilderness Act specifically states that designated wildernesses are to be managed for “outstanding opportunities for solitude or a primitive and unconfined type of recreation” (Sec. 2(c)(2)). It does not specify that controls cannot be taken to preserve the other conditions specified in that same section. Forest Service policy on wilderness management is to “Maximize visitor freedom within wilderness. Minimize direct controls and restriction. Apply controls only when they are essential for protection of the wilderness resource and after indirect measures have failed” (FSM 2323.12 (1)). The Forests have identified unacceptable conditions where pack stations use occurs under many years of “indirect controls.” Research indicates that direct controls can be useful in managing the types of impacts that were identified in the planning area. Chapter 4 “Wilderness Resource” describes the research and the effects of direct versus indirect controls.

Public Concern #19: *To the detriment of commercial pack stations, the Forest Service is incorrectly interpreting the Wilderness Act (response # 273, 276, 278)*

Response: It is not clear from the comment how the Forest Service is incorrectly interpreting the Wilderness Act. See response to Public Concern #13.

Consistency with Forest Plan and Other Agency Direction

Inyo Forest Plan

Public Concern #20: *The Needs Assessment fails to mention direction regarding pack station permits in the Inyo National Forest Land and Resource Management Plan (1988; at p. 110) and should affirm that no new commercial packing operations will be permitted in the planning area. It also must demonstrate that the existing numbers are necessary and proper. (response # 196)*

Response: The Inyo National Forest’s LRMP was amended by the 2001 Wilderness Plan. The accompanying Needs Assessment analyzes the need for commercial services and the FEIS addresses the effects of the proposed service levels on the resource. The Record of Decision provides rationale, based on information and the analysis in the FEIS, to demonstrate the selected alternative meets the “extent necessary” standard.

2001 Wilderness Plan

Public Concern #21: *The 2001 Wilderness Plan provides adequate direction for commercial pack stock use. (response # 175, 262, 375, 423)*

Response: The District Court directed the Forest Service to examine the cumulative impacts of commercial pack stock operations prior to issuing permits, and to specifically address trail suitability, designated stock camps, stock numbers and group size. A two-step NEPA process was identified. This led the Forests to complete programmatic direction (this FEIS) first, which, by definition, re-examines the 2001 Wilderness Plan. The purpose and need (described in Chapter 1) narrows the scope of the analysis to additional standards needed for commercial pack stock operations and the development of a trail plan. This direction will amend portions of the 2001 Wilderness Plan.

Ninth Circuit Court Order

Public Concern #22: *The DEIS should acknowledge the entire scope of the Ninth Circuit Court of Appeals ruling in High Sierra Hikers vs. Blackwell including the Court's finding that the agency misinterpreted the Wilderness Act, and that its 2001 Wilderness Plan (and other proposals, including its June 2004 Proposed Action) were founded on those incorrect interpretations of the Wilderness Act. (response # 196)*

Response: The Needs Assessment and FEIS take into consideration the Ninth Circuit's ruling in *High Sierra Hikers v. Blackwell*. The FEIS "purpose and need" clearly identifies that preserving wilderness character is the agencies first and foremost responsibility.

Other Agreements

Public Concern #23: *We would hope that the decision reached by the Forest Service would build on and incorporate the discussions and agreement reflected in the MOU signed in February 2005 between the Forest Service and Eastern High Sierra Packers Association. A great deal of work went into that document and it is disturbing to see that it is not reflected in the DEIS. (response # 325)*

Response: The Forest Service has attempted to comply and address the commitments made in the Memorandum of Understanding (MOU). That MOU commits the Forest Service to planning process items but does not influence or affect the Forest Supervisor's decision-making authorities or responsibilities. The ROD is not influenced or directed by anything in the MOU.

NEPA Considerations

Public Concern #24: *The No Action Alternative (I) is flawed because it does not reflect the status quo of the 2001 Wilderness Plan modified by Court Order. The DEIS should have used the service day allocations that represent current actual use (not arbitrary past allocations), minus 20% as intended by the District Court, in addition to reductions in group size and other court-ordered modifications to the 2001 Wilderness Plan as the no action alternative (response # 196)*

Response: The No Action Alternative is correctly identified in the DEIS as implementation of the Wilderness Plan. NEPA requires that a no action be analyzed. The no action direction has been interpreted to mean that the proposed action does not take place and the environmental effects of taking no action are compared with the effects of permitting the proposed activity or

one of the alternatives to take place. We considered the options for the No Action Alternative and concluded that to assume the Court Order injunctive relief to be the existing programmatic direction was not justifiable. This is because the injunctive relief has a limited time and scope and ultimately it is the Wilderness Plan that is in place in the absence of new direction, not the court order.

Public Concern #25: *I have worked as an environmental professional for more than twenty years, and have reviewed literally hundreds of environmental documents, and authored dozens. Frankly, this one is nearly the worst I have ever seen, and possibly the worst. It is poorly organized, there are numerous typos that render its meaning unclear, and its conclusions are not clearly stated. It is shoddy work, and frankly, I would be embarrassed if it came out of my shop. I say these things not to criticize unconstructively, but to point out that the DEIS does not meet the intent of NEPA to inform decision-makers and the public about the issues, alternatives, and environmental consequences. It took many hours of careful study to decipher the document, and I'd bet a fair amount of money that your decision makers did not get through it. (response #346)*

Response: The Draft EIS fielded considerable comments that demonstrate that many people were able to understand the agencies proposed management direction and provide extensive input on the analysis. In the Final EIS, considerable effort has been made to clarify points of confusion, and enhance the analysis where staff and public have noted deficiencies. It should be noted that the size and complexity of the analysis area, combined with the specific requirements of the court have led to a more complicated document in order to comply with the court order.

Public Concern #26: *The DEIS does not comply with NEPA/Wilderness requirements because a number of relevant concerns are not addressed including: (all comments are from response # 275)*

- *Larger group sizes are not evaluated. The Forest Service has never looked at the environmental consequences of increasing group size. The Forest Service maintained that large groups are socially unacceptable. They never have studied the affect on the environment.*

Response: It is very difficult to demonstrate that larger party size has fewer impacts than smaller group sizes. Research indicates that although larger parties may, in some situations have less impact than multiple smaller parties, in most situations this is not the case. (Monz et al 2000 check)

In order to focus the analysis, NEPA requires the agency to address significant issues. The District Court had enough concern that existing party size was a source of environmental impact, that it did not seem prudent to expand the range of alternatives to include direction we felt would not meet the stated purpose and need. Chapter 4 – Wilderness discusses the social and environmental effects of party size.

- *The baseline is improperly defined. Fails to compare the past with the present and evaluate. The document should compare the conditions on the land today and compare that to the conditions of the land twenty to forty years ago.*

Response: There is little data on the conditions of these wildernesses from twenty to thirty years ago, so it was not possible to use this timeframe as a baseline. Chapter 3 – Wilderness includes what little published references exist on resource conditions from the past, including Snyder (1962) and Sierra Club Impact Study (1977). There exists many opinions, recollections, and anecdotal information but this would not meet any substantive standards for NEPA analysis.

- *Improper use of use numbers. We recommend that instead of using numbers for 2001, 2002, 200, you go back and include the numbers for the 1980's and 1990's. We have excellent data from the 1940's on that the Forest Service doesn't consider.*

Response: Accurate historical data from the 1980s and 1990s does not exist for the entire planning area. Historical records from one or two pack stations have limited value when looking at planning area-wide trends. The Final EIS brings in as much data on use from as far back as is possible to show trends. This does not allow us to do anything more than show trends.

- *Day use impacts are not analyzed. Throughout the document it states heavy day use is having impacts. Doesn't mention means to mitigate or prevent damage.*

Response: In areas where the impacts of day use is a relevant effect to consider in the analysis (such as Little Lakes Valley), it is considered as a part of the cumulative effects. Additional information on the level of existing day use (both hiking and riding) is provided in Chapter 3. The scope of the analysis and the proposed direction is on commercial packstock, and does not intend to provide management direction on all issue and all impacts (see Chapter 1 – Purpose and Need).

- *Elimination of service days is not adequately analyzed. Under the 2001 John Muir Wilderness Plan there was considerable historical background. The public and agency could compare and contrast proposed alternatives with a variety of service day allocations. This DEIS proposes use changes that I can't even figure out what numbers of people will be allowed in the three wildernesses.*

Response: The comment is correct, there is some difficulty in assessing different mechanisms of limiting use. There is no direct quantifiable comparison between the mechanism of service days and destination quotas. Each alternative clearly details what levels of use occur, but what is confusing is that the mechanism changes and has different effects. Chapter 4 – Wilderness explains the expected effects of the different mechanisms.

- *Improper analysis of the types of trips. The impact to the land and social effect may be as high of a dunnage trip as it is a full service trip. However, the Forest Service doesn't want to recognize the impact of increasing spot and dunnage trips. The proposed alternatives need to at least suggest the environmental effects of the proposed changes. Unfortunately, it just isn't done in this DEIS.*

Response: The analysis does distinguish the different impacts of spot, dunnage and traveling (all expense) trips. However the conclusions reached in the EIS differ from the conclusions reached by this commenter. All expense trips are considered to have more impact than other types of trips because these trips tend to include large stock numbers, use larger campsites for larger parties, and hold and graze stock overnight in the wilderness. For these reasons, the all expense trips are viewed to have more cumulative impacts than spot and dunnage trips.

- *Reducing grazing will cause increased amount of stock on the trail to haul in cubes. Fails to show that the campsites and surrounding areas will be thrashed and have considerable damage. Forest Service fails to disclose the advantages of loose free grazing instead of having stock tied to pickets.*

Response: This has been noted and is included in the Chapter 4 Wilderness discussion.

- *Permanent camps should be analyzed in the document. The Forest Service is allowing and will essentially be making designated campsite a permanent camp in the wilderness. This is not being adequately disclosed.*

Response: The designated sites proposed will not have any permanent structure associated with the camp. They are typically camps that have been used for these activities for years, and in many cases decades. Some of the camps will need to be set back from water or have access trails improved to meet standards. To the extent that this makes them “permanent”—in other words to be used on a regular basis—is disclosed in the Chapter 4 Wilderness and Physical Resources sections.

Needs Assessment

Public Concern #27: *The Needs Assessment is inadequate and does not provide an analysis of the extent necessary for these commercial services. (response #106, form letter B)*

Response: Additional data was collected and analyzed during the 2005 operating season to better document the public’s need for these services and the extent to which commercial pack stock services are necessary. The results and further analysis have been incorporated into the FEIS needs assessment. Protection of the wilderness character is addressed both in the FEIS as well as the needs assessment for all commercial use alternatives.

Public Concern #28: *The Forest Service indicates in the Needs Assessment that that the proportion of commercial packstock use relative to overall use in the AA/JM Wildernesses has been allowed to grow by fully 60 percent in the last 25 years. No rationale for this significant change in the use allocation among the different recreational user groups is provided in the Needs Assessment. Given that the presumption in the Wilderness Act is not to allow commercial uses of the National Wilderness Preservation System, and that an exception is made to allow commercial uses ONLY to the extent deemed necessary and proper for realizing the recreational purposes of wilderness, it would seem that the agency should be extremely vigilant so as not to allow the proportion of commercial uses to grow without clear justification. No justification is provided. Yet a number of studies by U.S. Forest Service personnel over the years have documented significant damage to wilderness resources due to packstock use of the Ansel Adams and John Muir Wildernesses, indicating that it may be appropriate to reduce proportionate levels of commercial packstock use, not increase it. (response # 106)*

Response: The comment on the proportion of commercial use of the total use illustrating a 60 percent increase in the last 25 years is inaccurate. Five percent of the total use in 1979 was based upon a higher total use number before general public trailhead quotas were implemented. The recent higher percent (8 percent) of commercial pack stock clients is based upon a relatively overall lower total wilderness use number. According to use data presented in the John Muir Wilderness Plan (1979), from 1972 to 1976, the total use averaged 84,873 people. Five percent of that number is 4,244 people, which would represent the average annual number of commercial pack stock clients during the 1970s. For the years 2001-2004, the average number of pack station clients for both the Ansel Adams and John Muir Wildernesses was 4,783. The John Muir Wilderness portion in 2001-2004 averaged only 3,319 clients. This is an average of 925 fewer clients or a 22 percent reduction between the 1970s and 2000, which supports the needs assessment and FEIS conclusions that pack station use has decreased following the 1964 Wilderness Act. This contention is further supported by the 1979 John Muir Wilderness Plan (page 6): “Nineteen commercial packers serve the John Muir Wilderness. Most of these operate

out of facilities located near the trailhead they use. Commercial pack stock use has not increased appreciably over the past two decades.” And, the 1979 Minarets Wilderness Plan (page 5) states, “Commercial pack and saddle stock use has remained static or has even declined slightly during the past decade.” There is no credible data to support the claim that commercial pack stock use has been allowed to increase significantly in these wildernesses, or to support that there has been a 60 percent increase from 1970s to present.

The Forest Service is unaware of a “number of studies by U.S. Forest Service personnel over the years that have documented significant damage to wilderness resources due to packstock use of the Ansel Adams and John Muir Wilderness.” Anecdotal wilderness ranger reports do not constitute studies or even credible resource impact reports, as these personnel are generally not qualified to professionally assess resource conditions. In fact, the only comprehensive or credible studies of commercial pack stock impacts in these wildernesses has been completed only recently by the Forest Service interdisciplinary team that prepared this DEIS and FEIS between 2001-2004. The conditions found are fully documented in the FEIS, and do not support the significant damage conclusion. The FEIS and ROD propose management actions to fully correct or mitigate any site-specific, localized impacts associated with commercial pack stock use. Use impacts by all wilderness users (commercial pack stock combined with the general public) at the wilderness and geographic scale is characterized from not measurable or adversely affecting the wilderness character according to the FEIS.

Public Concern #29: *The Needs Assessment does not adequately demonstrate a need for commercial services in the wilderness. Some of the need categories do not reflect a need at all. An example of this is people needing pack support because their equipment is too heavy. The Needs Assessment must also specify the need required for particular types of commercial horsepacking services (i.e., spot, dunnage, full-service, re-supply, day rides etc.). Each of these commercial enterprises is unique, and the findings required by the Wilderness Act must be made for each. (response # 196, 201, 347)*

Response: The “categories of need” in the needs assessment were developed based upon activities that are wilderness-consistent and dependent, and proper in a wilderness setting. Commercial packstock are needed to support visitors who have heavy equipment or persons poorly conditioned. They are also needed to allow persons to access and enjoy these areas that do not own or have access to packstock or possess the knowledge or skills to use or handle such animals in a wilderness setting. Segments of the public that need commercial pack stock support to realize their wilderness experience have day use, overnight spot and dunnage, and traveling trip needs. There is no requirement to establish that the use of heavy equipment is “necessary” or that poorly conditioned individuals are “necessary,” only that the activities are proper.

Data was collected on commercial packstock clients and packers during the summer of 2005 to help establish the “need” and “extent necessary” for commercial services; this data has been used in the preparation of the FEIS needs assessment and analysis.

Public Concern #30: *The Needs Assessment does not specify an operational definition of “necessary” for the analysis, and appears to assume that demand and desire equate to need. (response # 196)*

Response: The FEIS needs assessment contains a definition and discussion of “need” and “necessary.” The Forest Service agrees that demand and desire do not equate to need or necessary in the context of this needs assessment.

Public Concern #31: *The Needs Assessment unnecessarily advocates the historical importance of commercial horsepacking, and distorts the historical record in its attempt to promote commercial packstock enterprises. An egregious example of the bias demonstrated by the Forest Service is its attempt to portray John Muir as a supporter and user of horses. Muir was undoubtedly the greatest advocate of foot travel in his day. He despised horses, and also strongly believed in traveling alone in the wilderness. This should be noted alongside the photo.* (response # 196)

Response: The historical background of commercial pack stock using these two wildernesses is relevant to the needs assessment, as it establishes the history and past use practices for these areas. The history section of the needs assessment has been updated and revised in the FEIS.

The photograph of John Muir on horseback was used to illustrate that pack stock support was historically common in these wildernesses and adjacent areas, even by John Muir himself. And, while the comment takes strong exception with using this illustration, there is ample evidence to support retaining it in the document. Some examples to illustrate that John Muir regularly used horses and mules follow: “After his initial eight-day visit, he returned to the Sierra foothills and became a ferry operator, sheepherder and bronco buster” (“John Muir” from *Wikipedia, The Free Encyclopedia*, p. 1); “John Muir met me with a couple of packers and two mules to carry our tent, bedding, and food for a three days’ trip.” (“Theodore Roosevelt, *An Autobiography*” from *Outdoor and Indoors*, Chapter IX(1913)); “Here we made our first camp and arranged with Mr. Longmire, a farmer in the neighborhood, for pack and saddle animals.” (“An Ascent of Mount Rainier,” Chapter 20 of *Steep Trails* by John Muir (1918)); “All mules have their fear of bears before their eyes and are marvelously acute in detecting them, either by night or day”; (*South of Yosemite; Selected Writings of John Muir*, by John Muir, ed. Frederic R. Gunsky (1968)); and, “So it would seem that the big traveling trips through the wilderness such as initiated by the Sierra Club in that first annual outing, should be continued, by whatever organizations may be qualified to conduct them. The argument that John Muir presented remains essentially valid. If we want mountain wilderness—the spacious scenic wilderness that means something—we must make it known to the men who, knowing it will protect it. Those who like best the Spartan of wilderness trips—cross country backpacking—must make haste slowly in any attempts to impose such trips upon others, or there may be too few men in the wilderness to protect it.” (David R. Brower’s “Are Mules Necessary?” 1948 Sierra Club Bulletin Article). As illustrated in David Brower’s article, it is well documented that the Sierra Club annual outings started by John Muir commonly used several hundreds horses and mules to support several hundred members. This practice went well into the 1960s. These examples seem to refute the notion that, “He (John Muir) despised horses, and also strongly believed in traveling alone in the wilderness.” At a minimum, he apparently found packstock needed and necessary for wilderness travel from time to time. The agency has been unable to find any evidence to support the comment’s contention that “Muir was undoubtedly the greatest advocate of foot travel in his day.”

The commenter seems to be offended by the tone of some of the DEIS and needs assessment, stating, “...the Forest Service comes across as the foremost advocate of the commercial packers.” In fact, the Forest Service considers and attempts to treat permit holders authorized to provide outfitter and guide services to the public as “partners.” The Forest Service’s Outfitter-Guide Administration Guidebook states that “the reasons to allow outfitting in an area are to assure that the public has reasonable access to National Forest opportunities, that the use

resulting from it is of the highest quality, that the resources are protected, and that the client learns the unique attributes of the environment.” While there are sometimes disagreements, difficulties, or issues between the Forest Service and outfitter-guides, the fact remains that the two parties exist to serve the public and both have responsibilities for protecting the resources. The Forest Service is generally proud of the role of and services provided by pack stations; and, although work remains in terms of providing better wilderness protection in some areas of these wildernesses, it does not justify downplaying their importance to segments of the public that need their services.

Public Concern #32: *The Needs Assessment must analyze and determine what levels of commercial horsepacking use are truly necessary and proper, not attempt to justify existing levels of commercial pack stock use and the agency’s desire to allow expansion of that use. The fact that the Forest Service used the latter approach in the Needs Assessment is revealed on page 1: “[Part I of the Needs Assessment] provides the evaluation and rationale for why the selected commercial pack stock service levels decided upon meet the Forest Service’s overall wilderness management objectives to carry out the recreational and other purposes of the Wilderness Act.” (DEIS at D-1) This is putting the cart before the horse, it is not acceptable, and it is not legal. (response # 196)*

Response: The concern about the Part I (needs assessment) selected quote is well-taken; the wording can be misinterpreted. The statement was intended to explain that the use levels of the different DEIS alternatives were designed and developed to be consistent and compatible with wilderness management objectives. This wording has been clarified in the FEIS needs assessment.

Public Concern #33: *The Needs Assessment evaluates commercial pack stock operations in isolation, without consideration of how their use allocation affects that of other legitimate commercial and noncommercial uses. This does not conform with existing Forest Service guidance. (response # 196)*

Response: The Needs Assessment does “conform with [sic] existing Forest Service guidance.” The Forest Service used the Outfitter-Guide Administration Guidebook (1997) as a resource in developing the 2001 Wilderness Plan and 2005 Needs Assessment. Other Federal agency “needs assessments” were also reviewed and considered. The Forest Service is unaware of any needs assessment that has been prepared for outfitting-guiding that is more comprehensive or thorough than the Needs Assessments for this planning effort. It has attempted to address the Ninth Circuit Court of Appeals opinion, agency policies and directives, and public comment. Wilderness capacity considerations, social and resource considerations, other user considerations, as well as preservation of the wilderness character considerations have been included and addressed in the FEIS and Needs Assessment.

Public Concern #34: *The statement that the 1985 limits were intended to reflect historic or then-current use levels is completely unsubstantiated and unsupported. The truth is that no supporting documentation exists to show that the original (1985) service day allocations for eastside packers were related in any way to historical or then-current use. In fact, actual use never reached the levels allocated in 1985, and the 2001 Wilderness Plan reduced the allocations somewhat to rein in the inflated allocations. The available evidence shows that the 1985 allocations had no basis in historical use, but rather were substantially inflated from the*

beginning, did not actually cap use, and allowed for substantial growth in commercial pack stock enterprises all throughout the 1980s and 1990s. (response # 196)

Response: Commercial pack stock use and impacts have been thoroughly considered and evaluated in setting use and stock controls and restrictions in the FEIS. Commercial pack stations are allowed to provide public access to only nine percent of the total area of these wildernesses. They serve six to eight percent of the total current wilderness users. As documented in the FEIS and Needs Assessment, commercial pack stock use has not increased as claimed by some since the 1964 Wilderness Act. The use of percentages from the 1970s to the present is misleading. In fact, the total number of commercial clients is 22 percent less in recent years than 1970s (refer to the response to Public Concern #29.) Hence, the claim that, "...and allowed for substantial growth in commercial pack stock enterprises all throughout the 1980s and 1990s" is not supported by the documented client served records. The balance between commercial served and non-commercial served visitors is a reasonable and proper split according to the FEIS Record of Decision.

The focus of the three year data collection effort and preparation of the DEIS and FEIS was to consider and evaluate the impacts of the commercial pack stock operations in these two wildernesses. This analysis was done by considering past, present, and foreseeable future uses, actions, and activities of all users, not just commercial pack stations.

Public Concern #35: *Improper interpretation of data is prevalent in the Needs Assessment including: (1) the evaluation of historical trends in commercial horsepacking use in the planning area (in contrast to the unsupportable conclusions presented in the Needs Assessment, the Livermore and London studies actually indicate that current stock allocations in the John Muir and Ansel Adams Wilde); (2) the interpretation of Congressional intent related to the Wilderness Act; (3) the interpretation of work by Dr. Hendee and (4) data associated with the need categories. (response # 196)*

Response: The Needs Assessment (D-12) reference citing the Eastern Sierra Packers Association (2000) of evidence in the congressional record has been eliminated. Only congressional records themselves are cited in the FEIS.

The comment regarding the DEIS use of Hendee et al (D-12) appears to have misunderstood the intent of the citation. The needs assessment stated, "...it is generally supported in the wilderness management field; the conditions found in these areas when they were established as wilderness define the benchmark for uses and naturalness to be sought by management". Attachment I (Background) to the Needs Assessment in the DEIS contained a summary of some of Wilderness Management wilderness concepts and principles (D-48). The fifth selective citations was, "To a degree, under the non-degradation principle, the conditions prevailing in each area when it is classified established the benchmark of naturalness to be sought by management—unless conditions are deemed below standard and the objective is to restore naturalness." (Hendee et. al 1990 p. 145).

The Forest Service disagrees with the statements and conclusions of the commenter about how service days were established for commercial pack stations. And, as addressed in the response to Public Concern #28, the contention that the service days were substantially inflated and did not cap use, and actually allowed for substantial growth all through the 1980s and 1990s is not based in fact or evidence. The number of clients served today by commercial pack stations is 22 percent less than 1970s, that is the bottom-line and the evidence needed to substantiate the Forest

Service's conclusion that their use has been at least capped if not decreased. However, as acknowledged in Chapter 3 of FEIS, service days have serious limitations and value in accurately measuring and comparing use over time. Comparisons of "visitors" or "clients" served have significantly more validity than service days.

Additional clarification has been added to the comparison of number of pack stations and stock numbers over time. There is evidence to support the Forest Service conclusion that the number of pack stations and stock used within these wildernesses has declined over time, and more importantly that the clients served since 1970s to present has decrease by 22 percent. The comparison was merely attempting to show the historical trend in reduced pack stations, stock numbers, and clients served.

As stated in the response to Public Concern #29, additional data was collected and analyzed during the 2005 operating season to better document the public "need" and "extent" to which commercial pack stock services are necessary. The results and further analysis have been incorporated into the FEIS Needs assessment. The methodology for collecting the data and limitations of the results are fully disclosed.

Public Concern #36: *The DEIS does not analyze whether the number of commercial horsepacking operators (i.e., permits) is appropriate to the level of need. The Ninth Circuit made clear in their ruling that analysis of the number of permits granted by the Forest Service would be necessary, "...the Forest Service must show that the number of permits granted was no more than was necessary to achieve the goals of the Act." (response # 196)*

Response: The FEIS Needs Assessment discusses this issue in more detail. To a large degree, "the number of commercial horsepacking operators (i.e., permits)" is irrelevant when determining the necessary level of public need for wilderness horsepacking services. If, for example, one operator was granted a permit for a level of use that far exceeds the public's need, the intent of the Wilderness Act is not being met. Likewise, if fifty commercial operators were granted permits to operate in the wilderness, and the level of use authorized was less than what the public needed, again the intent of the Wilderness Act is not met. It is not the quantity of commercial operators that is important, but rather it is the level of use authorized to the commercial operators that must be examined.

To determine the extent necessary, the Needs Assessment looks at the current level of use and determines whether this level is appropriate and needed to meet the public's need for commercial horsepacking services. The Needs Assessment also considers other factors, including demographic trends, and arrives at a level of need for this service that is a range.

Public Concern #37: *The Forest Service should not consider eliminating or reducing commercial horsepacking services as the Needs Assessment clearly describes a need for commercial outfitting services. (response # 198)*

Response: The comment supports the conclusion of the Needs Assessment that commercial pack stock services are necessary in these two wildernesses. All of the action alternatives propose that commercial pack stock services will be authorized at levels and locations needed by the public but with conditions deemed necessary to protect the wilderness character. Only Alternative 5 proposes to eliminate commercial pack stock services. This alternative was included so that a full range of alternatives were analyzed and considered in this EIS. The Inyo and Sierra NFs agree that given the public need for commercial pack stock services and the EIS

analysis demonstrating that the wilderness is protected with the different control mechanisms and restrictions, there is no justification for “removing” pack stations.

Public Concern #38: *The Needs Assessment underestimates the true need or demand for commercial packing services in the wilderness. (response # 279, 348, 357)*

Public Concern #39: *The Forest Service should not decide who may or may not need the services of commercial pack operators. Rather, if a person desires the services of a commercial packer to access the wilderness, that should be sufficient evidence of the need for the service. (response # 279)*

Public Concern #40: *The need for commercial pack stock in the wilderness is driven by the demand by services from the public. This EIS fails to assess what is the desire of the public for service? What type of service does the public want? This draft plan and needs assessment fits the desire of a few special interest groups and ignores what is in the best interests of the public. (response # 275)*

Response to Public Concerns #38-40: The requirement to complete an amended Needs Assessment resulted from a U.S. Court of Appeals for the Ninth Circuit opinion filed August 25, 2004 and amended December 1, 2004, that concluded, “The finding of necessity required by the Act is a specialized one. The Forest Service may authorize commercial services only ‘to the extent necessary.’” That court further clarified, “Nowhere in the Wilderness Plan of the 2001 Needs Assessment does the Forest Service articulate why the extent of such packstock services authorized by the permits is ‘necessary.’”

It was not possible between December 2004 and February 2005 to collect data to fully answer this required finding in time for the release of the DEIS; however, data was collected during the 2005 pack station operating season and is incorporated in the FEIS Needs assessment. The appeal court clarified there is a clear distinction between “need” and “demand.” Demand is not a legitimate basis for authorizing commercial services in wilderness; instead, it must be based upon legitimate “need” for realizing proper wilderness purposes. The latter is what the Forest Service attempted to do in the amended Needs Assessment for the FEIS.

Methodology/Use of Science

Incorrect Assumptions

Public Concern #41: *The DEIS contains a number of false assumptions:*

1. *The public wants more dunnage trips and spot trips.*
2. *Wilderness can tolerate a lot more people either by spot trips, dunnage trips or day use.*
3. *Llama use is compatible with wilderness and is ok*
4. *Wilderness managers should impose their personal views over the direction of the Wilderness Act.*
5. *Giving operating areas to individual packers is in the public interest.*
6. *The Forest Service implies their economic analysis is ok. The Forest Service fails to look at net income and the ability of pack stations to stay in business.*
7. *More people and heavier concentrations of people in the wilderness is consistent with the Wilderness Act.*
8. *Designated campsites are consistent with the Wilderness Act*
9. *Eliminating free grazing is consistent with the wilderness Act.*

10. *The rights of those people who are on a spot trip or dunnage trip should have greater importance than those that travel through the wilderness on outfitted trips. (response # 275)*

Response: This list of disagreement with the DEIS are not “assumptions” but rather are issues and effects discussed in the NEPA in the DEIS and FEIS. The effects of spot and dunnage trips versus full service all expense and traveling trips; the capacity of the physical and biological resources for the various types of trips; the use of llamas; operating areas; designated campsites; grazing methods; are all relevant issues discussed in detail in Chapter 4 of the DEIS and FEIS.

Wilderness managers input and participation in the process reflect professional views based on agency policies, research findings education and experience. It is possible that other hold different opinions on issues.

Public Concern #42: *The document is clearly biased against commercial pack operations by not accounting for non-commercial pack stock (e.g., hiker) degradation in the wilderness. Commercial packers are unfairly blamed for all the damage in the wilderness (response #103, 168, 198, 275, 311, 348, 355, 357, 401, 428)*

Response: The analysis cites research published on relative impacts of stock and hikers along with the interdisciplinary team’s own findings. The team did find impacts that were associated with commercial stock use, though it is not the intent to determine cause, but rather determine an approach to managing the use. The focus of the analysis is commercial pack stock, as ordered by the District Court. The analysis intentionally narrows the focus and should not be construed as bias, as much as to respond to the court order.

Public Concern #43: *The document is clearly biased in favor of commercial pack operations and relies too heavily on unconfirmed data and anecdotal observations provided by commercial enterprises. (response #105, 196)*

Response: See response to Public Concern #42. A number of comments were received that asserted that the document was favoring pack stock interests; an equal number were received that stated that the document was bias against commercial packing activities. That these comments came from both sides of the issue probably indicates that the document is a fairly objective analysis of the effects of commercial packing on wilderness resources.

In terms of packer-supplied data and anecdotal observations, the FEIS attempts to independently verify any data or observations used in the analysis. This, however, is not always possible. Often times, the commercial packers have the most accurate and comprehensive information for a particular topic. When this type of data or observation is used in the FEIS, the source is disclosed.

Cumulative Effects

Public Concern #44: *The potential cumulative effects discussion includes a number of impacts that do not even exist in the field. Mixing science, fact, hypothetical scenarios with desired future conditions is based on subjective interpretations of the Wilderness Act. Only the known specific cumulative effects and impacts attributed by proof to commercial pack stations should be analyzed in this document. (response # 311)*

Response: It is not clear from the comment what effects are discussed “that do even exist in the field.” NEPA requires a cumulative effects discussion in the EIS. By definition, a cumulative effect is the impact on the environment which results from the incremental impacts of the action

when added to past, present and reasonably foreseeable future actions (CEQ 1508.7). The analysis in the FEIS considers whether there are any cumulative effects associated with the proposed project when combined with relevant past, present, and reasonably foreseeable actions in the project area.

Public Concern #45: *Since the USFS does not currently document or consider the cumulative impacts of clearcut logging on public lands, which is obviously much more devastating to forests, wildlife, water resources and our quality of life, the USFS should not be able to require a Cumulative Effects Analysis EIS for other groups that impact public lands. (response # 72)*

Response: Under NEPA, a cumulative effects analysis is required for any federal action, including any analysis of timber sales.

Public Concern #46: *The catalog on page IV-4 does not include historic or present grazing by commercial pack stock. There are no records included for private or administrative use. (response # 311)*

Response: The effects of historic or current commercial pack stock grazing is disclosed in the direct and indirect effects discussions in the FEIS.

Public Concern #47: *Unfortunately, this EIS does a poor job of looking at the cumulative effects of pack stock in areas where packers overlap services. Instead, the Forest Service proposes to eliminate multiple packers using the same area and give exclusive rights to certain packers. (response # 275)*

Response: One action that is proposed in two of the alternatives is “primary operating areas.” This concept does not give exclusive rights to certain packers. In fact it allows for a number of areas of overlap where that overlap has occurred in the past and there are no resource concerns that need to be addressed. Measures have been proposed (and primary operating areas is one of them) to reduce or eliminate impacts where overlap of operators occurs and there are documented resource concerns. Chapter 4 – Wilderness describes the effects of overlapping operations. More specifically, a number of sections discuss the Silver Divide area and describes the effects of overlapping operations.

Other Methodology Issues

Public Concern #48: *The methodologies section of the DEIS is seriously flawed because it takes the liberty to determine the amount of impact that is acceptable: “The intensity of the impact considers whether the impact to wilderness character would be negligible, minor, moderate, or major.” There is no reference to the condition that existed when the areas were designated. The effect of this inappropriate methodology is evident in statements found throughout the DEIS, for example, “the higher development trails have characteristics and management intrusions which adversely affects visitors’ experience of wilderness.” (response # 276, 278)*

Response: There are references to the condition that existed when the area was designated wilderness in the Chapter 3 Wilderness section. Unfortunately there is a lack of data on the conditions, and very little other than anecdotal evidence of conditions.

The subjective statements on wilderness character are consistently used in order to provide some response to accusations that the proposed uses are violating the Wilderness Act and having an impact on wilderness character. A full description of the methodology of using wilderness

character can be found at the beginning of Chapter 4 – Wilderness, and may help put these statements in context.

Public Concern #49: *Why are some resources in Chapter 4 described at the wilderness scale (trails, social, economics, and heritage) while others are given a more thorough examination at the geographic scale. Some of these resources may have important implications for a pack station but are only given a quick review at the wilderness scale. (response # 311)*

Response: Chapter 4, page 1 of the DEIS explains that some resources are only described at the wilderness scale as this is the relevant scale to analyze the effects on those resources”.

Public Concern #50: *The Forest Service fails to look at the historical baseline. We again ask that the Forest Service include data and assess the environmental condition at beginning of the 1979 John Muir Wilderness Management Plan and compare it to the conditions of the late 1990’s. (response # 275)*

Response: Additional data has been brought into the analysis to try and display use levels at different points in time. However as mentioned a number of times, the quality of data is very poor prior to 2001. Data is incomplete across the planning area in 1979.

Public Concern #51: *The EIS is good in that it tries to show the various impacts and use patterns throughout the wilderness. For a quick study.....it should be a considered a good start. A major deficiency is not putting down on paper those areas that have received great use and show little impact. The EIS should do a better job of showing areas where there is a lot of use but the impact is not very high. (response # 275)*

Response: Comment noted. There are a few locations, such as North Fork of Big Pine, that receive very high level of use and resource impacts are considered low-to-moderate. Areas such as these are noted where they exist and are mostly the result of on-going management or the durability and resilience of the particular ecotype (i.e. granite).

Public Concern #52: *The differences in type and magnitude of impacts caused by recreation pack stock compared to other uses must be fairly and equitably analyzed in the DEIS. The Forest Service should acknowledge the disproportionate amount of resource impacts caused by stock-supported visitors, compared to non-stock-supported visitors, and that from a resource carrying capacity perspective, use allocations for non-stock-supported visitors could be substantially increased if commercial pack-stock use were limited to the extent truly necessary. (response # 196)*

Response: A number of research papers have been cited throughout Chapter 3 and 4 that note the differential impacts associated with pack and riding stock. The planning team does acknowledge the disproportionate amount of resource impact that can occur with packstock. We cannot, however, look at a condition and definitively state that something has been caused by stock. Allocations to commercial uses will be made with many considerations given to the extent necessary of this use. Non stock-supported visitors can also be the source of impacts that affect the recreational carrying capacity, but this analysis is focused on the commercial stock portion of the allocation and insuring it meets the intent of the Wilderness Act’s specialized requirement.

Public Concern #53: *While we are sure the DEIS represents a lot of hard work on the part of the USFS, we must question the intent of the authors and their proposed actions. The 1,000 page document is unwieldy and unclear in its format. It does not support any of the proposed alternatives nor does it include any clear scientific evidence that documents serious resource*

concerns. *If at all, it supports an increase in commercial pack stock use in certain areas.* (response # 279)

Response: To aid readability, the Final EIS has reorganized and clarified some of the analysis. Although some readers may read that there is a need for more commercial pack stock, it is the decision makers that will take the information provided and make a determination as to the extent of commercial pack stock that is necessary given this document's analysis of the factors.

Public Concern #54: *It appears as if Data significance changed - ie. data collection taken earlier in the study vs. later. If the ID team did not have objective data interpretation from start to finish, then there are some highly questionable outcomes. (For instance Lee and Cecil lakes areas seen the first year of data collection) (Chap. III - 1, Data Collection and Analysis Process).* (response # 355)

Response: It is true that the first year of data collection was prior to the court order. Data collection methods changed and were improved over the course of the four years of data collection. However, data interpretation and consistency reviews of data took place after each field season, with particular attention to the first year of data. The above mentioned Lee and Cecil Trail had additional visits over the course of the data collection and both still and video photos were taken that were used throughout the alternative formulation and effects analysis. There no indication that new information collected would change the outcome of this highly impacted trail.

Public Concern #55: *The DEIS did not use objective standards to determine wilderness character as defined by Congress in Wilderness legislation. (Re: Chapter 3, Affected Environment, Data Collection and Analysis Process)* (response # 355)

Response: The effects analysis used four elements of wilderness character (see response to Public Concern # 16) that come directly from the Wilderness Act. This approach is supported by a technical report (Landres et al. 2005) as an objective approach to what could be considered the very intangible goals of the Wilderness Act. Chapter 3 includes the same elements of discussion of wilderness character in the context of the existing condition.

Public Concern #56: *At IV-140, the DEIS states, "The Science Review acknowledges that the available literature is replete with statements about the probable effects of grazing, many of them observational or anecdotal, but rarely is there controlled studies from which to accurately assess different levels of grazing. Most studies refer to heavy grazing without actual forage use quantification by cattle or sheep, and do not examine moderate grazing intensities that are proposed in this EIS." Again, pack stock users have modified their methods to protect grazing areas, which are important to their livelihood, and again there is less stock grazing now than in years past. Additionally, horses and mules graze differently than cattle and sheep since they do not pull out the grasses by the roots and they favor the tops of the grasses. Further, the meadow monitoring methods used by the Forest Service are quasi-scientific and as such are subjective and can, and indeed are (as admitted to me by a Forest Service employee) slanted to fit the anti-pack stock bias of the person doing the monitoring.* (response # 348)

Response: The referenced quotation in IV-140 of the Science Review that was part of the Sierra Nevada Ecosystem Project was meant to demonstrate the difficulties in assessing impacts of all classes of livestock grazing impacts on wildlife populations and habitat across the Sierra Nevada. The quotation is not applicable for all aspects of grazing impacts on resources that were analyzed

in the DEIS (e.g., range condition and trend, suitability, range readiness, and proper functioning hydrologic condition). These management factors were used in many cases to develop grazing recommendations.

Public Concern #57: *The Forest Service should reduce user conflicts between hikers and stock users by giving notice where stock are likely to be. The agency estimates that pack stock utilize 9% of the land. Surely those on foot can find somewhere to travel in the remaining 91%. User conflicts can also be reduced by educating members of all user groups regarding the historic values, public service values and mutual responsibilities of all who seek to experience the wilderness. (response #277, 362)*

Response: Improving information to help with visitor expectations is an excellent approach, and one tool which the agency has and will continue to use. Such a tool is not subject to NEPA compliance and can be applied regardless of the alternative that is selected.

Public Concern #58: *Positive impacts of pack stations and pack stock are not mentioned or collected as part of this analysis. (response # 311)*

Response: Chapter 3 describes the existing condition of the resource with specific mentions of areas where pack stock operate that have low or no impact. This information was then used in assessing the effects of alternatives in Chapter 4. The environmental document discusses many locations where continued use would have minor or negligible effects.

Public Concern #59: *The Forest Service should clearly explain the source of the direction for many of the management actions they are proposing. Is it direction from the 2001 John Muir Wilderness Management Plan and Record of Decision? Or, is it from standards from the Sierra Nevada Framework? Or, is it a new direction that is included in this set of decisions to be made. There is little effort by the writers of the plan to disclose why they are making choices. It appears that the EIS studies past actions and assesses future actions as a result of:*

1. *Sierra Nevada Framework*
2. *Record of Decision of the John Muir Wilderness Management Plan*
3. *Permit Renewal Process for the various pack stations.*
4. *Court imposed sanctions on the Forest Service to correct NEPA and Wilderness Act Violations for current and past actions.*
5. *Settlement and lawsuits from the HS Packers Association*
6. *Personal vision of a few Inyo National Forest employees who want “their goals” imposed on the public. (response # 275)*

Response: There are many sources of the direction contained in Chapter 2, including the 2001 Wilderness Plan, Sierra Nevada Framework, and the court-ordered analysis of commercial pack stock in the wilderness. The direction also comes from the conditions found on-the-ground during the years of data collection.

Personal goals of Forest Service staff have no bearing on the ultimate decision to be made by the Forest Supervisors, nor the formulation of alternatives. Alternatives come from public issues raised during the scoping period. These issues must meet the stated purpose and need of the analysis as identified in Chapter 1.

Public Concern #60: *The Forest Service is eliminating the rights of the public to use less traveled areas because a particular official says it isn't ok. Not because of a resource*

concern...primarily because it wasn't used between the time studied by the Forest Service. This is wrong and goes way beyond the authority of the Forest Service. (response # 275)

Response: Determinations of trail suitability took into consideration of management objectives, resource concerns, and use allocations (see Purpose and Need, Chapter 1). Pack stations had the opportunity to provide historical information on trails they have used (and most utilized this opportunity). All of these factors were considered within the above criteria to make a determination, and was not solely based on how much the trail has been used in the past few years.

Use Data

Public Concern #61:: *The Forest Service provides no credible data or analysis in the DEIS to support its conclusion that actual commercial pack stock use after the injunction has been significantly lower than actual use that occurred prior to the injunction. In addition, the historical use data is not reliable, because the commercial packstations self-reported their service days using tally sheets, and issued all wilderness permits to their clients during that period. We also believe that the revenue of the commercial outfits has increased in the period after the injunction, further indicating that the restrictions imposed by the district court did not negatively impact their operations and that no significant reduction in actual use has been achieved. When comparing gross revenue for the years 2000-2001 (prior to the injunction) to 2002-2003 (after the injunction), gross revenue increased an average of 17 percent. (response # 196)*

Response: There is no evidence that pack stations regularly inflate their use numbers. Further, there is no evidence that data prior to 2002 is invalid. Existing data shows that use has decreased since the court-ordered injunction. Chapter 3 shows number of people serviced, not service days, to show that this very basic measure of use clearly is declining. Using gross revenues to draw conclusions on use is illogical. As discussed in the DEIS, the prices of trips have increased over the last few years. This alone could account for the increased gross revenue figures. It appears as though additional regulations have increased the cost of doing business. Over the last four years, commercial packers have increased the price of their services and experienced increased gross revenue although use has decreased.

Public Concern #62: *The 2001 Wilderness Plan allocations do not accurately represent average historical use. The pre-2001 service day allocations, first established in the mid-1980s, were never based on actual use levels. They were illegally established without public involvement or proper NEPA analysis, and they were arbitrarily established at highly inflated levels (i.e., to allow substantial growth in commercial pack stock enterprises). The 2001 Wilderness Plan service day allocations simply reduced those inflated allocations, for the first time, to reflect the high end of then-current use levels. And the 2001 Wilderness Plan then allowed for significant growth above the then-current levels. (response # 196)*

Response: No data supports this theory. All existing use data shows a very definitive decline in commercial pack stock use in the past twenty years.

Public Concern #63: *The 20% reduction in allocated service days to commercial pack stations has not resulted in a 20% reduction in use, as intended by the District Court. The Forest Service has provided no credible evidence to demonstrate that the 20% service day reduction ordered by*

the District Court in 2002 has had any significant effect on actual commercial pack stock use levels.

On average, these packstations utilized only 74% of their reduced allocation in 2002, 2003, and 2004, and only three of the twelve packstations utilized over 90% of their allocation. In other words, these data indicate that the court-ordered reduction in service days did not limit use for the vast majority of these packstations, because the actual use levels did not even approach the service day levels ordered by the court. The most likely explanation is that the self-reported use figures (upon which the 2001 service day allocations were based) were inflated, and that the current use under the injunction is not significantly different from past actual use levels. (response # 196)

Response: Considerably more work was done in the Final EIS in analyzing data to assess trends. The Wilderness section in Chapter 3 was revised to provide a clearer picture of the data available to substantiate the trends. We do not believe service days to be a very accurate measure of trends. Number of clients served has gone down over the past 5 years and total. That is an indicator of commercial use levels actually declining.

A full discussion of types of data and interpretations of data can be found in Chapter 3. They do not support the theory that commercial use is increasing.

Public Concern #64: *The DEIS fails to analyze and disclose the fact that commercial pack stock use has never been meaningfully capped. Until the 2001 Wilderness Plan was adopted, 29,623 service days were allocated to commercial horsepacking stations in the planning area (DEIS at D-26). According to the 2001 FEIS Needs Assessment (at D-9): “Little documentation exists on how these allocations were determined or originated. However all indications show that historic use levels were intended to be authorized.” It was this inflated allocation that the 2001 Wilderness Plan sought to address, reducing the total service day allocation to 21,900 (DEIS at D-26), not including the 20% injunctive relief reduction. However, by allocating service days based on the two highest-use years of the previous five, this did not amount to a meaningful cap, especially since the Plan provided for a pool of 3,000 additional service days. As demonstrated above, the commercial packstations have been using only 74% of their allocated service days during the past three years, even with the 20% reduction and without the discretionary pool of service days. The fact is that commercial pack station clients are almost never turned away because of these restrictions, while the non-outfitted public is turned away in droves. (response # 196)*

Response: The environmental analysis is conducted to determine the effects of pack stock and to arrive at a level of use that is compatible and consistent with the purpose and goals of the Wilderness Act. It is not a stated goal to “meaningfully cap” packers. It continues to be the agency’s position that it is not only the amount of use that is meaningful to managing impacts, but the type and timing and management of the use. See response to Public Concern # 63 for discussion of the reliability of service days as an indicator of use levels.

Public Concern #65: *The DEIS uses methods and determines use numbers based on historic highs. In reality, the numbers that were used were taken from the past three years – years in which pack stations operated under a Court injunction and a new management plan which both served to reduce use anywhere from 20 to 50%. Historic Use should include at least 10 years pre-Court injunction. (response # form letter F)*

Response: Nowhere in the document does it state that use numbers were determined based on historic highs. Use numbers from the last five years have been used as a baseline because data prior to 2001 prior data is inconsistent, inaccurate and not complete. However, in preparing the Final EIS all available data dating back the last fifteen years was reviewed and brought into the analysis. The results of this are documented in project record.

Adequacy of Comment Period

Public Concern #66: *The comment period for the DEIS should be extended. (response # form letter E, 196, 198, 275, 339, 364)*

Response: The Trail and Commercial Pack Stock Management DEIS is a long, complex document. The agency provided more than the minimum required comment period for a Draft EIS. Forest Service Handbook 1909.15, Chapter 20 requires a minimum of 45 days for comment on a Draft EIS. For this project, the Draft EIS was mailed out to the public on March 29, 2005. The document was also placed on the Inyo and Sierra National Forests' websites on this date. The comment period ended June 15, 2005. The comment period was open for nearly 80 days, more than a month longer than the minimum 45-day requirement.

Implementation and Monitoring

Public Concern #67: *The DEIS does not consider the implementation of the proposed alternative. Analyses in the document assume that full compliance with the proposed actions will be achieved. Relevant issues and factors related to enforcing the proposed management actions are ignored. Clearly, the proposed management actions will not achieve the desired outcome unless compliance can be ensured. Thus, the Forest Service should develop management schemes that take into account the agency's ability to monitor and enforce compliance, and consider the historical degree of compliance with management decrees by the commercial outfits. (response # 196)*

Response: The Final EIS cannot assume non-compliance with proposed management direction. Nonetheless, given the concerns expressed over compliance and monitoring, the FEIS includes a very descriptive implementation plan (Appendix A) to guide the implementation of the selected alternative.

Public Concern #68: *Overall use needs monitoring to see how it is working and whether special problems develop. This is especially true for marginal meadows. The document does not contain adequate concern for continued monitoring. (response # 195)*

Response: See Response to Public Concern #67.

Funding

Public Concern #69: *The forest service does not have the funds to micromanage designated destination camps and other aspects of the proposed project (response # form letter A, 35)*

Response: See Response to Public Concern # 67.

Public Concern #70: *The fees generated by a substantial increase in commercial pack stock activity would undoubtedly result in significantly greater income to the Inyo and Sierra National Forests. Given the greatly diminished receipts from timber sales over the last fourteen years, it is understandable that the agency is looking for ways to offset that loss of income. But that is not*

an excuse to abandon environmental ethics or to ride roughshod over the sensibilities of the self-propelled hiker. (response #166)

Public Concern #71: *The Forest Service's Preferred Alternative in the DEIS is a horrible example of the privatization and commercialization of wilderness. Do not give these outfitters a property right (through a 20-year permit) which permits them to commercialize and privatize wilderness. Retain the ability to regulate these non-conforming Wilderness uses and to limit them, when and as required. (response # 185)*

Response to Public Concerns #70 & 71: The proposed project does not represent an attempt by the agency to replace timber receipts nor does it privatize or commercialize the wilderness.

Public Concern #72: *Commercial pack stock enterprises should be required to post bonds to cover the costs to repair damage that they cause. The Forest Service has long known that commercial pack stock enterprises can and do cause substantial damage to natural resources in these wildernesses. The Forest Service's own files are replete with evidence of harm to the wilderness character that is caused by these businesses. The District Court found disturbing evidence of environmental degradation from stock usage in these wildernesses, and the appellate court upheld that finding. In response, all commercial pack stock enterprises permitted to operate in these wildernesses should be required to post bonds sufficient to cover costs to repair damage, as is required of miners who operate on public lands. This is not a new concept. (response # 196)*

Response: Currently under the "Guidebook on Outfitting and Guiding 1997" all O/G and Resort Permit pay a scheduled fee adjusted to the gross revenue reported at the end of the season to supplement the cost for use of the national forest land.

Chapter 4 includes environmental consequences and limitations associated with implementing each alternative. Where appropriate, the environmental document, discloses limitations and risks of inadequate funding, in particular when this funding is essential to effectively manage trails and commercial pack stations.

Adjacent National Parks

Public Concern #73: *The Proposed Action would cause significant impacts in the surrounding national parks. The proposal would eliminate service days, and replace those limits with new limits on the number of trips that commercial pack stock outfits based on National Forest System lands may operate into the adjacent national parks (e.g., Sequoia, Kings Canyon, Yosemite). The service day limits currently act as a governor on the number of trips that Forest Service-permitted outfits may run in the national parks. We oppose the elimination of service days, and any action that may increase the impacts of commercial operations in the fragile high country of the Sierra Nevada national parks. At minimum, the EIS must carefully evaluate the impacts of increased use in the national parks due to the elimination of service days and/or the adoption of limits on number of trips. (response # form letter D, 196)*

The Forest Service and National Park Service should, to the extent possible, manage wilderness uniformly. This includes evaluating the impacts of approving commercial trips that travel into the parks and coordinating grazing start dates with NPS administered parks. (response # 343).

Response: The Inyo and Sierra National Forests have worked closely with the neighboring parks throughout this environmental analysis. Both Parks have responded to the Draft EIS and a close working relationship is in place to insure as much consistency as possible given the issues and

the situations. The Final EIS incorporates many of the requested restrictions on commercial pack stock operations as outlined by the Parks.

Yosemite National Park

Public Concern #74: *If destination quotas and seasonal stock thresholds are used we would appreciate further discussion regarding the numbers provided for Yosemite access. Although excellent work was done to develop these proposals, there are some inconsistencies which may either be typos (for instance, no Yosemite trips are shown for Reds Meadow), or some numbers may be different than thresholds already established in the park for people and stock nights. Yosemite capped commercial stock use at its historic high in 2002, and will be continuing to monitor to assess proper levels of use. Some of the numbers given in the DEIS for quotas or thresholds are lower than use currently allowed in Yosemite. As an example, Yosemite Trails has an annual Yosemite stock use threshold of 457 animals, but the seasonal stock threshold in Alternative 3 is 245 animals. Their Yosemite use has been both higher (317 in 2003) and lower (191 animals in 2004) than the 245 animal threshold. We feel that because the pack stations need to travel through the Forests to access Yosemite, the park should honor the numbers given by the Forests if those numbers are based on research, best management practices, and/or ongoing monitoring. It will be important to review those numbers if this alternative is chosen. (response # 426)*

Response: Destination quotas for Yosemite National Park have been recommended in the preferred alternative in the FEIS that are reflective of the limits set in the Park. Thresholds already set by the National Park Service (NPS) and included in the Incidental Business Permits issued to the commercial pack stock operators by the NPS will be honored as appropriate use in the Park.

Public Concern #75: *We are uncomfortable with the standards given for trails entering Yosemite. Although we do not use the trail standards given in the document, the descriptions seem to imply a much more developed trail on passes leading into the Park. To be consistent with the level of development on the park side, each of those segments leading to the park boundary (Chiquito, Quartz Mt., Isberg, Fernandez, and Post Peak) would be more consistent if maintained to the level 2 standard rather than 3. Donahue Pass would be consistent at a level 3 rather than level 4. We felt the trail standards given were generally very ambitious. Additionally, it is highly unlikely we would allow sanding on any pass within the park, so would ask it not be allowed on the trails listed above to prevent hazardous conditions and resource damage from those accessing the Forest side earlier due to the sand. (response # 426)*

Response: In the FEIS, Alternative 2 – Modified proposes to manage Donahue Pass as Trail Class 3. For the remaining four passes that access Yosemite National Park (Chiquito/Quartz, Post Peak, Fernandez, and Isberg) we feel the proposed management classes in the Preferred Alternative of the FEIS are appropriate for the landscape, resource protection, and use. In particular field surveys indicate the Chiquito/Quartz, Fernandez and Post Peak trails appear to receive very similar management on each side of the boundary.

In Alternative – Modified, early season access over passes will be assessed by the proposed destination readiness criteria. One specific decision point in the process is consultation and concurrence with the National Park Service for trails that enter the Parks. The readiness criteria is designed to evaluate requests from the commercial pack stock operators based on the impacts created by altering natural snow pack conditions by shoveling, sanding or any other methods that

might be proposed. Annual approval is based on site-specific conditions on a case-by-case basis. This means that the National Park Service would be consulted each time a request is received, so that the specifics of that request would be considered.

Sequoia and Kings Canyon National Park

All comments are from response # 425

Public Concern #76: *Some specific aspects that we [Sequoia and Kings Canyon National Park] do not support are:*

- *The non-treatment of commercial stock use over Cottonwood Pass. With the controls proposed in all alternatives, we fully expect that commercial stock operators will at times seek other areas in which to operate. This will have an effect on SEKI, specifically in the area of Cottonwood Pass in the Golden Trout Wilderness.*

Response: Cottonwood Pass is subject to the subsequent analysis which includes the Golden Trout Wilderness.

- *The absence of analysis for commercial stock use over New Army Pass. Currently operators leaving the Horseshoe Meadow area prefer utilizing Cottonwood Pass, but if controls were put on Cottonwood Pass, some operators may seek to enter SEKI via New Army Pass. New Army and Cottonwood passes should be considered together to assure appropriate levels of use are determined. This is more of an issue if Alternative 3 is chosen which controls the area via a general trailhead quota, and less of an issue if Alternative 2 is chosen. It appears that if Alternative 2 is chosen, no commercial use would be permitted over New Army Pass as the destination is Cottonwood Basin. We would support only a very small amount of commercial use over New Army Pass.*

Response: The Final EIS includes specific discussion and direction for New Army Pass. This had been not specified as “New Army” in the Draft and is corrected in the Final.

- *The holding of exit quota spots, from Trail Crest east, for commercial operator clients as specified for Alternative 3. We feel that all visitors should compete equally for exit quota spots.*
- *Daily party sizes and yearly totals for these select passes:*
- *Taboose Pass in Alternative 3 – A single quota with 10 people/day and 50 stock/year allowed is proposed. We feel that the narrow and rocky condition of the trail, does not allow for safe passage of large stock groups and hikers and would encourage you to place a limit of 10 head/day on this trail. The annual limit as specified is acceptable.*
- *Shepherd Pass in Alternative 3– A single quota of 15 people/day and 100 stock/year allowed is proposed. We feel the narrow, rocky condition of the trail does not allow for safe passage of large stock groups and hikers, and that the fragile nature of the high country accessed does not support this level of stock well and would encourage you to place a limit of 10 head/day and a seasonal limit of 80 stock/year. The high meadow areas accessed by this trail have seen a notable increase in use in the past three years and they will not be able to sustain this level of use.*
- *Shepherd Pass in Alternative 2 – A destination quota of 18 trips per season is allotted. Due to the reasons stated above, we would encourage you to set the quota at 10 trips in order to assure that meadows in the area do not become overused.*

(NOTE: we feel the other quotas and use numbers as delineated in Alternatives 2 and 3 are acceptable at this time. We will continue to enforce our group size limits of 15 people and 20 stock as well as our monitoring efforts and may need to enact further control of use in these parks if impacts to resources and experiences so warrant.)

Response: Further communications with Sequoia-Kings Canyon have taken place to resolve inconsistencies and address their concerns.

Devils Postpile National Monument

Public Concern #77: *Some specific aspects that we [Sequoia and Kings Canyon National Park] do not support are:*

- *It does not appear that a thorough evaluation of the carrying capacity and impacts of the 1500 annual day use riders to Rainbow Falls has been conducted. The use of this area by commercial stock operators has been conducted via the NPS's Incidental Business Permit system. DEPO will be developing a General Management Plan in the upcoming years, and will address carrying capacity and resource impact issues in connection with this use. We are willing to accept the use numbers as allotted in the DEIS and Plan, but reserve the right to control and regulate use in DEPO pursuant to resource impacts determined through future monitoring and analysis.*
- *We also feel that trails which lead into DEPO, specifically those sections of trail number 2000.3 (Ref. #'s I-24 and I-25) should be classified no higher than Trail Class 3. These are classified as Trail Class 4 in Alternatives 1 and 2. These trails are in wilderness, and the higher level of trail class has conditions that we feel are not appropriate in wilderness. Trail Class 3 more accurately reflects the current condition and the maintenance level that we work to accomplish.*

Response: Proposed Day Ride allocation remains the same throughout the alternatives at 1500 (this includes rides at Agnew Meadow and on the River corridor). In the Final EIS, Alternative 2 – Modified designates Trails I-24 and I-25 as Trail Class 3.

Other Planning/Document Issues

Public Concern #78: *The Forest Service should allow people to help on the ground with the repair, relocation, and realignment of campsites and trails. If improvements or mitigation efforts are needed, there are a lot of people, including commercial pack operators who want to be of service. (response # 277)*

Response: The Forest Service currently utilizes many volunteer groups and organizations, including the Pacific Crest Trail Association, Sierra Club, American Hiking Society, Friends of the Inyo, Students Conservation Association, and the Eastern Sierra Backcountry Horseman to assist with trail maintenance, camp site relocation, logging out, brushing and general maintenance at trailheads. Packers are also required to help “log out” and repair trails prior to entering the wilderness in the spring.

Public Concern #79: *The Forest Service should address the issue of uncontrolled dogs in these wilderness areas (response # 346, 347)*

Response: This topic is outside the stated Purpose and Need (Chapter 1) and scope of this project.

Public Concern #80: *Noncommercial recreational pack stock should also be removed from the wilderness. Private stock is essentially unregulated. Private stock users are often untrained and unprepared for the task of handling and caring for stock in the mountains.*

Removing pack stock from the wilderness or reducing pack stock use might result in an increase in the number of backpackers. To realize the benefits of removing stock from the wilderness, measures must be taken to ensure that increases in other forms of recreational use does not result in increased negative impacts. (response # 392)

Response: Analysis of non-commercial pack stock is outside the scope of this document. As stated in the Purpose and Need (pg. I-1) this analysis responds to two needs: 1) establishing additional management controls for commercial pack stock operations, and 2) a trail plan that accurately identifies a system of trails for all users and appropriate trail management objectives.

Public Concern #81: *The FEIS should include a glossary and acronym list that describes and explains specific terms such as trail class, recreation category, spot trips, dunning trips, full service trips, service days, grazing night allocations, and properly functioning conditions. (response # 427)*

Response: The FEIS includes a glossary of terms.

Public Concern #82: *The FEIS should provide a one to two page comparative chart highlighting the differences between the impacts of each alternative on key resources and management issues. Include a comparison of the temporal, spatial, and intensity of effect of each alternative. For example, while Alternative 4 may reduce the spatial effects of commercial pack stock use, it could increase the intensity of adverse effects by concentrating use into smaller high use destinations. The goal should be to highlight environmental and management tradeoffs between alternatives. (response # 427)*

Response: Unfortunately, given the nature and complexity of the project it is difficult to summarize the effects of the (now) six alternatives in one or two pages. Table 2.25 at the end of Chapter 2 summarizes the effects of the six alternatives on the relevant resources analyzed in the document.

II. Alternatives

Alternatives, Components

Quota, General

Public Concern #83: *Commercial pack stock management quotas should include caps on both the total number of stock animals and the number of customers served. (response # form letter C)*

Response: This concept was analyzed in Alternative 3. For each trailhead quotas there was identified seasonal thresholds on stock and clients.

Public Concern #84: *No rationale and/or methodology is explained or referred to for the calculation of use levels and stock numbers which vary greatly from Alternatives 1 through 4. (response # 248)*

Response: The methodology for calculation of use levels in each alternative exists in the project record. The FEIS includes additional summary language in each of the alternatives' "Quota" section to help readers understand the differences between the alternative use levels. Alternative approaches generally respond to issues, which is how the DEIS attempted to explain the differences between the alternatives.

Public Concern #85: *There should be only one packstock group allowed per trailhead per day, with a limit of four clients, and eight horses/mules. The group can be either a day trip or overnight trip, with a limit of five days. They must carry in all their feed. (response # 316)*

Response: The DEIS/FEIS analyze a range of alternatives that propose a variety of mechanisms to control commercial pack stock use. The consequences of each of these are disclosed in the Environmental Consequences. There does not appear to be any rationale for the limits suggested above. The Preferred Alternative (Alternative 2 – Modified) proposes a destination quota system that regulates use on a very site-specific basis, which provides more direct internal controls than a daily trailhead quota. In addition, there would be daily and seasonal limits on the number of stock that could be used. The approach for managing pack stock suggested above does not meet the purpose and need for the project.

Public Concern #86: *Given the unused quota space over the last several years, it is obvious that demand does not exist at a high level for some commercial pack services. Quotas should be lowered to levels much nearer present levels. (response # 399)*

Response: Information on quota space ('quota availability') has been added to Chapter 3, "Wilderness Resource." This shows that quotas are filling at a similar rate for commercial quotas as non-commercial quotas. Quotas are in place as an overall regulator of capacity for the general public, while the commercial operator's capacity is regulated with service days (currently) and quotas act as a temporal control to reduce spikes in use. The various alternatives provide a range of commercial use levels and mechanisms to limit use. Alternative 4 proposes lower quotas where resource concerns exist. It should be pointed out that demand and use changes over time and the agency's objective with commercial use levels is to provide the level of commercial use that is necessary to meet the goals of the Act and preserve wilderness character. It is not the

objective (see Purpose and Need, Chapter 1) to reduce use to current need levels unless there is a resource need.

Public Concern #87: *Alternative 3 allows an option for “adjusting” allowed use downward if use is “low”. This is not reasonable - it is an outfitter/guide policy and should not be applied to Pack Stations. It does not account for economic trends, weather conditions or any myriad of factors. (response # 38, 355)*

Response: Alternative 3 does not have any direction to reduce stock and client thresholds simply because use is low or below the established thresholds. Any adjustments to the thresholds are based on an assessment by the Responsible Official regarding the condition of the resource conditions. “If any evaluation indicates that conditions do not meet standards and guidelines or desired conditions corrective actions including reduced thresholds, additional destination quotas and/or campsite or other site specific closures will be considered.” (DEIS pp. II-42)

Public Concern #88: *The Forest Service should not allow for the adjustment of quotas as is suggested on page 11-18 of the DEIS. There should be defined, effective limits on the seasonal and daily number of persons and stock animals, and effective controls (i.e., either daily trailhead quotas or daily destination quotas) to prevent spikes in use. (response # Form Letter C, 36, form letter B, 65, 196)*

Response: The analysis of this management direction is found in Chapter 4. The Final EIS improves this language to make it clear that proposed use levels are intended to be an estimate to reach certain conditions. Our emphasis is on the conditions, not the tool (quota) or mechanism.

Public Concern #89: *Pack Stations that merely pass through the John Muir and Ansel Adams Wilderness Areas without staying overnight or without dropping a party off as a spot camp should not have their use categorized as “overnight” as there is no overnight use taking place. No campsites are being used, no stock grazing or holding areas, and no firewood being used. It is merely day use of trails. (response # 428)*

Response: The classification of use as “overnight” was used when the allocation system is based on service days, as prescribed by the 2001 Wilderness Plan (ROD pg. 12) and the No Action, Alternatives 1 and 4 in the DEIS. With service days a certain number were allocated to “overnight” use as well as a specific number to day rides. However the Alternative 2 – Modified in the FEIS and Alternative 2 and 3 does not use service days as a use allocation method, so the classification no longer applies in these alternatives. The Selected Alternative implements a system of destination quotas. For trips passing through the John Muir and Ansel Adams into the National Parks, the number of trips, or other appropriate mechanism, will be set by the National Park Service. While it may be true that there are few impacts on the John Muir and Ansel Adams Wildernesses the impact will occur where the party does camp and the FEIS incorporates the appropriate direction in cooperation with the National Park Service to meet the objectives of both agencies.

Quota, Trailhead Quotas

Public Concern #90: *A separate quota should be established for each trailhead in the vicinity of any pack station that is specifically for commercial pack stations. For trailheads not frequently served by the pack stations, there should be another quota for all commercial users. (response # 428)*

Response: This approach is used in Alternative 3 (Chapter 2) and analyzed in Chapter 4.

Public Concern #91: *Non-commercial user quotas should be 95% reserveable and placed on the National Recreation Reservation System. First come, first served quotas are not fair to visitors from out-of-town. (response # 428)*

Response: Reservable quota and the National Recreation Reservation Contract are both outside the scope of NEPA and the Purpose and Need (Chapter 1).

Public Concern #92: *Trail Crest should not be considered an entry trailhead. Controls should be instituted on the uncontrolled, unlimited, and unregulated day use that currently tops 300 persons a day on the Mt. Whitney Trail. (response # 428)*

Response: Use entering Trail Crest comes through Sequoia and Kings Canyon National Park. The Park and Forest Service have indicated concerns with this use and determined management of it is important. Alternatives in Chapter 2 address these concerns by providing alternative approaches to a Trail Crest quota. Current levels of day use on the trail are outside the scope of this project and are not analyzed in the environmental document.

Public Concern #93: *Daily trailheads quotas should be implemented:*

- *To prevent “spikes” in use and overcrowding of popular areas. (response #Form Letter D, 33)*
- *To prevent overcrowding and in order to be fair to other users who have to abide by these quotas (response # form letter C, form letter E, 35, form letter B, 318, 399)*

Response: The FEIS presents various alternatives for managing commercial pack stock use, including daily trailhead quotas. Alternatives 1, 3, and 4 continue to use a quota system while Alternative 2 and the Alternative 2 – Modified use a destination quota method in place of the daily trailhead quotas.

Quota, Destination Quotas

Public Concern #94: *Some areas should be subject to destination quotas. Trailhead quotas will not be adequate to control use of some popular areas. The listed provision of trip limits for some areas is not sufficient protection. (response # 195, 277)*

Response: The effects of destination quotas and trailhead quotas are described and compared in Chapter 4 “Wilderness”. Chapter 4 analyzes the environmental effects of different control mechanisms (including trailhead and destination quotas).

Public Concern #95: *The Forest Service should give careful consideration and attention to the concept of destination management. Destination management can become a management tool which would provide a single focal point into which the myriad forms of restrictions or management contained in the DEIS can be integrated into a streamlined, destination specific form of site-specific management. (response # 325)*

Response: The Final EIS analyzes the environmental effects of destination a destination management approach to managing commercial pack stock. The concept has been incorporated into the selected alternative and the implementation /monitoring plan. The Record of Decision provides the rationale for adopting this approach.

Public Concern #96: *Destination quotas (Alternative 2) may ultimately be an excellent way to manage commercial use because they may allow the agency to more specifically target the areas of concern. However, trailhead quotas provide the value of freedom of movement. The unconfined nature of the wilderness experience is something to strive for in management as long as the behavior of the user is such that the resource is protected. There will be effects to Yosemite with either management direction. Trailhead quotas are consistent and generally preferred within the Central Sierra Wilderness Group due to the inherent flexibility and existing system, but the destination quotas may be a new and effective tool we should consider particularly with respect to commercial operations. (response #426)*

Response: The DEIS analyses both approaches to managing commercial pack station use. Daily trailhead quotas are a component of Alternatives 1, 3, and 4 while destination quotas form the basis for Alternative 2 and Alternative 2 – Modified. Destination quotas for Yosemite National Park have been removed in the selected alternative in the FEIS. Thresholds already set by the National Park Service (NPS) and included in the Incidental Business Permits issued to the commercial pack stock operators by the NPS are sufficient and there is no need for the Forest Service to interpret or duplicate them.

Public Concern #97: *Destination Quota – there is no impact when a party comes out of the mountain. Numbers should not be counted for stock just dropping people in the mountains nor should they be counted when picking up a party. There is no impact from this. (response #38)*

Response: There are impacts to the environment each time a group travels in the wilderness. Impacts to the trails are described in the Environment Consequences (DEIS pg. IV-30). Impacts to the wilderness character (opportunities for solitude; naturalness; undisturbed; and primitive and unconfined recreation (DEIS pg. IV-6)), also occur whether a party is traveling in or out of the wilderness, or is dropped off.

Public Concern #98: *Destination quotas should only be used in areas with no trailhead quotas. They should not be used in conjunction with trailhead quotas. (response # 428)*

Response: In Alternative 2, destination quotas replace both daily trailhead quotas and service days (p. II-17) for commercial pack stock operators. Destination quotas are not used in conjunction with daily trailhead quotas for commercial pack stock operators. In Alternatives 1 and 4 there are no destination quotas. In Alternative 3, destination quotas are implemented on a few sites (27 total) to provide site-specific management controls where daily trailhead quotas will not meet the desired objectives (p. IV-22)

Quota, Thresholds

Public Concern #99: *The proposed action relies heavily on thresholds. Implementation of the thresholds would require intensive efforts and a large investment of Forest Service staff time and resources at the end of each season. Any proposed reductions in thresholds would be vigorously contested by packers. Alternative 3 does not give any explanation on how thresholds have been determined. Thresholds would not be effective limits on use and should be abandoned. (response # 399)*

Response: Currently all pack stations are required under the annual operating plan to submit monthly, tally sheets of all use inside and outside the wilderness. The tally sheets record provide historical records to track use to monitor the threshold. Thresholds are another proposed tool to

monitor and control use in the wilderness. Alternative 2 – Modified (the Selected Alternative) does not include the threshold concept as outlined by Alternative 3.

Public Concern #100: *With regard to Seasonal thresholds - yearly assessments - this will be subjective and arbitrary. There are no guarantees that the public need will be met. It is also highly inefficient. (In Alt. 3 is borrowing still allowed?). The means for approving use is subjective. It would subject the clients of the Pack Station to the biases of various Forest personal, in the present or in the future. (response # 355)*

Response: These thresholds provide general guidance for total use in a season. Single quota trailheads will only have a seasonal stock threshold and will regulate number of clients through the daily trailhead quota (see DEIS, Chapter 2 C. Quota-trailhead Quotas). By utilizing the threshold, once packers meet their quotas, all trips will be discontinued. Packers will be responsible to monitor their operations and inform their clients of the possibility that they may not be able to complete their trip and another area will need to be selected.

Public Concern #101: *There should be no caps on the annual number of trips. There is no need to curtail trips in September or October, when use is generally far below the capacity of the area. (response # 428)*

Response: The packer will have the discretion to disperse trips throughout trailheads to prevent hitting the cap. Caps are also place in areas where evaluations have shown a need to control capacity to prevent resource damage and social impacts.

Primary Operating Areas

Public Concern #102: *The Forest Service should not implement the Primary Operating Area concept. (response # 38, 355)*

Response: Primary Operating areas will be deferred and developed when the pack station permits are reissued under the SUP EIS document. In the FEIS, destination areas will be analyzed.

Public Concern #103: *There are two major problems associated with the concept of POAs [Primary Operating Areas]. The first is that there is a potential to dramatically change the basic capital value for individual pack stations whose value was previously established through the purchase of a volume of use days. A restriction to a primary operating area which is not consistent with this level of use would have the effect of diminishing the value of the business asset through administrative regulation.*

The second problem relates to traveling trips. The MOU recognizes that there is a fundamental difference between traveling trips and spot and dunnage. A restrictive POA would compromise the viability of traveling trips or result in a significant concentration of use. As the DEIS indicates, traveling trips account for a smaller percentage of overall use than spot and dunnage trips. There are operators, including Frontier who have the ability and desire to offer this service to the public. Operators should have the flexibility to offer this service. We note that the discussion of POAs does not mention the use of such a management tool in connection with traveling trips and do not, therefore, believe that this is intended to apply to such trips. (response # 325)

Response: Identifying POA's will not restrict the operators from offering traveling or all expense trips to their clients. POA's could increase the value of the business once the packer can

show an area as part of the permit. The level of use allocated will be consistent with the historically recorded use by each pack station and not reduce use.

Under the DEIS Alternatives 2, 3, 4, traveling trips will not exclude packers from traveling outside the POA and, therefore, would not compromise the viability of traveling trips. Primarily spot and dunnage trips are directly affected by the DEIS.

Unassigned Trips

Public Concern #104: *We strongly oppose the proposal to allow five unassigned trips per year for each pack station (at II-17 & 18). These trips could occur essentially anywhere, at any time, presumably without specialist review, further NEPA analyses, or public involvement. The proposal would allow up to 100 commercial pack stock trips per season to areas in these wildernesses that have not been analyzed B and probably will not be analyzed or monitored in any meaningful way. Because commercial packers often hire young, inexperienced guides, and because the commercial outfits have a clear track record of disregard for wilderness protection regulations, the unassigned trips are likely to have significant adverse effects on the wilderness character. (response # 196, form letter D)*

Response: Alternative 2 – Modified (Selected Alternative) responds to this concern by not permitting “unassigned” trips. Unassigned trips are analyzed in the FEIS in Chapter 4, Wilderness for Alternative 2. While the analysis does indicate the difficulty in predicting the exact effects of unassigned trips, it is not entirely fair to make the assumption that commercial outfits have disregard for wilderness protection regulations.

Designated Stock Sites

Public Concern #105: *Loopholes render the proposed designation of stock camps ineffective. The DEIS proposes for Alternatives 2 and 3 that, (at p. II-33 and II-49), “All overnight holding of stock by commercial operators would only take place at a designated stock camp.” This key requirement would limit the magnitude and extent of stock impacts, and is long overdue. However, the proposal quickly adds loopholes that would render this direction essentially meaningless:*

If a stock camp has not been identified, and an operator requests use of an area where overnight holding of stock is needed, the Authorized Officer may approve that use. If an operator plans to use sites repeatedly through the term of the permit, the site should be approved and designed in accordance with the guidelines above. (DEIS at II-33 & II-49)

Despite the clear initial language (i.e., All overnight holding of stock by commercial operators must take place at a designated stock camp) exceptions can be obtained for overnight holding of stock anywhere and anytime as long as the operator receives approval from the Forest Service. There is no requirement for specialist review, NEPA analysis, or opportunity for public involvement as new sites are created and used as stock camps. There are no limits on the number of exceptions that may be granted, and no objective criteria to limit where or when such exceptions may be granted. Also, the words needed, repeatedly and should are undefined, open to wide interpretation, and essentially have no regulatory meaning at all.

In order for this proposed action to be meaningful, the provisions for exceptions must be removed, to require (with no exceptions) that all overnight holding of stock must occur at locations that have been: (1) evaluated and cleared by resource specialists, and (2) designated as stock camps in a public NEPA process.

Five years is too long to install BMPs at designated stock camps. It has long been known that stock holding areas pose the potential to cause significant nonpoint source water pollution. The Forest Service's own Best Management Practices Evaluation Program has shown backcountry stock holding areas to have among the lowest implementation and effectiveness scores of any nonpoint source pollution category. The DEIS states (at II-33 & II-49) that under Alternatives 2 and 3 the Forest Service and/or permittees will prevent nonpoint source water pollution from stock camps by installing Best Management Practices (BMPs) within five years of permit issuance (the BMPs are to include designated stock holding areas, designated access into and out of the camp, and other erosion control measures as needed). The Forest Service cannot legally put these problems off for up to five years. The DEIS (at B-13 to 15; Table 5) indicates that approximately 40% of commercial horsepacking campsites evaluated by the Forest Service have "substances entering water." These evaluations were begun in 2002 or earlier and little has been done to remedy these situations. The Forest Service must move more expeditiously to prevent water pollution from stock holding areas. (response # 196, form letter D)

Response: The Forest Service believes that placing the responsibility for approval of additionally requested stock camps with the Authorized Officer is appropriate. The Authorized Officer is bound by law, regulation, and policy to conduct an analysis appropriate to the magnitude of the request. The DEIS identifies the issue of allowing discretion for case-by-case decisions as non-significant (DEIS pg. I-10) since it is "conjectural and not supported by scientific or factual evidence." There is no evidence to suggest that future decisions would necessarily "lead to a deterioration of wilderness value and resources and an inconsistent approach to management overtime."

A five year target to implement BMPs at designated stock camps is appropriate. Table 5 (DEIS pg. B-13) does not differentiate proposed stock camps from campsites used for spot/dunnage, unknown uses or stock holding camps that are not proposed, so the percentage of proposed stock camps that have substances entering the water cannot be quoted from the data presented.

Public Concern #106: *Commercial packers should not be limited to designated sites*

- *Because according to the DEIS "impacts reach a peak with light to moderate use and beyond this point decreases significantly." (D-54) Much of any increased impact could be attributable to the increase in hiking activities, since pack stock use has actually decreased. Additionally, pack stock users have improved their methods for containing stock at camp sites, and have limited further deterioration of those sites. (D-55) By contrast, hikers will often seek new, untrammled sites on the edges of established camp sites in which to camp. Thus, attributing campsite degradation to pack stock appears to be misdirected. (response # 357)*
- *Because this is restrictive, demonstrate micromanagement of the forest and do not allow the public to visit the areas they choose. Flexibility and the freedom to travel within the wilderness are important values to the public, and are referred to in the Congressional Record for the Wilderness Act as being necessary for a wilderness visit. (response #34, 40, form letter F, 154, 281)*
- *Because designated campsites are terrible for the public and not consistent with the Wilderness Act. And the closure of camping from Third Recess to Second Recess is even worse than having a few camps. The Forest Service proposes a few designated campsites for Rock Creek Pack Station and fails to tell the public what that impact will have when they go to take a pack trip. (response # 275)*

Response: At the conclusion of this planning effort, the packers will be limited to existing established sites to prevent additional resource damage to the wilderness. The sites selected are sites historically used by packers and new sites are generally not necessary. Commercial pack stock use has been on the decrease for the last five years. The existing sites will accommodate the demands by the pack station and still provide additional sites for other users without adding pressure on the existing wilderness. There are no restrictions for foot travel off trails to visits the area they chose.

Public Concern #107: *To reduce the potential for user conflicts, the Forest Service should ensure that designated sites are adequately signed. (response # 198, 362)*

Response: The National outfitting/guiding regulation permits the Forest Service and the packers to post signs at the designated sites to inform the public that the site is under a fee for use (also known as Assigned Sites O/G Handbook p. IV-20 item V). The packer would have the right to request the other user to move to another site. In addition, more than one site will be identified in a geographic location to minimize the conflict of multiple users.

Public Concern #108: *The DEIS states that the designated campsites by alternative are as follows: Alternative 2 - 94 sites, Alternative 3 - 101 sites, and Alternative 4 - 59 sites (p. IV-116). The FEIS should provide the justification and rationale for the number and location of designated sites for each alternative. (response # 427)*

Response: The FEIS contains a range of alternatives to meet the purpose and need for the project. Imbedded in each alternative are specific components, including designated campsites. The components included in each alternative are generally developed to be consistent with the intent of the individual alternative. The effects of all the alternatives are analyzed and disclosed in Chapter 4 of the EIS.

Campfires, Restrict/Prohibit

Public Concern #109: *Commercial pack outfits should not be allowed to haul firewood into areas that are closed to campfires.*

- *Because this absurd proposal would constitute unfair favoritism to commercial businesses, it would result in increased impacts to trails and meadows (from the extra animals needed to haul firewood), it would invite abuses (i.e., packers would certainly use local firewood after their imported wood is gone, and other visitors would see the smoke/fires and think it's okay to build their own campfires). And, it would be impossible to enforce. (response #form letter C, form letter D, 33, 35, 36, form letter B, 65, 78, 97, 175, 209, 212, 230, 310, 318, 372, 390, 399, 406)*
- *Because this would set up a serious inequity perception, and confuse and compromise campfire regulations for other users. We are also concerned about the very disturbing potential of introducing pathogens and/or weed seeds by allowing wood to be imported. (response # 426)*
- *Because this practice would pose a myriad of problems and will not be allowed in SEKI. The practice takes significant risks with minimal rewards at best. By bringing in firewood, there is a risk of importing non-native, and potentially harmful, pathogens and materials, e.g. weed seeds. There is also a compliance issue in that coals/ashes may be dumped counter to instructions to remove these materials. We believe that ecological values should not be subservient to economic values. This practice would have other effects as well, including requiring additional stock to carry the wood/charcoal (which would increase impacts and costs to clients), the false*

impression that fires are allowed in what are supposed to be “closed” areas to other user groups, and the potential dissatisfaction of those other user groups who subject themselves to citations and may feel that a double-standard exists for the benefit of a commercial entity. On page D-37 of the DEIS, a US Forest Service policy states: “Where a choice must be made between wilderness values and visitor or any other activity, preserving the wilderness resource is the overriding value. Economy, convenience, commercial value, and comfort are not standards of management or use of wilderness.” We feel that the packing in of wood or charcoal is not in the best interest of preserving the wilderness resource and urge you to continue with the decision made in the 2001 Wilderness Management Plan to “Prohibit. . . packed in firewood, or fire pans within areas closed to wood campfires.” (response # 425)

- *The Forest Service should reconsider the decision providing an exemption for commercial pack stock operators to the elevation fire closure zone. The FEIS should describe the actual and perceived importance of campfires to clients’ experience of the wilderness. If exemptions to the elevation fire closure zone are provided, the FEIS should describe and commit to specific monitoring and mitigation measures to reduce potential adverse effects. (response # 427)*

All of these comments are from response #196

- *Because this apparent deference to political pressure by commercial outfits to weaken the campfire restrictions is inappropriate in light of the Ninth Circuit’s ruling in High Sierra Hikers v. Blackwell.*
- *Because the 2001 Wilderness Plan clearly stated the problems associated with allowing the packing in of charcoal or wood and to allow only gas stoves in the closed areas.*
- *Because the Forest Service should promote these wilderness areas for what they have to offer, not cater to incompatible desires and expectations of users.*
- *Because there is no valid reason to allow commercial outfits to have fires in areas that are closed to campfires.*
- *Because scientific research also clearly demonstrates that the Forest Service must ban campfires at high elevations in order to prevent significant adverse impacts to the environment.*
- *Because it would be nearly impossible to enforce a fire closure if commercial outfits were allowed to import firewood. In addition, campers who see the fires, smoke, and/or fire scars from imported wood or charcoal would be tempted to build their own fire, resulting in additional significant ongoing impacts.*
- *Because there is no evidence that the current campfire closure has caused lower elevation wood depletion.*
- *Because the full impact of allowing packers to bring in their own wood is not fully analyzed.*

Response: The inability of the packers to provide a desired service (campfires) to their clients was identified as an issue, and the determination of appropriate campfire limitations is part of the purpose of this analysis. The issue of inequity for users is addressed in Alternative 2 – Modified which allows any wilderness user to pack in charcoal and a fire pan and requires that the ashes be packed out. The use of charcoal would also eliminate the concern about weed or pathogen introduction. The environmental effects of the campfire policy are fully disclosed in Chapter 4 of the Final EIS.

Public Concern #110: *The elevational campfire closures established by the 2001 Wilderness Plan (i.e., 10,000 feet in the north; 10,400 feet in the south) are too high, and must be re-analyzed in light of the Ninth Circuit's ruling. Specifically, the Forest Service must regulate wood-gathering and campfire building by the commercial pack stock industry to fully protect the wilderness character. The Forest Service cannot continue to allow impairment of the wilderness character because commercial outfits desire to build campfires in areas where campfires are inappropriate.*

The inadequate campfire elevations established in the 2001 Wilderness Plan (i.e., 10,000 feet in the north; 10,400 feet in the south) were selected by the Forest Service based on political pressure exerted by the commercial pack stock businesses. (response #196)

Response: A range of alternatives has been analyzed in regards to campfire building. We do not believe the 9th Circuit ruling can be interpreted to include lowering the elevational closure based on an allegation that the 2001 elevations were selected based on pressure from the commercial pack stock business. The elevations were based on the approximate elevations of white bark pine forests.

Public Concern #111: *The Forest Service should consider dropping the fire closure to 8000' to 9000'. (response # 230)*

Public Concern #112: *Campfires should not be allowed anywhere in the wilderness (response # 316)*

Response: Consideration of campfires in general is outside the scope of the FEIS. The decision related to campfires and campfire closures was made in the 2001 Wilderness Plan (ROD pg. 4).

Campfires, Allow

Public Concern #113: *Campfires should be allowed above the current closure.*

Comment: *The firewood closure in areas where there is plenty of available and down firewood is wrong. A good alternative not discussed is to allow fires in those areas where the firewood is available. For example, the Tamarack/Dorothy Lake area has tremendous amounts of firewood available for campfires. However, the camping areas are between 10,000 and 10,400 ft. There should be alternatives that particular regions or lakes could have fires. The 10,000 ft fire closure for Tamarack and Mono Creek is inappropriate. This EIS should have shown the environmental consequences from the Fire Closure of 2002. Now camps are moving and there are all sorts of new impacts. (response # 275)*

Comment: *Campfires – All areas should be open to fire plans with charcoal. There are no other forests in the nation with this restrictive policy of no charcoal. In addition, there is no reason to not have a campfire as long as it is in a firepan, using packed in wood, and packing out the ash. It is all contained, everything is removed. This is highly desired by the public, and they should be allowed to have this option. (response #38)*

Comment: *There should be no elevational closures for campfires as this forces the public into concentrated areas leading to overuse and ultimately elimination of campsites. Mitigation measures can be used to allow contained campfires, including packing in wood, packing out ashes, and using fire pans. Campfires should be allowed in all areas with the mitigation measures in place where firewood is scarce. (response #34, 37, form letter F, 257)*

Comment: *Campfires are an important traditional aspect of the wilderness experience as well as a health and safety matter in a high elevation where nights and even days can be very cold. Campfires are a historical practice since the dawn of mankind and were in common usage when the Wilderness Act was enacted. Campfires are part of the wilderness character. If the area does not have sufficient firewood available, the visitor must be allowed to bring in fuel from elsewhere if they so choose. The elevational fire closures forest wide make no sense. The tree line is different in various basins and there are many avalanche slides with a jungle of fallen dead trees that can't be utilized and pose a fire danger, because of a no campfire regulation. Pack station customers have been shown to be in compliance with this regulation but backpackers are more difficult to regulate, and the majority are unaware of the regulations as evidenced by illegal campfire rings. (response # 198)*

Comment: *We believe that all wilderness users, regardless of their method of transportation should be able to enjoy the experience of a campfire if they are willing to pack in a fire pan and remove the resultant ashes. We strongly believe that management policies should not create categories or tiers of rights among wilderness users. Such disparities generate misunderstanding about what people can do and conflict between people who are subjected to different rules at the same location. We would propose that the campfire rules from the 2005 MOU be adopted. (response # 325).*

Response: The concerns of inequity for users, use of charcoal, and areas above the closure with adequate firewood are responded to in Alternative 2 – Modified. This alternative allows any wilderness user to pack in charcoal and a fire pan and requires that the ashes be packed out, and modifies the elevational boundary where adequate firewood is available. It also allows for some case by case exceptions for packers upon request, with established criteria for the approval process. Monitoring controls and responses are identified.

Group Size

Public Concern #114: *Group size should be lowered*

- *To no more than twelve animals should be allowed per group, maximum. (response #form letter D, 406)*
- *To ten animals per group, following the recommendations of the best available science. (response #form letter B, form letter C, form letter E, 35, 65)*
- *Because of the excessive manure, urine, and dusty conditions that large groups lead to. (response #30, form letter B, 78)*
- *Permanently to 12/20 limit on livestock party sizes to reduce environmental impact. (response # 175)*
- *To 15 animals. (response # 318)*

Public Concern #115: *Group size should be increased*

- *To accommodate the additional needs of handicapped individuals. (response # 188)*
- *To accommodate larger groups such as girl scouts, boy scouts, YMCA's, church organizations, youth groups, and large family reunions. (response # 355)*

Response to Public Concerns 114 & 115: Analysis of non-commercial pack stock group size limits is outside of the scope of this FEIS. In addition, the 2001 Wilderness Plan (FEIS pg. I-15) identified that consideration of party size limits was outside the scope of that planning effort: “Existing limits have been reviewed and determined sufficient for this planning effort.” In the FEIS, consideration of group sizes larger than the current limit of 15 people for clients of commercial pack stock operators would create an equity issue where some selected groups would enjoy privileges not afforded other users. Also, use data shows that with the current 15 person limit, only 7% of pack station trips exceed 12 people (DEIS pp. III-8, IV-14). There is no compelling reason to alter the upper limits that have been in effect throughout the entire central Sierra Nevada wildernesses for the past 15 years. Consequently, party sizes above the established 15 for commercial pack stock operators are outside the scope of the FEIS.

Public Concern #116: *The DEIS illegally fails to consider group sizes smaller than the court-ordered limits of 12 persons and 20 animals per group for commercial pack stock groups. There is no indication in the District Court’s rulings that it intended the Forest Service to limit its consideration of group size limits to 12/20 or larger, and there is every indication in the scientific literature that lower limits are needed to protect wilderness resources. During the scoping phase for this EIS, a large number of respondents asked the Forest Service to evaluate lower limits on group size for commercial pack stock. And our representatives made clear on several occasions throughout the process that the Forest Service must evaluate smaller group size limits as recommended by scientists.*

The DEIS is deficient because it fails to evaluate and disclose the impacts of allowing such large parties to use these wildernesses. Alternatives 1 through 4 are deficient and non-viable because they fail to evaluate or propose group size limits that will protect the wilderness character from significant impacts that have been documented in the record throughout this planning process. The scientific literature clearly indicates that group size limits for stock animals should be no larger than 10 in order to protect physical, biological, and social values (Cole 1989a, 1990; Watson et al. 1993). (response # 196)

Response: The Forest Service considered a reasonable range of alternatives (DEIS Ch 2) and displayed the environmental consequences of those various actions (DEIS Ch 4). Party size was identified as one of the significant issues (DEIS pg. I-8) and the indicator for that issue is “Locations where party size is less than wilderness-wide standard of 15 persons and 25 stock” (DEIS pg. I-8). Alternatives 1, 2, and 3 analyze a wilderness-wide party size of 15 persons and 25 head of stock, contrasted with Alternative 4, which analyzes 12 people and 20 head of stock, and Alternative 5 where no commercial stock would be allowed and party size not applicable. In Alternatives 2, 3 and 4 low use and low capacity site-specific locations are identified for less than the wilderness-wide party sizes. In Alternative 2 and 3 fifteen sites are identified with party sizes ranging from as low as 6 people/6 stock to 10 people/10 stock. In Alternative 4, 70% of the trailhead quotas would limit party size below the maximum of 12 people proposed in this alternative. The DEIS fully discloses the impacts of these actions for each alternative (DEIS pg. IV-19, 26).

Public Concern #117: *The DEIS is also inadequate in failing to consider that a lesser number of packstock is “necessary” today than in the day when 25 pack animals was deemed a reasonable upper limit (many years ago), because of recent significant reductions in the weight of necessary camping equipment and food. (response # 301)*

Response: see response to Public Concern #116

Permits

Public Concern #118: *All permits for outfitter/guide (O/G) operations within wilderness should be subject to the Forest Service's outfitter/guide regulations, and have a maximum term of ten years. The Forest Service has signaled that it is considering issuance of long-term resort permits for commercial pack stock enterprises that operate in these wildernesses. Resort permits are not appropriate for most/all of these operations because most/all pack stations are not a complex of enterprises, but are instead a single enterprise: stock packing. The base facilities (improvements) for the majority of these operations are not significant. They tend to have a few rustic cabins/shacks, corrals, hitching rails, loading docks, and trailers. They are not resorts as defined by Forest Service policy and regulations. (response # 36, 196, form letter B, form letter D)*

Response: Decisions regarding the appropriate type of permit and term are outside the scope of this EIS, which does not include the type or term of permits authorizing use. The scope of this analysis is displayed in the DEIS (pg. I-7).

Public Concern #119: *Commercial packers should not be allowed to write their own permits (response #97)*

Response: No alternative allows for the packers to write their own permits. This decision was made in the 2001 Wilderness Plan and is not subject to reconsideration (see Purpose and Need – Chapter 1).

Public Concern #120: *Commercial packers' permits should be phased out as they expire, allowing owners and employees an economic transition. (response # 171)*

Response: Decisions regarding reissuance and administration of the Special Use Permits that authorize commercial pack stock use are outside the scope of this analysis. The scope of this analysis is displayed in the DEIS (pg. I-7).

Public Concern #121: *Commercial packers should be liable to citation and made to clean up their messes left behind; requiring records of where trips went and when camps were used would allow post hoc assessment of how particular packers treat the wilderness. (response # 305)*

Response: Commercial pack stock operators are required to prepare detailed reports of their use within the wilderness and the “reports will include as a minimum: number of clients, number of employees, number of stock, trailhead entry, trailhead exit, destinations of the service provided, stock or designated camps used and grazing activity by grazing zone or meadow” (DEIS pg. II-4). This direction is common to all alternatives. In addition, all wilderness permits will be written by the Forest Service (or designated contractor), thereby, providing an independent crosscheck on the packer reports.

Public Concern #122: *The Forest Service should/should not issue resort special use permits to commercial pack stock operators.*

Comment: *Pack Stations operate with “Resort Special Use Permits” from the Forest Service. These permits recognize the substantial investment made by individuals to provide service to the public. With regard to controls or allocation methods Pack Stations should be treated like other Resort Special Use Permits nationwide, where the permit holders are encouraged to operate as long as possible to make the best use of the public lands. (response # form letter F)*

Comment: Term Special Use Resort Permits are not given their due anywhere in the document. Pack Stations continue to be considered as outfitter guide permittees when this is clearly not the case. We believe this leads to numerous errors and faulty conclusions. (response # 355)

Comment: The Forest Service should be strongly encouraged to utilize national standards of 'allocation' for this type of Permit - use can be limited by limiting the number of livestock allowed by the Permit. In this case, a business can balance cost with demand. (response # 355)

Comment: The pack station permits are resort permits, different from O/G permits, yet much O/G administration methodology etc. is applied to them incorrectly and adversely. These term permits, often 20 year terms allowing 365 days of use, if available due to natural land conditions etc.. were traditionally renewed under the authority of NEPA using the categorical exclusion method. (response # 311)

Response: Decisions regarding the appropriate type of permit and term are outside the scope of this EIS, which does not include the type or term of permits authorizing use. The scope of this analysis is displayed in the DEIS (pg. I-7). The mechanisms presented in each of the alternatives comply with current policies regarding commercial pack stock management within the wilderness. The 2001 Court Order specifically ruled out Categorical Exclusions in reissuing Special Use Permits for pack stations operating in wilderness and "determined that in authorizing the special use permits for the pack stations, the Forest Service failed to adequately document environmental impacts as required by NEPA (DEIS pg. I-1)."

Drift Fences

Public Concern #123: *The Forest Service should allow/remove drift fences in the wilderness.*

Comment: *All of the drift fences in the John Muir and Ansel Adams exist primarily for the convenience of the commercial packers. All of the drift fences should be removed. (response #form letter D, form letter B)*

Comment: *Existing drift fences should remain in place and be maintained. These fences are effective tools for stock and meadow management and have the ability to minimize conflicts among users. The Forest Service should have more drift fences and should let the public know the advantages. Fails to be an adequate document without offering the various options. (response # 325, 275)*

Response: The six alternatives provide various strategies for the management of drift fences in the wilderness (see FEIS, Chapter 2, Table 2.34 for a comparison of these strategies). The FEIS also contains an analysis of these strategies.

Sanding of Passes

Public Concern #124: *The Forest Service should not permit the sanding of passes.*

Comment: *Some specific aspects that we [Sequoia and Kings Canyon National Park] do not support are: The practice of "sanding." This activity poses several risks, including the introduction of materials to areas where they are not found, and the potential for excavation of materials from "borrow" areas. In other words it is not environmentally sound to bring in outside material or to "borrow" and displace local material to simply speed up accessibility. (response # 425)*

Comment: *Proposals in the DEIS to allow sanding of snowbound passes will irreparably harm the wilderness resource and character and are unacceptable.*

There are myriad significant negative impacts associated with sanding snowbound trails. Sanding facilitates earlier access to system or use trails and destinations beyond the snow blockage that are still either very wet from snow runoff or have other snow blockages. The DEIS also recognizes that importing sanding material, [C]ould possibly be a source of weed seed introduction.

An additional concern is that the Inyo National Forest has authorized the caching of sand in wilderness by commercial horsepackers in the past (i.e. sand is cached in the fall for use the following spring). Caches in wilderness are in violation of the Wilderness Act (16 U.S.C. 1133c) and inconsistent with the direction in the Forest Service Handbook.

Given the known adverse effects, the Forest Service can only conclude that the practice of sanding (or manuring) trails would create significant adverse effects on the environment. And given the negative impacts associated with sanding, and that the practice of introducing foreign material into wilderness for the convenience and economic benefit of commercial operators is antithetical to the Wilderness Act, the Forest Service should not permit the sanding of any trails, as in Alternative 4. (response # 196)

Public Concern #125: *IV-122 it says that passes would be allowed to be sanded are Piute and Pine Creek. Almost all passes will be sanded in the John Muir and Ansel Adams Wildernesses. Sanding reduces erosion because hikers follow the sand.*

Sanding is a traditional practice and has been used for over a hundred years and is necessary for livestock use in the Sierra. (response # 275)

Response: In the FEIS selected alternative, access over passes – including the use of sanding and/or shoveling, is governed by certain criteria at destination camps, use trails, and system trails, in addition to range readiness standards.

Day Rides

Public Concern #126: *The Forest Service should reduce or eliminate day rides in the wilderness*

Comment: *In Alternative 4, eliminate “day rides” in the wilderness. Commercial day use of wilderness resources adds to excessive trailhead area congestion and resource impact (including dust). Day rides should be accommodated outside wilderness; it seems only prudent to allow overnight commercial activity only. (response #form letter B, Form letter C, form letter E, 310)*

Comment: *The Forest Service should not allow day rides to increase above current levels. The USFS should expand horse riding opportunities outside of wilderness areas, and decrease or eliminate day rides in these wildernesses to reduce dust, trail erosion, and crowding on trails. (response #33, 35, 318,)*

Comment: *All limits on commercial outfitter use of these wilderness areas must include the impacts of day rides. Day rides must be included in outfitter use limits. (response #36)*

Comment: *Day rides should be limited to ten animals. (response # 194)*

Comment: *Alternatives 2 and 3 propose a substantial increase in the day ride allocation for commercial pack stations. There is no accurate data available on day rides historically, a deficiency identified in the 2001 Wilderness Plan ROD (at p. 15).*

There is no rationale given in the DEIS for substantially increasing the day ride allocations in Alternatives 2 and 3, by 39% and 34% respectively. The DEIS also fails to disclose the non-wilderness day ride allocations and recent use data for the numerous operations that provide that service. For example, the 2003 operating plans for Frontier Pack Train and Mammoth Lakes Pack Outfits allocate 1,850 and 7,000 non-wilderness day ride service days, respectively. There is no justification, aside from economic benefit to the commercial pack stations, for increasing the number of day rides in these wilderness areas, as most of these rides are of short duration and are not wilderness-dependent. We believe that most people take these rides because they want to ride a horse, and not because they want to visit the wilderness. Wilderness day rides are thus not necessary, and should be reduced or eliminated, and the Forest Service should strive to provide day-ride opportunities outside of these wildernesses.

The DEIS contains little discussion of the impacts associated with day rides. In discussing Alternative 1, it does state, “Opportunities for solitude will not be high in first six miles from trailheads. . . .” (p. IV-15) However, the DEIS fails to disclose that day rides would be a major factor; day rides occur predominantly, if not entirely, within the first six miles of a trailhead. Furthermore, the DEIS does not express this same concern with Alternatives 2 and 3, which would both substantially increase the day ride allocations compared to Alternative 1. The DEIS must analyze and fully disclose the impacts associated with the proposed day ride allocations in each of the alternatives.

The DEIS fails to evaluate the impacts to trail condition of increasing day rides, and it fails to evaluate the increases in dust (a human health concern) in the heavily used trailhead areas. The only two legal approaches to this issue would be to eliminate day rides, or to reduce day rides in these wildernesses to those that are truly necessary under the Wilderness Act. Day rides could be increased outside of the wildernesses to provide horse rides for those who want them, and to provide replacement income for the commercial outfits. (response # 196)

Response: The 2001 Wilderness Plan Needs Assessment identified that the general public does not possess the skills or equipment/stock to day ride in the wilderness. Day riding is a proper wilderness activity. As general public use trends change (2001 Wilderness Plan Appendix D-12, E) towards shorter duration outings, there is increased interest in day ride services. The Forest Service is of the opinion that a large segment of pack station clientele are aware of designated wilderness and wish to experience the wilderness from horseback. A team of resource specialists assessed the amount of day ride activities by alternative looking at many different aspects including current trail condition, risk factors, maintenance considerations, resource impacts and past use reports.

Day use is proposed in Chapter 2 and varies by alternative. Day use is described and environmental consequences are disclosed and compared in Chapter 4.

The comment regarding appropriate levels and types of use is an opinion. The analysis of use levels in the DEIS/FEIS focuses on the conditions or effects of the use levels, as much, if not more, than the use levels themselves. Use levels themselves are arguably more of a social/experiential consideration and in that regard they are considered. But the analysis of use levels is directed towards specific and identifiable effects on the resources. The Forest

Supervisor's Record of Decision describes the rationale in making the final determination of use levels standards and guidelines for commercial pack stock operations.

Spot/Dunnage Trips

Public Concern #127: *Return trips by outfitters to pick up guests that they previously dropped off must be also included in the limits. (response #345)*

Response: Return trips for spot and dunnage are included in Alternative 2 and Alternative 2 – Modified. They are not considered when using trailhead quota mechanisms for managing use. This difference is covered in the analysis and comparison of alternatives (Chapter 4 – Wilderness).

Grazing (grazing comments are in the vegetation section)

Recreational Categories

Public Concern #128: *The Forest Service should not implement the Recreation Categories concept*

- *Because the concept of zoning in the recreation categories is not in the Wilderness Act. Wilderness is to be managed as wilderness or a primitive area and not divided up into many little zones with different regulations about who can be there and under what circumstances. (response # form letter A and F, 34, 275, 355)*
- *Because any deliberate use concentration should be made because it is consistent with appropriate site specific destination management. Beyond this, all members of the public should have free access to the wilderness. (response # 325)*
- *Because the provisions of the Wilderness Act are meant to apply to the entire wilderness. Of the three categories of desired conditions described, only the first would be likely to maintain natural conditions in the wilderness. Wilderness values will not be protected in the Category 3 zones. (response # 392)*

Response: The three Recreation Categories were established in the 2001 Wilderness Plan (ROD pg. 3). Reconsideration of Recreation Categories is outside the scope of this FEIS, which deals with the allocation of use to commercial pack stock operators and trail management in these wildernesses. Alternative 3 does propose some minor adjustments to Recreation Category classifications as a result of field visits by the Interdisciplinary Team. In those Analysis Units changes proposed better match ground conditions with Recreation Category objectives.

Range of Alternatives

Public Concern #129: *The DEIS does not contain a range of alternative capable of complying with the Wilderness Act. Alternatives 1 (implementation of the 2001 Wilderness Plan), 2 (June 2004 Proposed Action), and 3 (Forest Supervisors' currently "favored" action) all would be illegal because they would violate the Wilderness Act's mandate to preserve the wilderness character of the John Muir and Ansel Adams Wildernesses.*

The Proposed Action (Alternative 2) and the "favored" alternative (Alternative 3) would allow substantial increases in commercial pack stock uses, and are so full of loopholes, invalid assumptions, and long-discredited practices that, on whole, the current Wilderness Plan would

be substantially weakened, and the wilderness character would be significantly degraded. The record shows very clearly that current levels of commercial pack stock uses are degrading the wilderness character in the John Muir and Ansel Adams Wildernesses, and Alternatives 2 and 3 in the DEIS would allow for significant, even substantial further growth of these commercial enterprises. The appeals court, in High Sierra Hikers v. Blackwell, has already ruled that such outcomes would be illegal.

These radically irresponsible proposals (Alternatives 2 and 3) are not even suitable as “fringe” alternatives, let alone preferred alternatives. Because they would not adequately protect the wilderness character to meet the mandates of the Wilderness Act, these alternatives should not have been evaluated in detail in this DEIS. In sum, the Forest Service must scrap both of these alternatives, and honestly evaluate a range of reasonable alternatives that can at least minimally meet the mandates of the Wilderness Act to preserve the wilderness character. The Forest Service should develop a range of reasonable alternatives, and re-circulate another Draft EIS for public review. (response # 196)

Response: We believe the four action alternatives (Alternatives 2, 3, 4, and 5) in the DEIS adequately respond to a reasonable range of alternatives. The Final EIS includes another alternative, a modified version of Alternative 2. The range of alternatives and scope of analysis is determined by the Purpose and Need (Chapter 1) and to look at lower use levels and party size than Alternative 4 (or 5) would be beyond the reasonable analysis expected from NEPA. The stated position related to appropriate levels and types of use reflect opinions. The analysis of use levels in the DEIS/FEIS focuses on the conditions or effects of the use levels, as much, if not more, than the use levels themselves. Use levels themselves are arguably more of a social/experiential consideration and in that regard they are considered. But the analysis of use levels is directed towards specific and identifiable effects on the resources. The Forest Supervisor’s Record of Decision considers the legal requirements of the Wilderness Act in making the final determination of use levels standards and guidelines for commercial pack stock operations.

Public Concern #130: *The DEIS does not contain an adequate range of alternatives because the Forest Service fails to provide an alternative that optimizes the public the opportunity to enjoy the wilderness with livestock in a manner that is consistent with the Wilderness Act.*

Congress passed the Wilderness Act for many reasons. A significant goal is to allow man to travel in the mountains for days on end to experience land not significantly altered by man’s modern civilization. Our wilderness areas, and for those of us in California, the John Muir and Ansel Adams Wildernesses, provide us the land so that we may experience the thrill and exhilaration of those original explorers who traveled in the West in the 1800’s. Native Americans had the good fortune to live everyday in that environment before the European migrants forced them off their land.

The Forest Service fails to provide an alternative that allows the wilderness traveler to have freedom of movement and to travel in the wilderness in a manner that Congress intended when passing the Wilderness Act. Alternatives 1-5 fail to adequately give the public an option that permits wilderness travel consistent with the values of the Wilderness Act. A separate and new, Alternative 6 needs to be proposed that relies on primarily external controls and uses site specific management to provide resource protection. (response #275)

Response: An analysis of the effects of internal versus external controls is found in the Wilderness section of Chapter 4. This information is used by the decision-maker to select a management direction that responds to resource protection and visitor access. The analysis has addressed these issues in Chapter 4.

Public Concern #131: *The DEIS does not contain an adequate range of alternatives because the DEIS fails to consider an alternative which is consistent with the protection and devotion of the area to historical uses such as pack and saddle stock and also considers alternatives which are inconsistent with this goal. In addition, the DEIS fails to consider alternatives which propose and evaluate variations to the Forest Service's draft National Trail Management Classes. Given the significance and very concrete impact with these trail management classes will have on the Wilderness Areas, this failure constitutes a violation of law. (response # 401)*

Response: In response to various comments, Trail Class definitions in the FEIS have been slightly modified and clarified to better meet the intended travel management of trails in the AA/JM Wildernesses. These definitions rely on the concepts of the Draft National Trail Classes and the Draft National Design Parameters so that they should be consistent with any future final national Forest Service concepts. The definitions are designed to be specific as to how the Inyo and Sierra National Forests intend to manage trails in these areas.

Public Concern #132: *The DEIS should analyze an alternative that requires that all users travel with a commercial provider, as this will provide the highest level of environmental protection. (response # 428)*

Response: Under the National Environmental Policy Act (NEPA), environmental analyses must consider a range of alternatives that address the significant issues and meet the need for the proposed action. The alternative suggested by the commenter does not meet the purpose and need and is outside the scope of the project. Further, this alternative is not consistent with the Wilderness Act which limits commercial services in the wilderness to the extent necessary for realizing the purposes of the Act.

Alternatives, General/Multiple Alternatives

Public Concern #133: *I believe strongly that the Eastern High Sierra Packers Association's Alternative should be included and analyzed in the Final EIS. (response # 248)*

Response: The Eastern High Sierra Packers Association's alternative was reviewed and considered; however, it was not evaluated in detail, as it was determined it does not meet the Purpose and Need (Chapter 1).

Public Concern #134: *Action alternatives are made up of discrete management elements including destination quotas, daily and seasonal quotas on stock and people, trailhead quotas, trail class and use designations, grazing use levels, campfire closures, and campsite locations. The criteria used for determining the parameters of the elements of each alternative is not well described in the DEIS. For example, the reason for allowing trail sanding on only one pass in Alternative 2, while it is unrestricted in Alternative 3, is not provided.*

The FEIS should describe each management element, its role in the use authorization action, and the environmental effects of the specific element. For instance, describe each type of quota and the likely effect of the specific quota on operator use patterns and operations, client experience,

and on-the-ground impacts. Describe how the parameters of each element in each alternative were developed and chosen. Also explain how internal and external use controls affect use patterns and environmental effects. (response # 427)

Response: The effects of the alternatives, including the effectiveness of internal versus external controls are discussed in some detail in the Wilderness section of Chapter 4. The rationale for why certain elements are in each alternative has been improved in the final EIS. This is not a requirement of NEPA; however, we felt given the complexity of the alternatives, there should be a limited explanation of rationale. The selected alternative (Alternative 2 – Modified), complete with the rationale, is found in the Record of Decision.

Public Concern #135: *The Forest Service should/should not implement a certain alternative.*

Comment: *We cannot recommend or urge adoption of any of the five alternatives. Four and five are absolutely NO. But we find unacceptable provisions in the other three including the Forest Service preferred alternative #2. A plan that would permit and support the continued availability of commercial pack stock operations in the Sierra to service the public who desires and needs their services is the only acceptable action. In the Needs Assessment portion, the writer does conclude that there is a need for commercial pack stations, that it is legal in the Wilderness Act and that it is appropriate. Perhaps a new alternative of the best and least discriminatory aspects of 1, 2, and 3 could be crafted together. (response # 198)*

Comment: *Alternatives 1, 2 and 3 are totally unacceptable as these drafts allow a large increase in commercial pack stock use as compared to present levels. Pack stock use causes documented impacts to the resource far exceeding that which is caused by muscle powered wilderness compatible recreation. The Forest Service must decrease wilderness use by commercial pack stock and mitigate the documented impacts caused by these activities. (response #form letter B, form letter D, 25, form letter B)*

Comment: *I strongly favor modified versions of either Alternative 5 or Alternative 4. Given that horses can have more erosional impact than motorcycles (Wilson, J. P., and J. P. Seney. 1994. Erosional impact of hikers, horses, motorcycles, and off-road bikes on mountain trails in Montana. Mountain Research and Development 14:77-88), stock use in all but a few exceptional circumstances should be prohibited immediately rather than phased out slowly, although I understand that the political realities may require more gradual change. Ongoing exceptions to the ban might include rescue operations, Forest Service work (especially trail maintenance work), and disabled access. These uses are likely to require a low and limited level of use, unlike able-bodied parties paying commercial outfits for special privileges while pummeling the trail and littering it with feces. (response # 367)*

Response: As directed by NEPA, the DEIS and FEIS analyze a range of alternatives with various effects that respond to the significant issues (DEIS pg I-7). The Responsible Officials have selected the alternative they believe best fulfills the Purpose and Need of this planning effort. Comments that state a position for or against a specific alternative are appreciated as this gives the Forest Service a sense of the public's feeling and beliefs about a proposed course of action. Such information can only be used by the Responsible Officials in arriving at a decision and not for improving the environmental analysis or documentation.

It should be noted that the selected alternative (Alternative 2 – Modified) draws on many of the elements of Alternative 2, utilizing the conclusions of needed commercial operations from the Needs Assessment with an articulation of the extent needed in the Record of Decision.

The effects of stock and hiker use on trails are described in the Environmental Consequences section of the DEIS (p. IV-30)

Alternative 1

Public Concern #136: *The DEIS is flawed in its characterization of the environmental impacts of Alternative 1, the implementation of the existing Wilderness Plan (i.e., no action alternative). The DEIS consistently presents arguments that attempt to discredit the existing Wilderness Management Plan, in favor of management direction in Alternatives 2 and 3 that would be even less protective. We in no way endorse Alternative 1 or the existing Wilderness Plan, indeed we appealed many aspects of it. But, we wish to point out this pattern in the DEIS of discrediting the existing Wilderness Plan, while the true implications of the management actions proposed in Alternatives 2 and 3 are never adequately analyzed or disclosed in an objective manner. (response # 196)*

Response: An explanation of the No Action is included in the beginning of the description of Alternative 1 in Chapter 2. The purpose of the No Action alternative is to provide a baseline from which to compare alternatives. We choose to describe the No Action in terms of “status quo,” disclosing that all the potential management direction from the 2001 Wilderness Plan has not yet occurred due to the intervention of the court and limited resources to achieve the court order and implement all aspects of plan implementation. This is not to say that we had never any intention to implement the plan. It is merely a description of what is the status quo. The No Action Alternative is a required alternative and provides the baseline to compare the alternatives to.

Public Concern #137: *Alternative 1 should be implemented:*

- *For the following reasons: a) alternative 2 and above are so restrictive that they will completely remove the opportunity to travel to little used areas. b) The reduction in travel opportunities will require the commercial packers to raise rates to the point it will be impossible to afford to employ a packer. c) Any other alternative will financially eliminate commercial packers from the Sierras. d) The elimination of the commercial packers will make it impossible to make an extended stay camp experience. (response # 363)*
- *With some site-specific controls. (response # 168)*
- *With no reductions in issuing permits. (response # 423)*

Response: The DEIS and FEIS analyze a range of alternatives with various effects that respond to the significant issues (DEIS pg I-7) as directed by NEPA. Various comments on the DEIS express support for one alternative or another. Comments that state a position for or against a specific alternative are appreciated as this gives the Forest Service a sense of the public’s feeling and beliefs about a proposed course of action. Such information can only be used by the Responsible Officials in arriving at a decision and not for improving the environmental analysis or documentation.

- *Because Alternative 1 represents the current level of mitigation and subsequent restriction on commercial pack stock operations in the Ansel Adams and John Muir Wilderness. This status quo, which represents an increase in restriction of commercial pack stock operations over historical activity levels, is the result of a previous environmental analysis performed in 2001 during the development of the Ansel Adams, John Muir and Dinkey Lakes Wilderness Plan Environmental Impact Statement. The Board believes that the 2001 analysis and subsequent mitigation accomplished its purpose. Of the alternatives presented the Board is supportive of Alternative 1, however, it is important that all concerns identified in this letter are addressed in whatever alternative is developed. The Board believes the additional restrictions to commercial pack stock operations, as proposed by the remaining alternatives outlined in the DEIS, to be unnecessary. These additional restrictions would result in significant economic impacts to commercial pack stock activity, an important historical and cultural pastime and a healthy segment of the local economy. Such impacts to the local economy could also result in a significant "ripple effect," thereby negatively affecting the county economy as a whole and impacting individual livelihoods outside the commercial pack stock industry and tourist economy of Inyo County. (response # 354)*

Response: Comment noted. The economic effects of each alternative are disclosed in the Final EIS.

- *Because the Snow Survey Program depends on having sufficient access to conduct these field observations. Summer and fall access is actually more critical than in winter because that is when we can perform infrastructure maintenance on our electronic and manual data collection sites. To that end, we are generally not in agreement with increasingly restrictive limitations on livestock and helicopter use which could adversely affect timely and feasible access to our data collection sites. We favor the "No Action" alternative in the absence of assurances that reasonable and feasible access for our program activities is safeguarded. We have observed through the years that there is a trend in wilderness management that "ratchets" in favor of restrictions, but does not allow for any loosening of restrictions if justified by objective criteria. (response #15)*

Response: None of the alternatives presented would affect access for the Snow Survey Program. Access to infrastructure would be considered administrative use and not subject to the management controls placed on public use of the pack stations. Helicopter use is outside the scope of the FEIS, and current policies are not affected.

Alternative 2

Public Concern #138: *Alternative 2 would allow a substantial increase in commercial pack stock use, and it would eliminate the existing caps on commercial pack stock use. The proposal to eliminate current service day limits and trailhead quotas in favor of quotas on the number of trips is radical, untested, unproven, and unlikely to succeed. Furthermore, the quotas on number of trips are proposed at levels that would allow a significant growth in commercial pack stock use.*

We strongly oppose the proposal to eliminate trailhead quotas and service day limits for commercial pack stock outfits operating in these wildernesses, as proposed in Alternative 2. The trailhead quotas are needed to prevent spikes in use that were identified by the 2001 FEIS (and

the district court) as being a significant concern. The service day limits are needed to ensure that the number of commercially supported wilderness visitors does not increase over time.

Elimination of service day limits would also cause many indirect problems. For example, certain provisions in the outfitter/guide regulations (i.e., Forest Service Special Uses Handbook) regarding service days may no longer apply if service days are eliminated.

The proposed quotas on number of trips per season would allow a substantial increase in commercial pack stock use compared to recent levels. The DEIS does not include a disclosure or credible analysis that compares Alternative 2's commercial pack stock regulatory scheme with past use. (response # 196)

Response: Alternative 2 and the FEIS selected Alternative 2 – Modified both use a destination quota to limit the number of trips. Our analysis shows that it is the number of stock, more than the number of visitors that contributes to the environmental concerns brought forward by the District Court. While we do not believe Alternative 2 – Modified will substantially increase use, we have identified a need for that level of use (Appendix D) that is consistent with maintaining wilderness character in these wilderness. Both the Record of Decision and Chapter 4 of the Final EIS contain an analysis of the effects of Alternative 2 – Modified on wilderness character. It is our conclusion that environmental and social concerns are significantly and sufficiently mitigated by limits on number of trips to destinations and that this mechanism, along with the other regulatory mechanisms in the alternative allow for a level of use that both meets identified need and preserves wilderness character.

Public Concern #139: *Alternative 2 should not be implemented:*

- *Because it seems to be very restrictive to the operator and users of commercial pack stock. This is a very bureaucratic alternative that will be difficult to enforce, monitor, and implement. (response #40)*
- *Because it has not been shown that the changes proposed in this alternative will reverse the downward trend of meadows, watercourses, trails, and campsites utilized by stock. There are no definite limits on stock in this alternative. It appears as though an increase (even a considerable increase) in stock numbers and resulting resource damage (at particular locations) seems possible under this alternative. (response # 392)*

Response: See response to Public Concern #137.

Alternative 3

Public Concern #140: *Alternative 3 should be modified:*

- *So that there will not be a financial incentive for the packers to add unneeded animals to our type of trip. It seems to me that it would be in the interest of the forest to limit the number of animals required for a given number of users. The seasonal client limit in Alternative 3 may lead to the same problem that the Service Days have: groups with small numbers of stock are placed at a disadvantage. I encourage you to simplify the complex system in Alternative 3. (response #13)*
- *By removing the seasonal client threshold from all trails, not just those with single quotas. Although I recognize that people also have an environmental impact, the seasonal client quotas*

seem redundant and entirely unnecessary when group size limits, trailhead quotas, and destination trip quotas are in place to limit the number of people entering the wilderness. In Alternative 3, some trails have daily trailhead quotas that are less than the group size limit. This Alternative does not discuss whether split quotas will be permitted on these trails. I urge you to permit this practice. Since the management plan is concerned with the impacts of pack stock, the plan that is adopted should encourage more trips with low numbers of stock and fewer trips using large numbers of stock with few people. (response # 333)

Response: Comments that state a position for or against a specific alternative are appreciated as this gives the Forest Service a sense of the public's feeling and beliefs about a proposed course of actions. Such information can only be used by the Responsible Officials in arriving at a decision and not for improving the environmental analysis or documentation.

The practice of split quotas would continue in all alternatives except for Alternative 4, unchanged from its current application.

Direction regarding application of the Client and Stock Thresholds in Alternative 3 is described in the DEIS pg. II-42. "At the conclusion of each season actual use will be compared to the established thresholds. If thresholds are reached or exceeded, the responsible officer will make an assessment of the causative factors and potential resource implications. If conditions are within standard (sic) and guidelines, the responsible officer can allow the threshold to be raised with definitive monitoring goals and objectives identified. If any evaluation indicates that conditions do not meet standards and guidelines ore desired conditions corrective actions including reduced thresholds, additional destination quotas and/or campsite or other site specific closures will be considered." Quotas, on the other hand, are limits that cannot be exceeded.

Public Concern #141: *Alternative 3 should/ should not be implemented.*

Comment: *Alternative 3 should not be implemented:*

- *Because it will only allow increased degradation of the wilderness by profiteering commercial outfitters. (response #30)*
- *Because it will allow a substantial increase in commercial pack stock on the trails and it would fail to address the many impacts of commercial pack stock on the trails and pathways of our wilderness areas. The alternative does not set an upper limit on the number of commercial pack trips in the wilderness and increases the group size from 20 animals per trip to 25. (response #33, 36, 145, 166, 179, 230, 396)*
- *Because implementation of the alternative is left to the judgment of the Forest Supervisors who will be expected to rely on future studies and evaluations which may not even occur (response # 166)*

Comment: *Alternative 3 should be implemented:*

- *With the camping restrictions of Alternative 1. (response #40)*

Because it seems to represent a fair compromise, employing trailhead quotas, combined with a limited number of destination quotas, depending on local conditions. We presume that quotas would be altered season-to-season, as a result of monitoring. (response # 175).

Response: See response to Public Concern #137.

Public Concern #142: *Alternative 3 would allow a substantial increase in commercial pack stock use, and eliminate the existing caps on commercial horsepacking use. In this alternative, service days would be eliminated and replaced with non-binding thresholds on commercial stock numbers and clients, which are characterized in the DEIS (at II-42) as general guidance. Besides no longer mandating any binding cap on use, the principal significance of this change is that instead of a service day cap that applies to a particular pack station, the seasonal thresholds apply to particular trailheads, which may apply to multiple packstations. Elimination of service days would have the same adverse effects as described above for Alternative 2. Further, the DEIS does not make a credible attempt to compare the proposed guidance thresholds to historical levels of use, or to the existing service day allocations. Such a comparison is difficult to make, as some destinations in the interior of the planning area may be accessed from multiple trailheads, and by multiple packstations.*

Alternative 3 apparently relies on setting client threshold guidance that exceeds average historical use by an even greater percentage (an average of 73% for these six trailheads) than the stock threshold (32%). But, given that these thresholds are non-binding, and that the allocations are substantially inflated compared to past use, it is not likely that they will result in any limitation on use, either to the number of clients, or the number of stock. (response # 196)

Response: The respondent's comparison uses a mean of three years of data, and two years are at reduced use levels, and then uses the mean to compare proposed stock numbers which indicates a considerable increase. First, this is misleading, as the mean is not a valid approach to measure increases. But more importantly, the objective of the proposed management direction is to manage stock impacts, not to "hold the impacts static." In addition, the objective is to improve conditions where they need to be improved and manage for a range of settings and experiences and conditions that is consistent with the purposes of wilderness and the desired conditions established in the 2001 Wilderness Plan. It is misleading and simplistic to assume that simply an amount of stock relates directly to an amount of impact and that maintaining use maintains a condition. Our selected alternative employs many tools to achieve goals and conditions, and stock controls are only one of the tools we are using to manage for conditions.

Public Concern #143: *There is no explanation in the DEIS as to how the daily quotas and seasonal thresholds are determined and whether any objective criteria are used in calculating these limits. Also, despite the assurance on page IV-27 of the DEIS that impacts to new areas will be reduced over the short and long-term some experts maintain that these impacts to new areas are the most serious impacts. (response # 392)*

Response: See the response to Public Concern #134 above regarding rationale and justification. We have provided more rationale for the derivation of quotas and thresholds in each of the alternatives in the FEIS.

Alternative 4

Public Concern # 144: *Alternative 4 should/should not be implemented.*

Comment: *Alternative 4 should be implemented:*

- *Because this alternative better limits the number of pack stock and impact to the environment (response #153, 305, 313)*

- *Because it follows the letter and spirit of the Wilderness Act. Wilderness belongs to all Americans, and commercial users should not have the right to excessively impact it. (response #110)*

Comment: *Alternative 4 should not implemented*

- *Because it is too restrictive and it reduces service levels (response #40)*

Response: See response to Public Concern #137.

Public Concern # 145: *Alternative 4 should be modified:*

- *With changes to better protect these magnificent wilderness areas. In particular, Alternative 4 needs limits on stock numbers, lower group size limits for stock, fewer (or no) day rides (to protect trailhead areas from overcrowding and trail deterioration), later grazing start dates (to protect meadows and lakeshores from trampling damage), lower “service day” allocations for pack outfits (to address chronic resource impacts), and lower campfire elevations for commercial outfits (i.e., 9,600 feet north and 10,000 feet south, with no exceptions) to protect soil and vegetation. (response #form letter D, form letter G, form letter B, 100, 299, 306 328, 359, 360, 367, 368, 369, 378, 381, 389, 391, 393, 394, 395, 400, 406, 409, 414, 422)*
- *By decreasing the “service day” allocations for pack stock outfitters (from current levels). Allocations for both the number of commercial participants (including crew) and pack stock must be lowered to a level that does not impair the wilderness resource. (response #form letter B, form letter D, form letter E, 36)*
- *By setting clear upper limits on the total number of stock animals that may be used in a group. 25 is too many as is 20. Grazing start dates must be changed to better reflect the cycles of the environment. There are months when soil and lakesides are more vulnerable. High elevation campsites should not have campfires as they are quite fragile and cinder piles leave an ugly mark upon the landscape. Trails without the infrastructure and capacity for stock animals should not be used for stock animals. (response #25)*
- *With maximum allocation numbers identified. An allocation ceiling must be identified for both commercial participants (including crew) and pack stock. Both people and livestock impact the resource, and both must have an identifiable use limit. The identified allocation maximums must protect the wilderness from impairment. Wilderness as a resource should not be sacrificed for the profit margin of commercial activities in wilderness. Identifying maximum use limits assures that the resource will be protected while still allowing commercial Activities. Daily use limits must be established. Commercial activities must be limited by a maximum daily use limit to decrease weekend and holiday crowding. This is only fair as such limits apply to the general public who do not use commercial services. (response #form letter B)*
- *With changes to strictly limit stock numbers and the places they go. One head of stock for two people is adequate in the wilderness; for a group of six, a decent maximum that is three mules, six horses to ride if they must and one for the packers, ten head of stock (response #93)*
- *By reducing the current limit of 20 animals per group. (response #145)*
- *With no increase in use above prevent levels. This includes present day rides groups, size of overnight parties (both customers and stock animals), daily trailhead quotas (like those imposed on backpackers), no campfires where fires are not presently allowed, and no stock cross-country*

travel. There are also good reasons to lower items such as party size and trail quotas. (response #98)

- By reducing the service day allocation to address degradation of the wilderness character that has occurred, and is occurring (and being exacerbated) by current levels of commercial pack stock use. The DEIS incorrectly assumes that the service day allocations proposed in Alt. 4 represent a reduction in actual use. The DEIS fails to acknowledge that the service day allocations in Alt. 4 would result in significant growth (approximately 36% growth) of commercial pack stock enterprises over time, and it fails to acknowledge the resulting impacts associated with that growth;

Add controls on the number of stock, not just people. The DEIS identifies the following concern with Alternative 4: "With a reduction in people serviced and controls on people, not stock, there is a potential for stock numbers to increase. (IV-27)." The obvious remedy for this concern is to limit the number of stock animals, as well as people. This is the only way to achieve the goal of reducing the stock/client ratio, which would optimize the number of commercial pack stock-supported visitors that could visit the wildernesses, for a given level of impact;

Allocate commercial horsepacker service day allocations by type of service (i.e., spot, dunnage, full-service, day ride, re-supply). Each type of service impacts the resource and wilderness character to a different extent. Thus, the most effective means to manage these impacts would be to establish limits for each type of service;

The Forest Service must take a more conscientious and reasonable approach to the approval of user trails. Scientists have long recommended that stock animals should not be allowed to travel off of designated, maintained trails, except in rare cases where site-specific environmental analyses demonstrate that a specific route can be open to stock use without increasing erosion rates or otherwise adversely affecting the wilderness character. Yet the Forest Service simply approved most of the off-trail travel routes requested by the commercial packers, without even surveying the routes and surrounding environmental conditions. (This is a clear violation of the District Court's injunction, which required the Forest Service to follow specified criteria for approving off-trail use by commercial packstock. One of those criteria is that such routes must be existing, visible trails;

Reduce the elevational campfire closures to 9,600 and 10,00 [sic] feet north and south of the San Joaquin River, respectively, with no exceptions;

Reduce the group size limits for travel on designated trails to maximum 12 persons-per-group, maximum 10 stock animals-per-group, and for off-trail (cross-country) travel a maximum of 8 persons-per-group, with no stock animals allowed off-trail, except for grazing at approved forage areas;

Eliminate day rides within the wilderness areas;

Alternative 4 lowers some commercial trailhead quotas so that many are less than 15 on major trails and does not allow split quotas (borrowing). This latter provision removes a loophole that allowed large groups to gain access to a low use/quota trailhead by seeking the services of a commercial packer.

Without these modifications to Alternative 4, it fails to preserve the wilderness character. (response # 196)

- *By reducing the commercial packstock service days to eliminate day rides, eliminate 1-way dunnage trips, and eliminate full-service trips for all but truly disabled folks. (These just aren't necessary. Focus necessary commercial stock use on spot/dunnage trips to allow wilderness access for people who can't hike or carry a pack; such trips are the lowest impact); reduce the maximum group size limit for commercial outfits to 12 persons and 20 heartbeats, maximum (on designated system trails), with 8 persons and zero stock animals off of system trails; include limits on stock days to prevent commercial stock use from increasing over time; do something to require dogs to be under control. (I am so tired of being harassed by dogs on Forest Service lands. Take a look at the rule in the Emigrant Wilderness, which is a good, fair approach); lower the campfire elevation to 9,600 feet (north) and 10,000 feet (south) to be more consistent with the surrounding parks & protect high-elevation ecosystems. (The existing fire elevations are bogus & were established based more on politics than wilderness protection); remove all drift fences from the wilderness. (They're just for packers' convenience, and aren't necessary); come up with a more realistic plan for regulating grazing (i.e., don't allow grazing where stock can drift into sensitive "closed" areas).*

Maybe if you do these things you will regain the public trust as well as make progress toward proper wilderness stewardship. Alternatives 1-3 are bankrupt bad ideas and/or business as usual. It's time for the Forest Service to rein in the packers, take control, and make some decisions that protect the wilderness character, instead of the commercial packers' wallets.

Oh, and by the way, the idea of allowing packers to haul firewood into closed areas is ridiculous. It's unenforceable. They won't follow the rules. You'll have on-going problems forever. Just forget about granting special exceptions to the commercial outfits. It won't work, and it's not fair. (response # 346)

Response: These suggestions for modifying Alternative 4 are addresses in Chapter 2 of the FEIS in *Alternatives Considered, but Eliminated from Detailed Analysis*. This alternative was not considered in detail because we believe that merely reducing commercial services to arbitrary levels below Alternative 4 does not demonstrate a corresponding improvement to the condition of the wilderness and justify the draconian reduction in public access to these wilderness areas. In effect, "Modified Alternative 4" is the same as Alternative 5 in that the severe restrictions proposed for this alternative would likely result in a number of the commercial operators going out of business and quite possibly the eventual elimination of commercial packing services in these wilderness areas.

Alternative 5

Public Concern # 146: *The Forest Service should/should not implement Alternative 5.*

Comment: *The Forest Service should implement Alternative 5.*

- *Until the agency can regain its regulatory independence and, by protecting wilderness for future generations, serve the public. (response #100)*
- *Because given the dishonest treatment of history, the clear bias in favor of commercial companies, the poor analysis, and the generally useless nature of the document to allow a true understanding of the current situation, Alternative 5 is the only alternative that will address the ongoing harm being caused by these companies. (response #105)*

- *Because of the negative impacts related to pack trains. (response # 319, 353, 356, 371)*
- *In a manner that phases the pack stock operations out over a couple generations as these operations are usually family-owned. (response # 396)*
- *Because Alternative 5 is the only alternative that is in accord with the purpose of the proposed action and the requirements of the Wilderness Act. (response # 392)*

Comment: *The Forest Service should not implement Alternative 5.*

- *Because stock has always been a part of the wilderness. (response #40)*
- *Because the Forest Service has shown a need for these services in the Needs Assessment (response #277)*
- *Because there is nothing in the DEIS that would support this draconian alternative (response #277)*
- *Because closing down commercial pack operations is not appropriate. I think that the Forest Service should continue to work with the parties involved including the packers, find areas of concern, and do what's needed to mitigate those concerns in order to come to an agreed upon solution. (response #44)*
- *Because it is unnecessarily draconian. With proper limits, it seems that pack stock led by responsible commercial outfits can be accommodated in the wilderness along with those entering on foot. (response #145)*

Response: See response to Public Concern #137.

Public Concern # 147: *The DEIS's evaluation of Alternative 5 does not have rational validity. In discussing Alternative 5, the DEIS states that, "Campsites will likely not improve since they will continue to receive use and impacts have already taken place. Only with additional management would campsite rehabilitation, containment, and improvement to the site take place. It is likely that without the commercial use, this work would have less of a chance of getting done, whereas if commercial use were to continue the improvements to campsites, access, size and proximity to water would occur under Alternatives 2, 3 and 4." (IV-29) These statements do not make sense. Conditions at campsites would improve significantly without the holding of stock, etc., as the sites recover over time. And there is no valid reason to conclude that campsite rehabilitation would be more likely to take place if commercial pack stock impacts continued to degrade them. (response # 196)*

Response: Research does indicate that once an impact reaches a point, unless there is significant mitigation, the impact will persist and recovery will be very slow. Specifically, forested environments where soils has been severely compacted, will take some time to recover regardless of use. Sites that have moisture and do not get continued use, may recover quicker. But the campsites that commercial pack stock has frequently used will continue to get use from backpackers, private stock, just at a lower use level.

Public Concern #148: *In discussing Alternative 5, the DEIS states that, "It is also possible that with the removal of stock there may be an increase in backpackers. Those hikers and backpackers that have avoided areas where pack stock use is high may plan more trips than they currently do." Thus the Forest Service acknowledges that current levels of commercial stock use displace noncommercial visitors. However, they inaccurately portray the situation, in that there*

cannot be an increase in backpackers without an adjustment to the non-outfitted trailhead quota. Alternative 5 does not provide for re-allocating the excess capacity formerly used by commercial operators to the non-outfitted public, which has a demonstrated need and demand for it. Thus, the DEIS omits a significant implication of Alternative 5, and fails to disclose its true impact to the public. (response # 196)

Response: It is correct to say that Alternative 5 does not provide for re-allocating the commercial pack stock use. There is no indication that the non-outfitted public has demonstrated a need and demand for additional use or that capacities have been reached. Chapter 3 shows the number of days non commercial quotas are being filled, which do not show that many days are currently filled (one exception is the North Fork of Lone Pine which is a hiker only and the commercial quota is non pack stock). And, even if quotas are being filled, it does not constitute a need to raise the quota just to meet demand, as the ultimate objective is to preserve wilderness character which includes environmental and social considerations. The alternative does not address future public allocations, primarily because the purpose of this alternative is to demonstrate the effects of eliminating this user group, not replacing that use with additional non-public use of a different kind. It is not even considered a reasonably foreseeable action in this alternative to increase the non-public use, since, as stated above, there is not a significant demand for that use.

III. Environmental Consequences

Commercial Pack Station Operations

General

Public Concern #149: *The Forest Service should encourage packstock operators to invest in and use lightweight equipment that reduces the number of packstock required and the consequent environmental effects. (response # 399)*

Response: The Forest Service does encourage the packstock operators to invest in lightweight equipment, and other minimum impact techniques, as required of the *Annual Operating Plan, Appendix E, Resource Protection/Leave No Trace Practices for Stock Management*, and is considered part of the administration of the special use permits. The Forest Service also encourages permittees to view the video *Caring for the Land, Stockpacking in the Sierra* for minimum impact stock use in the wilderness and to attend Leave No Trace, Stock Masters training.

Public Concern #150: *The Forest Service should not micromanage commercial pack stock campsites, campfires, and grazing. (response #32)*

Response: The Forest Service is engaging in site-specific management of wilderness resources, not commercial pack stock. The site-specific nature of the destination management strategy allows the agency to pinpoint resource concerns and apply the appropriate measures to remedy the problem.

Public Concern #151: *Packers should be required to use dung-catchers on their animals and to pack out their excrement. (response # 318)*

Response: The use of dung-catchers is not practical, nor safe, for the animals on steep mountainous terrain. The Forest Service does not consider this a practical means of operations, nor is it identified as a significant resource issue.

Public Concern #152: *The pack trains should stop at the wilderness border. The commercial outfitters should be given an additional permit only when they can show proof that they went out and spent a week repairing damage to trails, meadows, streams and trees that they caused. That seems fair—one week of repair for each new permit and no access to areas designated as Wilderness. (response #12)*

Response: As demonstrated in the Needs Assessment and the analysis in the Final EIS, commercial packing is a legitimate use in these wilderness areas. It should also be noted that commercial packers already assist with trail maintenance.

Public Concern #153: *If the Forest Service is serious about reducing the stock/client ratio, then they should propose a real mechanism for doing so. Currently, the billing practices of commercial packstations, whereby clients are charged based on the number of employees and pack stock utilized, favor maximizing the stock/client ratio. Commercial horsepacking is not operated in the same way as a freight-hauling business, where the hauler charges based on the*

quantity of freight, and the hauler has an incentive to minimize the amount of equipment used and maximize its efficiency. (response #196)

Response: Forest Service did consider and evaluate control mechanisms that directly or indirectly affect business practices and number of stock used by pack stations. However, control mechanisms were generally designed to protect wilderness resources and not specially to provide “incentive to minimize the amount of equipment used and maximize its efficiency.”

Public Concern #154: *The DEIS does not adequately disclose the effects to operations including: (all comments from response #275)*

- *Sawmill Pass will be closed to commercial stock. Essentially wipes the option away in the future for pack stock to take a trip into Kings Canyon. And, the way the alternatives are written, commercial pack stock probably won't be able to exit either.*

Response: Based on the Table 2.3.1, page II-85, DEIS, Alternative 1 proposes the Sawmill Pass trail as trail class 3. Alternatives 2 and 3 designate the Sawmill Pass trail as trail class 2. Both designations allow access by commercial stock. Alternative 4 proposes trail class 1, “Not suitable for Commercial Stock.” All trails were assessed using various standards by the Interdisciplinary Team. The Forest Service understands this difference in opinion and considered this comment while developing the FEIS.

- *Red's Meadow Pack Station won't be able to originate trips and head south on the Muir Trail. No allocation for stock headed on the John Muir Trail from Red's Meadow.*

Response: This was an omission in the DEIS and will be corrected in the FEIS.

- *Operating areas will give each operator a monopoly. Rock Creek Pack Station will not have the ability to operate trips on the John Muir Trail. Possibly 2 trips per year from Rock Creek to Yosemite. Who is going to get to do those trips?*

Response: Alternative 2 – Modified has removed the concept of operating areas.

- *Stops most traveling trips. The document does not disclose that campsites on Mono Creek where you can graze and have a nice camp have been closed. There isn't enough grazing to support less than three or four trips per year;*

Response: Traveling trips will be allowed. It will be the pack station's responsibility to work within the decision parameters.

- *Grazing going from Mono Creek to the Fish Creek area has been closed off; Once you get to Fish Creek area you can't spend more than one night since there is a one night stay (essentially won't be able to fish any of the lakes unless it is a spot trip).*

Response: comment noted

- *Cost of any traveling outfitted trip will increase significantly. The document indicates cost will increase 25%. The document does not disclose that with only two trips a year, the cost will rise to the highest bidder.*

Response: The Economics section of Chapter 4 discloses that there is potential for the cost of some trips to increase as a result of new restrictions and regulations. Exactly how expensive these trips will become is somewhat speculative.

- *Hiking with stock trips will be unable to go down the Muir/PCT trail because of designated campsite and controlling operating plan areas.*

Response: The DEIS analyzed campsites, as identified by the packers. The Forests believe enough campsites will be designated in appropriate places to allow hiking with pack support to continue. If clients wish to stay at a site that has not been designated as a stock camp, the stock and staff can continue on or return to the designated stock camp.

- *Alternatives 2 and 4 substantially increase wilderness use for dunnage and spot trips. The Wilderness Act was supported and promoted to protect the continuous traveling trips like the Sierra Club trips.*

Response: The agency's interpretation of the Wilderness Act does not include this contention that the Act was passed to protect traveling trips.

- *The trail system in Hilton Lakes and Tamarack Area has been closed. (response # 275)*

Response: Although commercial pack stock use is managed, the trail system in the Hilton Lakes and Tamarack Area has not been closed.

Public Concern #155: *The DEIS does not describe existing environmental conditions at the Pack Stock Stations. Nor does the DEIS evaluate potential environmental effects of these Pack Stock Stations or the effect of commercial pack stock use authorizations on the environmental conditions at the Pack Stock Stations. The FEIS should include a description of existing conditions at Pack Stock Stations, especially those located on Forest Service land. Evaluate the potential environmental effects of action alternatives and use authorization on existing conditions. For example, describe existing conditions and potential effects of reduced or increased use authorization on water quality, meadow conditions, and threatened and endangered species habitat at Pack Stock Stations locations. (response # 427)*

Response: Analysis of the pack station operations and facilities not in the Ansel Adams and John Muir Wilderness are outside the scope of this EIS. The scope of the analysis is displayed in the DEIS (pg. I-7). Impacts at the base stations and in areas outside the AA and JM will be appropriately considered in the analysis to reissue the authorizing Special Use Permit for the entire pack station operations.

Operations, Llamas

Public Concern #156: *The Forest Service should not be allocating use to llama operators.*

Comment: *There is no historical precedent and llamas are not part of the historical pack stock use nor are they heritage resources of this John Muir Wilderness, nor the Inyo and Sierra National Forests' trails, and use. Why is this proposal even included in the document? Why take use from our established pack stations that are suffering from the 2001 Wilderness Plan and Court ordered reductions. This particular llama user has illegally used the Inyo and Sierra National Forests and Sequoia/Kings Canyon with no permit. Even after operating illegally, the operation is assigned twice as many service days than an established, legal outfit such as Sequoia Kings Canyon Pack Outfit. (response #279)*

Comment: *Llamas have a greater impact on the landscape compared to mules; for example, they can't carry as much weight, tend to browse brush and trees and transmit diseases to Bighorn Sheep. (response # 311)*

Comment: *IV-20 Chapter IV - third paragraph to say that 500 more service days for commercial llamas will have no additional effect on resources is wrong.*

It is the duty of the Forest Service to state what the impacts of llamas and 500 more service days of people will have on the environment.

- 1. Where do the llamas graze?*
- 2. What is the impact on llamas on water quality?*
- 3. Which areas of the wilderness will llama groups travel to in the wilderness.*

One needs to look at the impact of commercial llama parties because the llamas traditionally only go five to seven miles per day. That means that llamas in the Rock Creek area will be going to Little Lakes Valley, Hilton and Ruby Lake if they are going over Mono Pass.

And, by allowing llama packers to compete with the commercial quota of a regular packer you will have commercial mule and horse packers utilizing other areas that they wouldn't have used prior to competition with llama trips.

Llamas are a new use and inconsistent with the Wilderness Act. It is a new use and the needs assessment in the EIS for the John Muir and Ansel Adams Wilderness area fails to show they are needed. (response # 275)

Comment: *The USFS proposes to add llamas to the trail and allot high use levels to them. There has been little demonstrated need for llamas and it appears as though the agency is creating demand where none currently exists. (response # 279)*

Response: The 2001 Wilderness Plan identified a need for a small amount of llama packing services in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. Alternative 2 – Modified modifies that direction by reducing the allocation from 500 to 250 service days from the 2001 Plan.

Pack Station Specific Comments

Cottonwood

All comments are from response #38

Quota

Public Concern #157: *Alternative 2, Quota: While I disagree with this type of regulation completely, I will comment on the specifics: 50 trips to Cottonwood – one spot trip has always been considered “a trip.” It was never thought of as two trips. Further, since I am limited to 25 round trips, I will be forced to take only spot trips (since I can rent more stock on this, with clients riding and all clients taking at least one pack mule). Also, I will be forced to sell as many as all-expense trips as I can. This makes no sense! It discriminates against the dunnage trips/hikers who want help carrying their gear. This is just reworded service days will the same problems.*

Response: The number of trips assigned was determined using the packer reported use in recent years. Reported use summaries are part of the planning record. Reported two way spot and dunnage trips were split out as two trips, in and out, in the analysis data. Hence, the high reported reflects a two way service as two trips. Refer to table in App B. of the FEIS, page B-1, Table 1 Pack Stations Use by Analysis Unit for summary of reported use.

Spot and dunnage services are considered separate and have a separate allocation of trips from all expense services. Although it is possible to wait for large parties, or for spot trips instead of dunnage, it is probably not practical or probable from a business standpoint. But, the more important point is that this is the same level of use that has been occurring. If currently businesses are not waiting for larger groups or spot instead of dunnage, it is likely that will not start happening with a different mechanism, however monitoring and adaptive strategies are built into this alternative in order to respond to unintended consequences or unacceptable impacts.

Public Concern #158: *Alternative 2, Quota: Trail Crest – 10 trips – what does this mean? What if the trips are continuous hire? The EHSPA MOU agreed there would not be a limiting number on one way dunnage where the clients hiked over Trail Crest.*

Response: The ten trips identified for Trail Crest include one-way services provided, including spot or dunnage, where the client hikes out to the Whitney Portal unguided by the pack station.

The allocation of 10 trips for Trail Crest reflects the Wilderness Plan established reservable quota of 25. Chapter 2, Alternatives 2 and 3 propose a maximum of 10 trips. This use is analyzed in Chapter 4. There are relevant issues raised by Sequoia Kings National Park that affected the selected alternative quota. The EHSPA MOU does not direct the decision.

Public Concern #159: *Alternative 2, Quota: Seasonal and Daily Stock Limits: 35/day; 300 season: this is an unreasonable number. If I had to use 35 head/day – this would be less than 75 clients round trip (when you include packer horse) – there is no way I can maintain a viable business with this number. It could mean less than 50 people per season based on the number of stock/party and the necessary packers needed. This is unworkable, with 300 head of livestock per season, I could hit my quota in less than 9 days of operation.*

Response: Stock numbers per day and season were determined using recent reported use data which is part of the planning record. Refer to the table in Appendix B., page B-1 for a summary of use in the Cottonwood Analysis Unit. The high stock use reported into the John Muir Wilderness was 296 in 2001. Based on historic use patterns, it is unlikely that use will be maximized as described. This analysis considers use only in the John Muir Wilderness. Service provided into the Golden Trout Wilderness is a large component of Cottonwood Pack Station's total business. Comment noted and considered in developing the FEIS.

Public Concern #160: *Alternative 3, Quota: There is no way with a 300 seasonal stock that I can accommodate 200 clients. In reality, the client threshold is less than 75 (when packer stock are counted). To overlay this with 15 daily quota is overly restrictive. This is flawed math. I cannot remain viable with this kind of restricted number. It is apparent that the only type of wilderness user the Forest Service desires us to cater to is the backpacker/hiker.*

Response: Reported use data for the Cottonwood Lakes Basin is part of the planning record. Stock numbers per day and season were determined using reported use data. Refer to table in Appendix B., page B-1. Forest Service considered this comment when developing the FEIS.

Trails

Public Concern #161: *South Fork Cottonwood Creek, Ref #148 – there is no reason to close this trail, especially if I want to use it for day and ½ day rides to make a loop trip. This trail is not user created – it was built by a Forest Service crew, it has rock structures and layout. It was rumored to have been built about the same time as New Army Pass by the Army Corps of Engineers. It was the main trail to Lower South Fork Lake and Cirque Lake.*

Response: Some segments of this trail show some very simple trail structures, and it is likely that some basic design was incorporated at one time; however parts of the trail are located in some sensitive areas with risk factors, and would be hard to maintain under recurring use. If this route were used frequently as a loop trail—either for day rides or for traveling between South Fork Meadow camps and the Cirque Lake and Cottonwood Lakes Trail—it would need to be maintained at a much higher level to maintain stability. The Cottonwood Lakes Trail is a well-built and maintained trail which accesses the same destinations, so access to these areas is provided on a stable route.

Public Concern #162: *UT 140 and UT 141 – This should not be closed. Nobody camps here. This is very necessary for my ½ day and all day rides. This is where fisherman like to be dropped off. If these trails are closed, the fisherman and hiker will still be there. Fish and Game’s employees spawn fish in these lakes and this will continue. Chapter 4 claims that these trails should be closed to reduce foot traffic around the lake, closing the trail to commercial stock will not change this. This is discrimination.*

Response: The Cottonwood Lakes System Trail provides access to the outlet of Lake 4 and Lake 5, where clients can be dropped for angling. UT 140 is a trail that leads to and along the back sides (west shores) of Lakes 4 & 5. Clients can still walk this trail, but commercial pack and saddle stock will be prohibited.

System trails or approved use trails provide access to the same destinations that UT 141 would, along Lake 2 and Lake 3. The location of UT 141 on the map may be in error, as no stock-used route is visible west of Lake 2. In either case, the use trail duplicates access with system trails.

Day Rides

Public Concern #163: *There should not be any limit on day rides as long as there is no limit on day hikers. 200 is the number used in Alternative 2 for Cottonwood. While that number is workable, there should not be a number. Alternative 3, day rides: There should be no numbers counted on day rides. This is discriminatory. While 200 is a nice number (better than 41), it is unreasonable to limit this use. The service is supplied to visitors in Lone Pine, there will never be an overuse. There is no reason for this number and it restricts my ability to maintain a viable business as day rides provide needed cash flow especially as wilderness use is restricted.*

Response: This EIS is concerned with disclosing the environmental effects of commercial pack stock not day hikers. The day ride allocations in Alternative 2 and Alternative 3 represent the average day use over the last three years. Alternative 2 – Modified (the selected alternative) does not include a specific limit on day rides, but rather relies upon a total number of stock in the wilderness cap to provide maximum flexibility to the commercial operator.

Designated Camping

Public Concern #164: *Camping Limitation: My historic camp at Muir Lake has always been at the east end of the lake. This is my historic all-expense camp. There is a trail to this camp, it should be mitigated to allow this use as I have very few options. The public does not desire to stay at the west side camps. Many hiking groups use the camp as the east end.*

Response: The selected alternative does not limit access to historic pack stock camps on the east at Muir Lake, II-37. The current route to the camp has some resource concerns and risk factors, so access will be allowed via a designated alternative route. If no practical alternative exists, some stabilization of the current route may occur.

Public Concern #165: *The DEIS does not adequately disclose the implications of allocating several more trips-per-year to SEKI, and several trips to locations in the planning area for which there are no records of permitted historical use.*

Alternatives 1, 2, 3, and 4 would allocate overnight service days to Muir Trail Ranch for the first time, despite stated concerns about resource impacts, overlapping operators, and conflicts with other wilderness users. There has never been an official allocation of overnight service days for the Muir Trail Ranch, which the DEIS fails to acknowledge.

We are adamantly opposed to any overnight service day allocation to Muir Trail Ranch. The Florence Trailhead, from which Muir Trail Ranch operates, was assigned a resource rating of Red-Yellow in the 2001 Wilderness Plan. (response # 196)

Response: The current permit for Muir Trail Ranch authorizes a total of 319 service days of use consistent with the 2001 Wilderness Plan allocation. Prior to this permit, they had been authorized a total of 500 service days. The use recorded for the “high two” as shown in the 2001 Wilderness Plan was recorded by the permittee as day use. This was based on the definition found in the Outfitter-Guide Administration Guidebook which states that day use is “Outfitting and guiding involving no overnight use of National Forest System Land.” Muir Trail Ranch has guided clients to the SEKI Park for many years. Although the clients remained in the park overnight, it was still recorded as day use because the park was not National Forest System Land and they did not spend the night on the Forest. However, under the 2001 Wilderness Plan this same use was defined as Packstock Supported Overnight Use. Based on this new definition the use into SEKI should have been converted to Packstock Supported Overnight Use in the 2001 Wilderness Plan. It was not changed because the Sierra NF was either not aware or did not understand the difference in definitions. This is corrected in the DEIS – Alternative 1 by splitting their current 319 service days between day rides (184) and overnight use (135). The total service days have not changed and this merely brings the Muir Trail Ranch service day allocations into alignment with current definitions. These mistakes were discovered when the 2001 Wilderness Plan was implemented in 2002.

Use figures based on tally sheets for Muir Trail Ranch show the following totals: 2001 was 185 day rides with one trip to Evolution Valley in SEKI for 2 service days with 3 head of stock (This trip in 2001 was prior to implementation of the 2001 Wilderness Plan and understanding that this would be considered Packstock Supported Overnight Use by the Wilderness Plan definition), in 2002 there were 150 day rides, 2003 there were 115 day rides and one trip to Evolution Valley in SEKI for 10 Service days with 5 head of stock (Packstock Supported Overnight Use using the Wilderness Plan definition). This trip to Evolution was previously recorded on the spreadsheet as day use, 2004 was 115 day rides with no trips into SEKI.

The “Red, Red/Yellow Trailhead Evaluation” from the 2001 needs assessment was not specific to commercial uses. Some areas, such as Blayne Hot Springs were given these concern ratings yet had little or no relationship to commercial pack station use. The use levels proposed for Muir Ranch were considered and evaluated in the FEIS, and found to be compatible with preserving the wilderness character.

Public Concern #166: *The DEIS fails to document or demonstrate that there is need for an additional packstation to offer overnight services in the Florence area when High Sierra Pack Station and Lost Valley Pack Station already offer these services.*

In 2004, High Sierra Packstation utilized only about one-third of their service day allocation, while Lost Valley Packstation substantially exceeded their allocation. Florence is one of the busiest, if not the busiest trailhead on the west side. The Forest Service should be proposing ways to limit use, reduce conflict, and protect the resource in this area, not allocating additional commercial use.

Response: The DEIS does not propose an additional pack station to provide services in the Florence area. The 2001 Wilderness Plan identifies the four pack stations that are in the area and allocates service days. In the case of Muir Trail Ranch the service days are shown entirely in Day Rides, which is in error, 135 of the 319 service days shown should have been categorized as Overnight Use. The correction does not represent any change in use, but merely reflects a clerical error in the 2001 Wilderness Plan. The correct allocation of service days is shown in Alternative 1 in the DEIS.

The DEIS discloses that overlap may occur in the Florence/Bear area and may increase, but this is not identified as an issue. The Preferred Alternative (and Alternative 2) in the FEIS proposes use that is controlled by very specific destination quotas, along with daily and seasonal stock numbers. Overlap of different pack stations is not in itself an issue since the destination quotas limit each operation to a specific number of trips to a particular location or zone. The numbers of trips were allocated appropriate to the destination, “Generally locations that were suitable and sustainable were identified for potential growth while areas where impacts were high or current use was of a concern were identified for reductions” (DEIS pg. IV-482).

In 2004 Lost Valley Pack Station had no use.

Public Concern #167: *The Forest Service must analyze the non-conforming use of the access road to Muir Trail Ranch and Lost Valley Pack Station.*

Vehicular use of an access road to Muir Trail Ranch and Lost Valley Pack Station has not been previously disclosed and is creating significant impacts. In a FOIA request submitted in 1998 to the Sierra National Forest, we specifically requested all documents related to non conforming uses in wilderness, including vehicle access to private in-holdings. No documents specific to this request were supplied, so we were left with the impression that this was a nonissue. The 2001 Wilderness Plan FEIS did not identify the several mile long four-wheel drive road and motorized access as an issue or non-conforming use, nor do the Special Use Permit and Operating plans for Muir Trail Ranch and Lost Valley Pack Stations. This begs two questions: (1) what authorizing instrument was used to establish and justify this non conforming use; and, (2) was an analysis and public process performed under NEPA?

We first learned of this situation in the DEIS (at p. IV 481 & 482):

“Both Muir Trail Ranch and Lost Valley have private in holding within the interior of the wilderness boundaries. A four wheel drive access trail to private in holdings will continue as a non conforming use. The presence of the road has both experiential and environmental effects. Multiple trailing has occurred due to confusion, desire for direct access to east bound destinations and historical grazing by the pack stock associated with the permittees in the area. This causes some confusion and a high density of trails in a small corridor. Both the presence of the road and the confusion and resource impacts of multiple trailing can diminish the wilderness experience for users. Both the private in holdings and their associated four wheel drive access trail impact wilderness character.”

This statement identifies negative impacts to the physical resource, the experience of visitors, and the wilderness character, but then indicates that this non conforming use will continue and measures to mitigate the situation are not up for discussion. The Forest Service cannot permit additional/new services from either the Muir Trail Ranch or Lost Valley Pack Station. Law and policy require that non-conforming uses such as vehicular access to inholdings should have been analyzed prior to commencement of such activity. An analysis of this non-conforming use must meet the standards in the Wilderness Act. Until this analysis is completed, or documents provided that indicate this analysis has been adequately accomplished, this non-conforming use should cease. (response # 196)

Response: Muir Trail Ranch has a Special Use Permit that was issued to them on July 13, 1956 for the purpose of “Using and maintaining an existing public jeep road between the boat landing at the southeast end of Florence Lake and the Muir Trail Guest Ranch. The road is to be used for hauling freight and guests between these two points and to a lesser extent for the same purposes by other landowners in the Blayney Meadow Area.” A previous Special Use Permit for this road was issued to Nate R. Combs on Jan. 2, 1948.

The area surrounding the Muir Trail Ranch became wilderness as part of the California Wilderness Act of 1984. The jeep road to Muir Trail Ranch is mentioned in a Committee report (Report No. 98-40) on pages 21 and 22. In this report it is stated “As a final matter, the Committee notes that the boundaries of the wilderness additions were drawn with the understanding that traditional motorized access will be allowed in the private inholdings within the wilderness by special use permit. The particular lands in question are owned by Karl Smith of Ahwahnee, Fred Ross of San Jose, and David and Miriam MacKenzie of Menlo Park. Current access to those inholdings is by primitive road from Florence Lake to the inholding itself. The committee intends that the designation as wilderness will not preclude the Forest Service from continuing to issue appropriate special use permits for access to and from those properties.”

The Wilderness Act (Section 5. (a)) provides for “...such rights as may be necessary to assure access to such State-owned or privately owned land...” Initiation of an analysis of the access to the private lands is outside the scope of the FEIS. This access is under long standing Special Use Permit that pre-dates wilderness designation. The right of access is based on private land ownership and long term private businesses that occur on private land and not on the off-site pack stock portions of the landowners businesses. The FEIS analyses the use of pack stock on National Forest System lands that occur off the private land.

Rock Creek Pack Station/Mt. Whitney Pack Trains

All comments are from response #275

General

Public Concern #168: *The Forest Service has already decided to eliminate Mt. Whitney Pack Trains. In the Executive Summary they have removed Mt. Whitney Pack Trains. When you read through the entire 1000 page document you will see that the Forest Service decides to eliminate this most historical pack station. That is because the Forest Service has decided to have spot and dunnage trips. Mt. Whitney is typical of the style of packing the Wilderness Act intended to save.*

And realistically, the Congress was more aware of Mt. Whitney Pack Trains because it was the main packer to the Sierra Club. How ironic that the Forest Service in 2005 proposes four times the use for llama operators as the historic Mt. Whitney Pack Trains. (response # 275)

Response: The Forest Service is not eliminating Mt. Whitney Pack Trains. In the DEIS, Alternatives 1 through 4 analyze the services provided by Mt. Whitney Pack Trains (Alternative 1, page II-7, proposed current Wilderness Plan service day allocations). Alternative 2, as proposed in the June 2004 Proposed Action distributed for scoping, pages 74 and 83, allows a service day allocation and seasonal and daily stock quotas. (The DEIS service day information for Alternative 2 was left out inadvertently.) Alternative 3, page II-41, proposes a service day allocation and existing daily trailhead quotas. Alternative 4, page II-56 proposes a reduced service day allocation from current Plan allocation. All alternatives were described and analyzed in Chapter 4. There are no base facilities authorized or used in conjunction with the Mt. Whitney Pack Trains operations. The selected alternative analyzes Mt. Whitney Pack Trains as an authorized outfitter/guide providing pack stock services. Pack stock operators under outfitter/guide special use permits will be counted in existing daily trailhead quotas. The Forest is not eliminating full service trips offered by commercial pack stock operators. The selected alternative has revised the extent of llama operations.

Trails, Comments on Chapter 3

Public Concern #169: *There are a number of trail-related discrepancies in the Draft EIS that affect Rock Creek Pack Station.*

Comment: *III-80- Disagree with assessment of trail at Second Crossing.*

Comment: *III-92: The Mono Pass Trail was put in without adequate water bars. The standards of construction were not followed with complicity of the Forest engineers. It is not the heavy use that destroyed them but lack of maintenance and proper water bars.*

Comment: *III-93 Trails in 3.2.1.3 Hilton Trail System*

The plan says that the trails on the Hilton Ridge are simply shortcuts. Not true. This was the original trail to Davis Lake and has been continually used since 1919. The trail to Lake #3 has not been maintained or poorly maintained since according to Keith Waterfall, the Deputy Forest Supervisor said not to maintain it until the Trail Plan was finished so that there would be a place for the llamas to go.

The Pine Grove to Hilton Lakes trail is used by stock. It is a vital link between the Lower Corral and the Hilton area.

The trail that the writer says is a shortcut is shown on the main Inyo National Forest as a system trail. It is improper for this document to imply that a system trail is shortcut. And, to remove a system trail since the 1920's with wrong and deceitful information is improper.

Why doesn't the Forest Service say that they don't maintain the trails, clear logs and this is the reason there are bypass trails. And, many of the trails are from stock out grazing. Inadequate analysis of the whole trail system in Fourth Recess AU.

As part of this DEIS, the Forest Service should include their trail maintenance plans for the various regions the last 20 years. This information combined with a history of the new trails and reconstructed will help the public in their analysis.

Comment: III-94 *Fails to say that the Third Recess Trail has not been maintained or water bars kept in place. Wilderness managers and some elitists in FS want this to be a stock free area and purposely didn't put any time or money into trail. When and how much money was spent on this trail over last thirty years?*

The shortcut trail you describe is a main trail that was primarily used by the Westside packers to get to Pioneer Basin. And, it has always been in use as a trail. It is not a shortcut but a regular trail.

Comment: III-95 *We use the Second Recess trail crossing all the time. "impassable?" It shows how little the Forest Service knows about what is going on in the wilderness. We have repeatedly asked for fixing the crossing to make it easier. However, the wilderness management team purposely has refused to let the trail get more difficult.*

This is another perfect example of how those elitists in the Inyo and Sierra National Forest achieve their personal aims to eliminate stock when management direction stated to maintain the trail.

Comment: III-138. *Shepherd Pass. Shepherd Pass can be maintained if there is management direction to move rocks near the top. Inyo Management doesn't want stock up the trail and purposely spends all the money close to the road so it is easy to get home.*

If there was proper staff and direction, a few good men could clean the rock and maintain the Shepherd Pass Trail. A Sierra Club volunteer group maintained the trail for a few years ago and it was a wonderful trail.

Comment: *We strongly object to the Forest Service removing the system trail that the DEIS calls 2904C. This has been a system trail and is not a cutoff. The Forest Service fails to analyze the effects of removing a trail that disperses use and allows for a significant amount of stock to travel to Davis Lake without affecting other users at Lake #2.*

The trail to Lake #2 from Rock Creek is very poorly constructed and the steps are difficult for livestock, children and disabled people. This DEIS implies throughout the document that this is a cutoff trail. The Forest Service needs to be honest to the public.

Please refer to our previous correspondence regarding this trail from Rock Creek to Davis Lake. This trail should be maintained at a class 3 or 4. The Forest Service proposes closing this trail because it allows the District Ranger and Wilderness Manager to exert control over the commercial packer. This is primarily a personal vendetta instead of decision based on resource concerns and the general public.

The Pine Grove to Hilton trail should be at least maintained for a 2 or 3 and it is a good trail from the Lower Corral to Hilton.

It is good to maintain the trail to Lake #3 and Lake #4. The trail to the 5th-9th lake should have maintenance to keep the water from further eroding the trail. Commercial stock should be allowed as it has been since the early 1900's.

The trail system in Pioneer Basin is not correctly drawn. Need to allow for user created trail that cuts across the dry section from Lake #2A over to the trail coming from Mud Lake to Lake #4. This is environmentally the best route and allows you to travel to the tarns.

We have provided comments in writing and orally regarding the trail system in Hilton Lakes, Tamarack Basin and Little Lakes Valley. We would like those comments and submitted maps to be considered as part of this record.

Local Forest managers propose a highly bureaucratic set of rules and regulations that increase jobs and responsibility for Forest Service mid-level officials and their ever increasing staff. Where is the money and commitment by Congress to fund the staff to monitor and manage the ambitious programs in Alternatives 2-5?

Trails are closed such as the trail from Long Lake up towards Morgan Lake where the Sierra Club trip of 1963 camped. An ideal campsite and the area is beautiful and in excellent shape. However, the Forest Service restricts use to this camp. Access is good and the resource is protected.

Comment: *Disagreement with specific trail assessments and decisions:
Second Crossing Use Trail*

Hilton Trails – Maintain UTs to 5th, 6th, 7th, 8th, 9th Lakes.

Pine Grove to Hilton – Critical access from lower corral.

Hilton Ridge Trail and Hilton Cutoff – put back on system.

Mudd Lake to Mono Creek Camps Use Trail – add to system.

Third Recess and Second Recess – just need better maintenance.

Shepherd Pass Trail – Just need better maintenance.

Pioneer Basin – Incorrect locations and decisions.

Response: Trails were assessed using a team of specialists looking at many different aspects on each trail, including current trail condition, risk factors, maintenance considerations, resource impacts, consistency with other destination direction, and records of past recent commercial activity. An objective assessment process was followed on trails visited by the IDT. It is understandable that there may be different opinions about these trails, and these comments were individually considered for the selected inventory in the FEIS. Where appropriate, the comments above were incorporated into the Final EIS and Alternative 2 – Modified.

Public Concern #170: *We do not feel that this document adequately discusses removing system trails such as the Hilton trail. In page 33- it says, “trails removed from the inventory generally did not exist on the ground and there appeared no reason to provide transportation management to this destination.” However, this DEIS does not follow this procedure when eliminating trails in the Rock Creek/Hilton drainage.*

Response: Another factor considered in removing trails from the system is whether there is duplicate access provided. While the primary Hilton Lake trail may have some isolated characteristics that are not comfortable to equestrians, this trail is generally stable and can sustain repeated stock use.

Public Concern #171: *III-95- We disagree with your comments that the Goodale Pass Trail is stable. It is deteriorating rapidly and is treacherous for stock. It is probably more dangerous to stock than the Second Recess Crossing. The Forest Service calls the Goodale Pass Trail good*

and Second Recess Crossing impassable. A perfect example of the inconsistencies of writers of the plan not having a clue about stock use and trails.

Response: Goodale Pass trail is generally stable and in good condition in the Graveyard AU (south of the Pass). However, on pg III-81 in the DEIS, the description of the Goodale Pass Trail in the Silver Divide AU, (north of the Pass), states: "...it is in degraded condition" and compares it with a nearby use trail as "equally awkward, with jumpoffs and erosion."

Campsites

Public Concern #172: *Designated campsites are a terrible consequence to the public and not consistent with the Wilderness Act. And the closure of camping from Third Recess to Second Recess is even worse than having a few camps. The Forest Service proposes a few designated campsites for Rock Creek Pack Station and fails to tell the public what that impact will have when they go to take a pack trip.*

Response: The purpose and need in the DEIS (Chapter 1, I-5) clearly states the agency's intention to follow the legal constraints of the Wilderness Act. There is no language in the Wilderness Act that prohibits the designation of campsites. Reference DEIS Chapter I-3, Purpose and Need for Action, Item 1, states: "There is a need for establishing additional management controls for commercial pack stock operations in order to achieve and maintain desired resources and experiential conditions identified in the 2001 Wilderness Plan and ROD." The Record of Decision for the 2001 Plan gave the Forest the ability to establish designated sites (page 4) in order to protect wilderness values. We believe that designated campsites are consistent with relevant laws, regulations and agency policy. Refer to DEIS, III-96. The Mono Pass Trail has been identified as an area of special American Indian concern and is currently considered and evaluated as a potential Traditional Cultural Property. Use of campsites known to be located directly on cultural sites is known to have direct impacts.

McGee Creek Pack Station

All comments are from response # 355

General

Public Concern #173: *We prefer alt 2 with seasonal stock quota and seasonal day ride service days being replaced by total number of stock allowed by the Permit.*

What we would prefer to see: Limit number of livestock on the McGee Creek Pack Station permit to 65. Determine highly visible spot/dunnage and stock holding camps as: Horse Heaven, Sheep Camp, Point Camp and Hilton Camp in Upper Fish Creek; Genevieve Cloverleaf and Edith (no stock holding unless authorized by line officer on special occasion); Davis lake outlet camp; Round Lake and Grass Lake in McGee Canyon. Then, repair all access, reinforce any stream banks or crossings necessary. This work should be done cooperatively by the end of summer 2006. Until then limit number of stock to Clover-leaf/season to 50, with a definite sunset by the time Special Use permits are issued. Maintain trails to other lakes and campsites as determined by trail alternative's 1 & 2. (Alternative 1 plus 2 trips/year to Meadow Lake). Make a designated tie up area at Round Lake and Beaver Meadow. Allow caching of feed in bear proof boxes out of sight of the public, especially in overnight spot trip areas. Allow spot and dunnage trips access as done historically to low use areas on a limited basis. (1-2 trips/year - counted as 1 party/1 trip)(areas such as Meadow Lake, Lee & Cecil Lakes, Constance Lake.

Allow spot and dunnage trips to all other areas as provided by limited number of livestock on permit. Limit day rides by number of livestock on the permit, allow mitigation needs for higher use areas, (day ride tie up or turnaround areas, etc). Further concerns, mitigations, emergency measures or problem areas can be addressed by the annual Operating Plan written by the Permittee, the District Ranger and the Permit Administrator.

Response: All of these comments were considered in the Final EIS and when Alternative 2 – Modified was created. Some of the suggestions above are beyond the scope of this project. Once completed, the SUP EIS document will give the District Ranger and the Permit Administrator the authority to determine mitigations measures for problems and emergency situation under the annual operating plan.

Day Rides

Public Concern #174: *Day rides - McGee Creek numbers (in the best possible scenario! Alt. 3 - the alt. that allows for growth) increases our numbers by nine! There should be no number on Day rides, until and unless the FS analyzes day use by all users. The court did not ask for day use to be limited in anyway. There is no significant rationale for this small amount. Day use should reflect demographics. Increased visitation to the Mammoth Lakes area; shorter vacations filled with more activities. Horseback riding is one of those activities. Overnight wilderness use is decreasing steadily - the demand is for short, daily experiences. When businesses are being overly penalized in one area, we should not be burdened with additional penalty in not allowing ANY growth in day use. Alt 2 has a reduction of 40 clients, this is not ok. Again, there should be no numbers, but if day riders are to be counted essentially with service days there should be a minimum of 900.*

Response: Specific limitations on day rides are not included in Alternative 2 – Modified. Rather, a stock in the wilderness at one time cap is implemented. This will provide additional flexibility for operators wishing to provide day rides.

Day use outside the wilderness will be considered under the SUP EIS. Opportunities for expanding short, daily experiences will definitely be addressed under the SUP EIS with an emphasis on developing opportunities for growth in non-wilderness areas.

Quota

Public Concern #175: *There is disagreement as to the quota and threshold numbers allocated to McGee Creek Pack Station in the Draft EIS.*

Comment: *McGee Creek - too many quotas and thresholds. Allocation limitations need to be dictated by the number of stock allowed on the permit for overnight use and for day use.*

As shown the seasonal client threshold discriminates against the spot and dunnage trip groups. The Seasonal stock threshold does not allow the public to enjoy wilderness as they see fit. Congress dictated that these Wilderness areas should be ‘untrammeled’ - not controlled by human device. This multiple layering of quota’s, thresholds, etc certainly restricts and controls the ability of the American public to enjoy their Wilderness areas. We disagree with these methods. We continue to advocate for the one appropriate method of ‘limitation’ - the number of stock allowed by the permit. This allows the business owner to balance cost with demand. In turn this provides maximum quality service due to a healthy business operation.

Comment: McGee Creek Pack Station advocates for a maximum number of livestock allowed by the permit. A total of 70 head of livestock to be used to supply public demand.

Comment: Alt 2: Seasonal Stock quota of 700 too low. Allows only 14 days of operation at maximum. It also allows for a possible maximum of 300 spot/dunnage trip visitors. When packers stock is included, this is a very low number, highly restricted from past years, with no reason.

Comment: Alt 2: Destination quotas based on low years of court injunction - this appears discriminatory. It appears as if there is no understanding of our business operations - a spot trip should never be counted as "2" trips. A spot trip is one round trip service. To count a round trip dunnage as 2 trips is also irregular and discriminates against the lower 'impact' type of trip. Due to campfire closures in upper McGee, the number for Grass Lake is too low. Same with Horse Heaven - campfire closures increase the need for use of areas open to campfires. Numbers for Cloverleaf, Genevieve and Hilton are also too low. We appreciate the ability to take 1 trip a year to Meadow Lake. Rock Creek has 44 trips to Hilton Lakes, most of which are All-Expense with stock, while ours are mostly spot trips. Our low number should be raised.

Comment: The "seasonal threshold for McGee Creek is lower than the current allocated Service Days. Further, it is half of pre-2001 Wilderness Plan use. It would likely allow for service of fewer than 200 people per year. The Stock threshold discriminates against the spot trip party forcing us to provide only dunnage services! This is a forced loss of revenue!

Comment: The Laurel Quota and Seasonal Stock Threshold ignores the admitted errors in the 2001 wilderness plan where data of commercial use was ignored or forgotten. This DEIS continues the same error. This trail is heavily used to access the Convict basin and is the only way to access the basin. By lowering the quota to half of the legal party size it becomes impossible to accommodate larger families. This is a huge basin, the many camps are ideal for groups of 10-15. Use by the hiking public is limited, there is no rationale for the overly restrictive numbers. The seasonal stock threshold of 80 is impossibly low. This would mean only 2 spot trips of approx. 7-8 could enter the basin in 1 entire season. This is RIDICULOUS! No where is there a rationale for this low number. NUMBERS SHOULD BE RAISED TO DAILY Quota of 15, "Seasonal stock threshold of 500. Regarding quota, even Cloverleaf Lake allows a group of 15 - yet the reserveable quota does not allow a group of 15 to enter the Wilderness.

Comment: Trail Crest - page II-44. It is beyond our understanding why the Forest Service considers a trip commercial when hikers hike out in 1 day over trail crest with the packer carrying their gear back to the starting trailhead. Why would the Forest want to block and deny the very use they should be encouraging in order to reduce overnight stays on the Mt. Whitney trail? 40% of the quota should remain available as stated, the statement "but are currently unguided and unsupported to exit Trail Crest." should be dropped. "Exit Trail Crest" also establishes the improper use of an exit quota.

Comment: Destination Quota's - Limiting Cloverleaf to essentially 2 spot trips is not supported and there appears to be no rationale for why this would improve the current condition of the trail. (See party size comments). Limiting the entire Convict basin to 18 trips or 9 spot trips is not supported. Limiting Tully Lake to only 2 spot trips is not supported.

Response: Comments noted and considered in the FEIS. The six alternatives propose quotas, thresholds, maximum number of stock in wilderness at one time and stock limits at pack stations. Allocation of service days were developed by using the highest year of a three-year average. These service days included and counted the spot and dunnage trip as two days which reflects the current operation—not a decrease.

Trail Crest Exit Quota was established prior to the 2001 Wilderness Plan and was supported and retained at that time; this trail provides additional access to the Mt Whitney Trail which is the most heavily used and regulated trail in these two wildernesses. Commercial guiding is not needed or authorized on the Mt Whitney Trail except for special circumstances. Pack stock use is prohibited. No additional management direction is necessary for Trail Crest.

Alternative 2 – Modified provides for unguided trips by commercial pack operators.

Primary Operating Areas

Public Concern #176: *Primary operating areas are assigned yet Pine Creek given trips in Hilton. This is not a warranted decision. There is not historic use of the Hilton Lakes basin by Pine Creek Pack Station, nor is it a primary operating area.*

Response: Primary operating areas will be assigned under the SUP EIS document.

Party Size

Public Concern #177: *Party Size - Tully Lake is reduced by party size as well (8) in this alternative - With limited numbers of trips (2) why reduce the party size as well. Limiting the Tully Lake campsite to groups of only 8 is not supported by any reasonable rationale. The legal group size should be allowed. Using Recreation categories to rationalize this limit is a violation of the Wilderness Act.*

Response: Tully Lake area was assessed using a team of specialist looking at campsite density and carry capacity of the area. It was determine that the Tully Lake area could accommodate a party of eight or less without increasing the degradation of the wilderness character along with a total number of two trips a year.

Trails

Public Concern #178: *There are a number of trail-related discrepancies which affect the operations of McGee Creek Pack Station.*

Comment: *I-117 Trail 2802 - Trail displayed as Level 2 and as NRFS. Trail should not be reduced from level 3 to level 2. Not appropriate for access to area. This is the main canyon trail. Lower part (which is no longer accessible to stock) should be distinguished as separate from rest of trail.*

Comment: *I-118, Trail 2802A - Dorothy Lake Spur. This is a major trail to access only camps at Dorothy - Should not be Level 1.*

Comment: *I-119, Trail 2804 - Laurel Lake to Edith, (use trail continues to Cloverleaf). This trail was built by the Forest Service trail crew and is currently the only access for stock to the Convict basin. Trail is major route to the canyon due to closure of Convict Canyon trail (by default - lack of repair), should be a Level 3 not 2. Trail from Edith to Cloverleaf Creek Crossing is the same as the system trail, it is not a user trail. Currently user trail is better trail than*

system trail. System trail needs to be repaired and maintained. No maintenance has been done for over 20 yrs. on that trail.

Comment: I-120, Trail 2902C - Baldwin Canyon. Should be a level 3 Trail. THIS IS A MINE ROAD! Should not be downgraded due to Forest Service lack of maintenance. The only needs are water removal. Very simple fixes. Currently there are wooden and steel culverts on the road which are plugged up.

Comment: I-121, Trail 2902 C - Baldwin Canyon - Should not be downgraded from a Level 3 to 2. Again, this is a mine road! Simple maintenance would resolve minor issues of water running down the road from summer thunderstorm activity! Should not be reduced due to forest inefficiency or lack of resolve on the part of past trail/wilderness manager. HIGHLY CONTESTED - in Trail Suitability Table - this is TOTALLY CLOSED TO Pack Station in ALT. 3!!! This is discriminatory - how does the Forest distinguish use by commercial stock vs. private stock. This is heavily used by private stock owners from Mammoth!!!! Alt. 2 should be adopted. Further this road has the potential to be a Heritage Resources designation.

Comment: I-122, Trail 2902D - Steelhead lake. Should not be reduced to level 2. Major access to 2 lakes of McGee Canyon. Very popular areas, with high use. Beginning terminus confusing?

Comment: I-124, Trail 2902F - Baldwin Cutoff. It is appropriate as shown in Alt. 3 - should be Level 2 trail class, as long as trail always allows use by Pack Station. Beg. & End. Terminus description is incorrect: Beg. Term is 1.2 mi above junction of McGee Pass Trail and Baldwin Canyon Road. Ending terminus is at McGee Pass Trail above Steelhead junction.

Comment: I-125, Trail 2902G - Big McGee Lake - Level 2 is appropriate as shown in Alt's 1 - 4, as long as open to Pack Station stock.

Comment: I-126, Trail 2907*- Hopkins Pass. This trail should not be listed as 0. It was present at the time of wilderness designation. Should be maintained on the inventory, even if at Level 1.

Comment: I-127, Trail 2902, McGee Pass - appropriate as shown in Alt. 3: Level 3.

Comment: I-128 - I131 are appropriate.

Comment: I-132, Trail 2000.3, PCT - this should trail should remain as a Level 4 trail in Alt. 3, (as in Alt 1 & 2).

Comment: I-136, Trail 2902H - Tully Lake - need to have historical access to Tully lake via whichever trail is deemed safe and appropriate

Comment: UT87 - Cloverleaf North of Creek. This trail is approved in Alt. 1 & 2 until the system trail is repaired. It should also be approved in Alt. 3 under the same conditions.

Comment: UT93 - Baldwin Cutoff. Use is approved until Canyon/McGee Pass trail is fixed. (Designation of trail is incorrect). Once Canyon Trail is repaired, Baldwin cutoff needs to still be approved for use for ACCESS to campsite. This access can be stipulated from one trail or the other, but at least from one, most likely the Baldwin Canyon Mine Road trail.

Comment: UT94 - Round Lake campsite - which "new route to relocated campsite"? What needs to be done as identified by Inyo Line Officers is re-enforce the stream bank.

Comment: *UT95 - CCC Camp site access - is approved in Alt. 2 but Prohibited in Alt. 3. This trail should be approved in alt. 3 as there is assigned use in the Alt. 3 to the campsite. This was a packer camp long before it was used by the CCC.*

Comment: *CANT FIND HILTON LAKES DRAINAGE IN System Trail Table 2.3.1 (Recieved by email from Marty Hornick 6/6/05). Hilton Trails 2942 should remain Trail Class 4. The rest of the Hilton trails look appropriate.*

Comment: *As for improving access to the CCC camp above Big McGee, that is a good idea. However in Alt. 3 access is denied until "Heritage Clearance". This is unreasonable. This was a packer camp long before it was a CCC camp. Further, Packing is a "Heritage Resource" and campsites are a major component of the activity.*

Response: See response to other trail specific comments for Public Concern #169.

Public Concern #179: *System and Use Trails to Lee Lake and Cecil Lake from McGee Pass Trail should be maintained and open to stock.*

Comment: *I-133, Trail 2810, Lee Creek - Check McGee Creek Pack Station files - trail was wheeled by Diana Pietrasanta in 2002. The system trail (1988 inventory) is Level 2, 1.5 miles. This takes the trail to Cecil Lake. The 2001 Appendix C, shortened the trail to .8 mi (although inappropriate action). Even so, .8 mi takes the trail just past Lee Lake. This table lists the trail to "Sheep Camp" as .4. This is incorrect. Sheep Camp is .1 from the McGee Pass trail Junction. This is an error. The trail should remain at Level 2 to Lee Lake.*

Comment: *I-134, Trail 2810 - this is part of the same trail above. Should be maintained at the same level to NE Lee Lake. This entire trail is of historical significance and has potential to be listed as a Heritage Resources designation.*

In Trail Suitability Table - Lee Creek trail above Sheep Camp is closed to Commercial Pack Stock in all alternatives. DISCRIMINATORY! It is open to private stock. Yet the 'trail' to Hortense - admittedly a non-system trail is available for use. The trail does not even exist - yet a system trail to Lee Lake is closed. FIX THE TRAIL, don't close it. Further, in Chapter 4, page IV341, the Agency admits no use will not improve the resource concerns. In addition, the concerns will continue to multiply unless restorative work is done. The restorative work would include the same requirements to re-store and repair the trail. In addition, due to what appears to be pre-planned, pre-determined outcome of the CEA-EIS - the Forest missed an opportunity to repair these concerns during Fish Creek Watershed project where a trail crew did work for 2 summers in the area in 2002 and 2003.

Comment: *UT109 - Cecil Lake - trail should be allowed for grazing, historical access. Campsites*

Response: Trail and resource concerns in the trail corridor to Lee Lake are some of the most severe in the planning area. While it is true (as with other trails in the planning area) that the resource impacts will not naturally recover without active physical management, removing recurring stock use from this area will likely slow the rate of further degradation. When physical repairs are made, their chance of success will be increased without recurring equestrian traffic.

Camping

Public Concern #180: *On page II-35 - why is it written: "Designate 2 stock camps at Horse Heaven - 1 site only"?*

Response: This editorial error has been corrected in the Final EIS.

Public Concern #181: *Designated Camps: after much thought, we disagree with this practice. It will provide opportunity for the anti-stock, anti-commercial advocates to pinpoint our use, and will not allow the flexibility required to serve the public.*

Response: Designated camps are an important part of the Destination Management Strategy which allows the agency to pinpoint resource concerns and remedy any resource-related problems related to commercial pack stock. See also responses to Public Concerns #106 and #172.

Public Concern #182: *Limiting groups camping at Cloverleaf Lake to only 8 head of livestock is effectively no more than a spot trip of 3. This is discriminatory. The only consideration here is the trail, the public should not be denied a normal experience due to the Forest Service's lack of quality trail maintenance. This regulation should be temporary at most, with a 'sunset' date of 2 years allowing time for the trail work to repair the short section of trail. This work needs to be done as currently there is no reasonable system trail access to a lake which is shown on the inventory as having a system trail. This is misappropriation of funds - if the Forest submits a certain number of miles of system trail for funding purposes, the lack of maintenance on those trails should not be used as means to discriminate against the recreating public.*

Response: Due to the geographical nature of the Convict drainage and the carry capacity of the Cloverleaf area, eight head of a stock at one time was determined to be the appropriate stock size for the conditions.

Rainbow Pack Outfitters

Public Concern #183: *In forest decisions that were both arbitrary and capricious, the number of head we were authorized to have in the barn went from 80 head to 40 head, upon the purchase of our outfit in 2000. Also, the service day numbers for our outfit went from 800 down to 400 service days per season. The grazing allotment that had historically belonged to Rainbow Pack Outfit was put on hold, citing resource concerns and the need for further analysis, which is yet to be done six years later. These are the kinds of slow and inefficient management technique that hurt our historical businesses. Lakes that had been historically used by Rainbow Pack Outfit and were named by the packers that discovered them have been closed off to use. Access to lakes like Marie Louise, Margaret Lakes, Tyee Lakes, Ruwau, Chocolate Lakes, and Ledge Lake, has been taken away from us. The proposed trail closures that take the access away to these lakes means a 33% decrease in the destinations in our basin where we can take the public. Without documented resource concerns, it is wrong to take away historic use by the trail management proposals, that are discussed in the DEIS (response # 279)*

Response: Decisions made at the time of pack station purchase are outside the scope of this analysis. The permit holder has been notified since purchase of the pack station in 2000 that use of pastures would be analyzed during pack station term permit reissuance; and, the use of these pastures is being analyzed the subsequent EIS and therefore outside the scope of this analysis. In terms of the areas closed to commercial pack stock (e.g., Marie Louise Lake), there are documented resource concerns within the planning record.

Sequoia Kings Pack Trains

All comments from response #311

Public Concern #184: *There is an error on page ES-10 – the operation is referred to as Sequoia Kings Pack Trips.*

Response: Comment noted; correction made in the FEIS.

Public Concern #185: *The DEIS proposes to reduce the ability of the operation to serve 800 people to 212.*

Response: Respondent is referring to use allocations prior to the 2001 Wilderness Plan. The Wilderness Plan set allocations based on packer provided use reports, as policy directs. This current allocation is described in Alternative 1. The DEIS provided a range of alternatives to address levels of use. Alternatives 2 and 3 as proposed do allow for additional use. Use levels in the selected alternative reflect discussions and input from Sequoia Kings National Park.

Wilderness

Public Concern #186: *The public needs to accept that there will be some areas in designated wilderness that are simply going to be more heavily impacted and thus perhaps need to be more heavily regulated – than other areas dues to their popularity, ease of access etc... Examples of such areas include Thousand Island Lake and Little Lakes Valley. Use should not be shut off to commercial pack stock in these areas, but measures can and should be taken to assure that such areas aren't further degraded by wilderness users. (response # 216)*

Response: Alternatives 1, 2, 3 and 4 all continue use to the areas mentioned and standards and guidelines proposed in each alternative represent measures to assure no further degradation and remedy of unacceptable impacts.

Public Concern #187: *Commercial use should follow strict use restrictions as it is a non-conforming use of wilderness and could be accommodate in non-wilderness areas. (response # 170)*

Response: Commercial outfitter and guide services are not non-conforming uses, they are allowed by the Act to the “extent necessary” for meeting the purposes of the Act. The stated Purpose and Need of this environmental analysis is to assess the need for commercial service and manage this need so as to preserve the wilderness character.

Public Concern #188: *There is a discrepancy between the figure on page III-14 that suggests the number of people visiting the wildernesses is increasing at a rate of approximately 500 people per year and the data from the last four years that shows the number of visitors have stabilized or may be decreasing. (response # 248)*

Response: The Table on page III-14 is for the Sierra National Forest only. The table does show that on the Sierra NF overall trend from 1996 to the present is upward, but that over just the last four years the trend is downward. The FEIS presents a revised chart for the Sierra NF that incorporates a longer timeframe that shows an overall downward trend from 1991.

Public Concern #189: *Stock supported wilderness travel does not contribute to high quality wilderness experience. In fact, livestock seriously interfere with human use and enjoyment of the wilderness, the objective of seeking primitive and unconfined experience and opportunities for solitude certainly is not furthered by the presence of livestock. Solitude is foregone by parties that travel with stock. (response # 392)*

Response: Some visitors hold this opinion. Other visitors are achieving their wilderness experience on recreational stock, which is a form of transportation that is consistent with wilderness purposes. Conflicts in values, experiences and perceptions are a significant factor and are considered in the effects to wilderness character portion of this analysis (see the Environmental Consequences for Wilderness in Chapter 4).

Public Concern #190: *The DEIS improperly relies on claims by the commercial outfits that they spread the minimum-impact message. The DEIS implies that wilderness character would suffer if commercial pack stock enterprises were reduced, because the commercial packers effectively educate wilderness visitors about proper wilderness behavior, and that the positive impacts of the packers message is greater than their impacts. There is no basis in fact for this claim, and it is, frankly, ridiculous.*

The Forest Service should refrain from repeating anecdotal statements by commercial packers that they provide wilderness ethics education, unless they can provide evidence to support this claim. The available evidence indicates that the commercial packers do not provide effective low-impact education to their clients or others. (response # 196)

Response: The analysis has been reviewed and statements that are believed to be anecdotal and not properly referenced have been removed.

Wilderness, Social Considerations

Public Concern #191: *The DEIS does not include a discussion of the effects of commercial pack stock-related manure and urine on other user groups.*

Comment: *There is no discussion in the DEIS of the impact of large quantities of manure on the hiking experience. (response #241)*

Comment: *Impacts from pack animals, including urine and feces on the trail has made recreating in the wilderness unpleasant for other users. (response # 178)*

Response: This experiential component has been considered and addressed in the Wilderness section of Chapters 3 and 4 of the Final EIS.

Wilderness, Comments on Chapter 3

All comments are from response # 198

Public Concern #192: *On page 111-76 there is a correction. Historically, McGee Creek Pack Station did the necessary packing for the Federal Fish and Wildlife Service who were studying fish in upper Convict Lakes Basin for a number of years. The canyon trail along Convict Creek was used. In 1953 and 54, that trail was in good shape. McGee also took some private pack trips to the lakes that Convict could not handle. Convict was mostly conducting day trips then. The Summers Mammoth Pack Outfit used the Laurel Pass trail beginning in the early part of the century or before. The Summers ran cattle up into the Laurel Meadows and owned some mining claims up there. When the Roesers bought Mammoth Lakes Pack Outfit, we used the Laurel Pass Trail to the upper basin beginning in the early 1960's.*

Response: This information has been added to Chapter 3, "Wilderness –Fish Creek-Convict-McGee"

Public Concern #193: *More corrections on page 111-78. The DEIS mixes up two of the lakes, Papoose and Squaw, in the Lakes of the Lone Indian basin. This is understandable since some old commercial map first made the error and then other maps followed suit. Papoose Lake is the lake on the John Muir Trail. Squaw Lake is the lake to the east and adjacent to Lake of the Lone Indian. That is the correct designation from the Forest Service trail crew who were working on the Silver Pass Trail in the summer of 1949. The switching of the 2 lakes occurs throughout the document.*

Response: We will note the historical names for these lakes; however, since every map and guide for at least 35 years has shown it the same as named in the DEIS we feel it would be confusing and outside our jurisdiction to change these place names back to their 1949 names.

Public Concern #194: *There is incorrect information contained in the Wilderness section of Chapter 3. (All comments are from response #275)*

Comment: *The assessment of the affected environment makes no attempt to assess whether the impacts that the FS calls “high, noticeable & bad” are from people or stock. The camping impacts are generally the effects of people and not stock. And, there is little to no determination of non-commercial to commercial use.*

Response: It is not possible to determine if impacts were caused by private stock, commercial stock and in some case from hikers instead of stock. There are some impacts that are clearly related to stock (i.e., roots exposed at tree wells in areas void of vegetation and apparently used for high lines, at or adjacent to campsites). The analysis clearly states that the purpose was not to determine cause of impact, but to record the conditions where pack stock have identified their operation and determine what, if any, management actions are needed to continue this use. Where pack stations identified their campsites, trails grazing, we assessed the condition and proposed actions for managing into the future.

Comment: *Page III-76: The Forest Service makes the comment that D&F conducts few full service trips over Goodale. In the last ten years there has been significant use. And, most of the trips went to Grassy Lake and the stock remained for the duration of the trip.*

Response: Refer to Appendix B, Table 1 in the Draft EIS to see that recent use by D & F Pack Station has not been significant in the area accessed over Goodale Pass. Refer to the destination quota table in DEIS, page II-20. The quota for D&F reflects their use over the last 4 years. Use data does not reflect this statement. Use by D&F has been light.

Comment: *Page III-76: The writer says Rock Creek’s use was limited by resource concerns. The major concern was over competition for customers.*

Response: The limitation on use by Rock Creek Pack Station was indeed based on resource impacts resulting from all expense traveling trips. The concern was not over competition for customers, but an overuse by all outfits of the area. Authorized officers at the time specified an amount of use by Rock Creek in response to primary operator concerns.

Comment: *Page III-76: Grazing numbers of stock for 2001- 2003 wrong. Missing data.*

Response: We have reviewed and updated our files regarding grazing data.

Comment: *Page III-77 The Forest Service says impacts are high relative to use levels occurring. What impacts and compared to what? Perhaps the Forest Service is lacking use data*

and the impacts are low compared to the use. Also, other private stock users and hikers are using campsites that cause impact.

Response: See pages 6-7 and 12 for a discussion of the methodology for categorizing use levels and impacts.

Comment: *Page III-78: The Forest Service does not indicate that the camps in Cascade Valley show heavy impact. The heaviest used campsites of the 1980's barely show any use. It proves that large numbers of people, with large numbers of stock can result in campsites that are fine.*

They make note of a highly disturbed Third Crossing campsite. This has been a relatively small used campsite compared to others in the region.

In summary, the description of the campsites of the 2nd Crossing to Island Crossing is totally lacking in being comprehensive.

This analysis of the affected environment does not disclose the number of campsites, who used them historically and why they don't show recent use. Lacking is the historical record of use. Unfortunately, the writers of the plan look at one year or perhaps a few years of use.

It is interesting that in Court documents, the plaintiffs use wilderness ranger's comments indicating the harm to the wilderness when up to 75 animals per night were grazing in Cascade Valley per night up to 3 nights a week. Contrast that to the occasional trip of 20 that frequents the area the last few years.

This Cumulative Effects analysis of this area is poorly written and does not allow that average reader a good understanding of the historical and current use patterns. Neither does it adequately present an analysis of what things look like on the ground.

Response: Comment noted and appropriate changes are made in the Final EIS.

Comment: *III-89: False Statements: "Conflicts with Rock Creek"? We never have had a conflict with High Sierra Pack Station in Mono Creek over grazing, use, packers, etc.*

Response: In a personal communication, the "conflict" was identified by High Sierra Pack Station as an explanation why they do not do as many trips into Pioneer Basin. Another way to present it is that some operators have chosen not to be in conflict with other packers by not going to certain areas. This situation was what was meant by "conflict."

Comment: *Grazing data for 2001 missing.*

Response: Updated grazing data has been included in the FEIS.

Comment: *III-89: False Statements: FS implies extensive use trails is because of travel between stock camps. The trails have been in use since the 1930's. Not use trails.*

III-89, 2nd to last paragraph: The Forest Service is wrong. These are not use trails but trails in continuous use since the 1920's for travel between campsites and locations at Davis and Lake #2.

The trail from Mudd Lake to Third Recess is a trail and not a use trail.

Response: "Use trail" describes a trail that is not on the System. See definition of use trail in the Glossary. Trails to campsites, although they have been used, some for many years, are still considered use trails.

Comment: III-89: False Statements: Solitude is high in July in Hilton Lakes

Response: Solitude is subjective. The concept was used to provide a consistent means to describe a quality of Wilderness that is used to define Wilderness in the Wilderness Act. Certainly, a person may go to Hilton in July and see no one. But because Hilton is used regularly and frequently by commercial pack stations in July, as it offers good early season access, the opportunities for solitude are lower.

Comment: pp. 89-90: The Forest Service gives one paragraph about day use of 100-150 hikers per day. And, doesn't comment that this is bad, wrecks the social experience, causes high number of use trails, causes water pollution, etc. Totally inadequate EIS when you don't divulge the environmental effects of use.

This EIS should put the commercial pack stock use in perspective with others use in the wilderness. The plan states there is a lack of solitude in Hilton Lakes and then follows with the statement of high day use in Little Lakes Valley. The DEIS doesn't state that there is no solitude in Little Lakes Valley in spite of little commercial use. Shouldn't a good environmental document use numbers to compare and contrast use patterns?

And, for example the wilderness alongside of the Mt. Whitney Trail should be used as an example of what the wilderness looks like without horses and mules. It shows that people are as much or more of a resource problem than commercial livestock.

Response: The FEIS does include considerable more attention to day use and where relevant is brought into the cumulative effects discussion for the area. Because Mt. Whitney is not an area used by commercial stock, it is not a focus of the analysis.

Comment: III-90 Untrue statements! Use trails aren't proliferating. The Forest Service is using maps that don't reflect the actual layout of the land, don't know the numbers of the lack and have little knowledge of the trails and use patterns.

Last year I provided maps and information to the Forests about the problems and sent return receipt letters to the Sierra National Forest--two times and they refused to correct their mistakes or acknowledge constructive help on identifying proper camps, names and locations of lakes and trails.

Response: The Forest Service utilized USGS maps which are the standards for resource management. The map provided by the respondent was a 1950s fishing map. We did not consider this map to be the definitive map of place names and locations for these two wildernesses and stand by the use of USGS 7.5 minute quads as the official map. Naming of camps in the DEIS tried to follow what we knew to be commonly used names by packers, however because of confusion, we have created a new naming convention for campsites to eliminate the confusion of perhaps different names that different packers give the same site.

Comment: III-90 Use trails in Pioneer are getting more faint and less notable.

Response: The appearance of trails being fainter rather than heavier very well may be true by some people's perceptions. The issue the Forest Service is attempting to deal with is the resource concerns associated with the trail, which even though fainter, may still be considered a concern that must be managed. The data does show that Pioneer Basin has a high density of trails (mostly "use trails") many of which have severe resource concerns. It is true that many trails that were identified by the packers were not visible. These were not considered in the condition described

as a high density of use trails, since they appeared to be cross-country routes not trails. Possibly these could have at one time been more visible and the condition has improved, but nonetheless less the use trails that do exist have notable concerns that this analysis addresses.

Comment: *III-90: Use in Hopkins Lake is not concentrated at Lake for commercial use. We have had one or less trips per year to lake. Absolute lie of describing campsite that we use. This is a backpacker and perhaps an occasional private stock user has used. Absolute lie and the impacts are not from Rock Creek Pack Station's stock camps.*

Response: Rock Creek Pack Station identified seven campsites in the vicinity of Hopkins Lake during the time we requested information on all pack station operations for the purposes of this study (Forest Service files). In addition there are numerous entries on Rock Creek Pack Station's tally sheets for "Lower Hopkins" and "Hopkins Lake."

Comment: *III-91: Second Recess. We use it all the time. Stock travel is not difficult other than the creek crossing. Forest Service wilderness managers purposely don't fix so that it is treacherous to cross.*

Response: Reported recent use records show no overnight use to Second Recess for spot, dunnage or grazing. The field reports indicated that the trail has not been maintained and are terribly difficult for stock passage and showed no use. If a packer had used it in the past five years they most likely would have cleared the trail. By Forest Service accounts, it is not the crossing of Mono Creek but the lack of maintenance on the trail that makes it difficult for stock.

Comment: *III 91: Third Paragraph. We use Second Recess and take stock up the canyon. The fact that the Forest Service can't see evidence of stock use could mean several things:*

- a. They didn't get up Second Recess (stream flow was high when id team was looking at Mono Creek)...*
- b. The id team got lost and didn't use the trail that I have personally used since 1957 when I was three years old.*
- c. The Forest Service fails to acknowledge that when you put picket lines in good locations and move them that you can't find the use.*

Response: See response above related to Second Recess. A Forest Service pack string did go up Second Recess and was able to follow the trail and make the crossing.

Comment: *III-100: It says that "the field evaluation was aborted because of high creek flows in Mono Creek inhibiting the crew's ability to cross into Second Recess. This EIS should divulge all the sections that are impacted by the field evaluation impacted by high rain.*

Response: The interdisciplinary team had initially planned to travel up into Second Recess and camp. It was determined to be not safe for foot travel to cross the stream due to high water. Instead, the pack string and pack stock specialist from the team traveled there, took photos and looked for some of the key pieces of information as best as they were able. It should be pointed out that there are many sources of information other than the field visit by the interdisciplinary team. It was not possible (due to time and budget) nor was it the goal for the ID team to go absolutely everywhere identified by pack stock operators. Nor was it possible to do anything more than an extensive assessment. Additional source of information came from Sierra National Forest Staff who have years of observations as well. The Forest Service feels there is adequate information to make this decision.

Comment: *III-134 Rock Creek and Mt. Whitney Pack Trails graze Sawmill Meadow. We use the Cottonwood and South Fork grazing areas on trips.*

Response: The statement in the DEIS was that Pine Creek Pack Station was the only reported grazing use in Sawmill Meadow. Our records show this to be a true statement.

Comment: *III-135. The Forest Service fails to mention that they burned the corrals and refuse to replace them or allow us to have overnight stock holding facilities. This has reduced commercial use. And, the Forest Service purposely doesn't allow or maintain the road to Taboose.*

Response: The Forest Service did not intentionally burn the corrals, the corrals burned during a wildfire in the area.

Comment: *III-135. There is no Baxter Trail Use by commercial stock because Garry Oye refused the two requests that we made by families to use the area. As one client was told by a senior Forest Service staff member... "we never intended or ever intend to allow commercial stock use on Baxter Trail".*

Response: Comment noted.

Comment: *Kearsarge Pass: The Forest Service fails to adequately explain why there is commercial stock use. It is for the most part because of restraint of trade provisions by the Forest Service and the Packers Association.*

There is heavy demand for use at Kearsarge Pass. If Mt. Whitney Pack Trains was allowed to use Kearsarge Pass or chose to do so....there would be a lot more trips that originated at Kearsarge and exited at Taboose, Sawmill and Shepherd Passes. There is incredible public demand for stock supported trips.

Response: Commercial stock use was considered and evaluated for all areas needed by the public in the 2001 Wilderness Plan and again in the FEIS. Many areas, particularly trail-less areas and very difficult and remote trails were restricted for commercial operators because of the potential for resource damage. Not all areas that commercial pack stock clients need access to were approved for commercial use.

Comment: *The exit quota situation at Trail Crest needs to be addressed in this document. There is an incredible demand that the Forest Service is denying to pack stock operators.*

Response: Refer to public comment # 175 response.

Comment: *There is a totally inadequate description of why, where and when there is commercial stock use into Sequoia National Park.*

Response: A discussion of use into Sequoia and Kings Canyon National Park was in the Draft EIS (Chapter 3, Section 3.2.1.1 John Muir Southeast). In addition, as the proposed actions affect use or impact into the Park, it is discussed in the cumulative effects section, specifically at the geographic scale, in John Muir Southeast and Florence/Bear, where this use from the forest into the park occurs.

Wilderness, Comments on Chapter 4

Public Concern #195: *There is incorrect information contained in the Wilderness section of Chapter 4. (All comments are from response #275)*

Comment: Page IV-14: Wilderness Scale: Party Size: I am not sure you can say there has been a trend toward more dunnage trips. Where is the data? Where is the statistical data?

The whole paragraph doesn't make sense and I believe does a poor job of looking at party size.

There are often smaller numbers of people in a commercial dunnage trip. That is because the cost is getting so expensive that the person requiring the service gets his or her dunnage packed in and then the rest of the group gets a general reservation permit.

Maximum party size is reached by Rock Creek many times. The comment is made that maximum party size is rarely reached. Reducing group size and changing grazing regulations has done more to cause an increase in stock per person than the assessment of the analysis made in IV-16

Response: The party size discussion has been subject of disagreement from both sides of the argument. The analysis was modified to try and include suggested elements brought out through all comments on the issue. There is very little direct research on party size and no research is going to determine a “proper” party size. The Record of Decision indicates the decision makers feel the level of analysis was adequate for the decision to be made.

Comment: Page IV-16: Wrong to talk about unintended consequences saying that the number of stock used has increased. The Forest Service should be saying that there is an incentive to get more money per service day. There is not an incentive to use more stock because stock costs a lot of money to maintain.

“Recently with the court ordered reduction in service days, the number of stock used has increased.” Absolute Lie. In the data you present there is a reduction in stock from over 8000 in 2000 and 2001 to 7004 in 2004.

You state that there was an incentive to service less people for a shorter period of time. Where does it show this in figure 4.2.2 and 4.1.3?

The Forest Service does not adequately know how to analyze the data. In many cases, there is more stock used since the party size has been reduced to twelve people. That means that instead of having one group of 12 guests, 3 crew and 10 head of stock...you will have a group of 8 guests plus three crew and then another trip of four guests plus two crew and a total of about 17 head of stock.

Response: Relative to the allocation and the actual use of service days, the data does indicate that more stock was used to service fewer people. This is what Figures 4.2.1 and 4.2.3 indicate in the DEIS. If one looks at the use of service days in 2001 compared to the number of stock and compare to that proportion in 2003 or 2004, you see the point—there was 44% less service days used and yet only 16% less stock. The analysis does not try to interpret the relationship between party size and stock, merely service days and stock. The Forest Service does not allow a party to be split into two as described above to avoid the party size limitations. If this happened or is found to occur, it is considered a violation of the intent if not the letter of the regulation.

Comment: No statistics are used in IV-17 and even if you believe there is a trend (I don't)...the difference in numbers isn't going to affect the environment. If you look at their three year analysis we are saying that we would use 142 head of stock to service 100 people in one year and 147 head of stock to service 100 people on another year. However, before the new regulations took place in 2000 we would have use 145 head of stock per 100 people.

And, the data provided the participants in the Programmatic notes set out in July 2004 use different numbers of people, service days and stock than in the plan. The Inyo Packer Use for 2001 was 6141 people/8541 stock and 2002 E of people 4735 and 6404 #stock, 2003 the # of people 5290 and # of stock 7575. If you use these number you will get .71, .73 and .63 ratio of people per stock. This is a different set of numbers included in the DEIS. (these numbers would be used on page III-5 and for III-6.

Response: The analysis in Chapter 3 and 4 has specifically accounted for the use of stock for two-way spot and dunnage. A calculation was not done in the figures used in the “programmatic agreement notes.” The calculations were done to more accurately assess the use of stock, as ordered by the court. Previous reporting of stock has only calculated the number of stock once even though the stock was used twice, to service in and to return on a later date and bring the party out. This analysis was done from 2001-2004 for the FEIS. And 2001 is the baseline of use prior to all the changes from the Wilderness Plan and the court order. It provides a useful comparison. As stated in other responses, data prior to 2001 is incomplete, rendering a comparison impossible. In your contact with the Inyo National Forest, it was not clear what report you were referring to. Often resolving the differences cannot be done off the top of someone’s head, but requires adequate information and consideration.

Comment: *The EIS should be addressing important information:*

1. *Did the stock stay overnight?*
2. *What percentage of stock was tied to a picket line or allowed to roam free?*
3. *Was the stock used both ways? For example, if a mule takes a load of gear for one group and brings out another person’s dunnage is the stock counted twice even though it didn’t make two trips down the trail?*
4. *How much stock was used to haul feed vs. haul people’s gear?*
5. *Is the stock that is used to haul feed counted the same way as the stock used to haul people’s gear?*

If the Forest Service presented the data differently, one could possibly make informed conclusions about the effects of the 2001 Wilderness Plan and Court Directed relief.

Response: Much of this suggested information is not feasible or practical to collect for all the operators and as noted in many responses, accurate data from pack stations has been difficult to attain. It would likely provide little additional information that is needed to make decisions regarding the resource impacts we are attempting to respond to.

Comment: *The Forest Service fails to divulge the effects of its elevational grazing closures to stock. In 2004 the Inyo called the year a normal year...probably one of the driest in many decades. It forced packers to relocate trips and pack feed. This increases the stock count on the trail for feed.*

The DEIS isn’t looking at the impact per stock number. The Forest Service is looking at a few operators and improperly assuming that each packer wants to rent more livestock. Economically, it makes sense to charge more per animal than less. The data doesn’t support the conclusions.

Response: Delaying grazing until forage and soil conditions reach “range readiness” is a Forest LRMP Standard. Appendix G of the JM/AA Wilderness Plan re-states this direction, and

identifies that range readiness will be determined for pack stock use following the guidance in the Forest Service Range Management handbook (2209.21). The Record of Decision for the AA, JM and DL Wildernesses FEIS identified the issuance of Forest Orders as the tool for implementing range readiness standards, and the Wilderness Plan for the AA, JM and DL Wilderness Areas states that these Forest Orders may be revised annually, if necessary, to established grazing start dates. The CEA/EIS does not propose a change in this direction, and therefore the effects of delaying grazing until range readiness standards are met are not evaluated as part of this document.

Predictions of range readiness dates are made annually prior to the start of the pack stock grazing season, based on percent of normal snowpack. This prediction is used as a basis for the establishment of grazing start dates incorporated into the Forest Orders implementing grazing closures. The elevational closures are intended to reduce the impact of packing feed on packstock users by allowing grazing in lower elevations while waiting for range readiness in the higher elevations of the Wilderness areas. The desire to utilize packstock in areas prior to meeting range readiness conditions may necessitate the packing in of feed, and this increase of stock on trails is an effect that is described in Chapter 4.

Comment: *In IV-18 there is the statement that there is no incentive to use less stock. I strongly disagree that there is an incentive to use more stock.*

Response: The statement was that the court order (reduced service days) “seemed to be an incentive to use more stock.” This is supported by the tally sheet data. Some packers have indicated that this is in fact the response to the reduced service days. There have been implemented a minimum stock number for services by some outfits as example. Perhaps not all outfits responded this way, but there is supporting evidence that this does appear to be the case.

Comment: *The EIS is flawed in that it assumes that with daily and seasonal stock quotas there will be an increase in the number of clients. And, then furthermore it states that it is the number of stock and not the number of clients that affect the resource. This document does not assess what the impact on the resource will be by encouraging more clients.*

Response: The EIS does not so much assume there will be an increase in clients but attempts to provide the incentive—in Alternative 3—to serve more people without using more stock. The focus of the courts issues were on stock impacts, and research does indicate that stock has more impacts (albeit different) than hikers. There are impacts with people and more people, and the FEIS attempts to provide more discussion of these impacts.

Comment: *On page IV-19 the Forest Service gets into operating areas. Instead of assessing the cumulative effects on the resource of having various outfitters and members of the public utilize overlapping areas...the Forest Service proposes to eliminate overlapping commercial stock use. This is wrong. Instead of doing a proper environmental analysis the Forest Service makes the decision to eliminate overlapping use. And, the Forest Service wrongly assesses the impact of this decision on the resource.*

Furthermore, they lie that packers are doing more traveling trips into areas where they had not historically operated.

Response: There is no reference to this comment and such a statement could not be located in document. Since there is no significant assessment or attempt to assess “historic use” this may be taken out of context.

Comment: *How can the Forest Service say that assigning primary operating areas to those operators at a base facility will result in less impact to the Forest Service? First, the Forest Service needs to look at the environment and assess what are the affects of multiple operators using camps and drainage areas. Secondly, there is NEPA requirement to look at various alternatives and divulge reasonable environmental consequences.*

Response: The analysis does not state there will be less impact to the Forest Service, but it does help the Forest Service manage overlapping uses better. The analysis has determined that in at least one of the areas where there are many operators—Silver Divide—the impacts are more severe. Many of the operators have indicated that it has been a source of the problem.

Comment: *Chapter IV-21 states that the wilderness character will be improved. Unfortunately, it doesn't state that it removes the ability of the public to move through the wilderness with freedom. The Wilderness Act was established to allow the public to use their wilderness and not deal with all the regulations and restrictions suggested in Alternative #2.*

Response: In the same section (IV-20) the statement is made “Packers’ freedom of movement and camping will be substantially limited by the alternative.” The analysis does recognize this element of wilderness character that is being affected by more direct controls. The FEIS will clarify that not only packers, but clients of packers are limited, as that was intended but not well stated in the DEIS.

Comment: *Chapter IV-page 26 has a discussion of party size. Again, the Forest Service misses the opportunity to look at the impact of party size on the wilderness resource. The Wilderness Act specifically wanted historical use of livestock to support traveling trips such as the Sierra Club Hiking and Riding trips in the Sierra.*

If 25 people want to travel the length of the Muir Trail there will be less impact if we send one group of 25 with 20 head of stock than three groups of ten people with 45 head of stock.

Every time the Forest Service cuts party size, it requires more stock and packers to service less people. The stock per client and service day ratio climbs. If we want to have less stock per person or service day we need to increase the party size.

Smaller party size creates more traveling trips down the John Muir Trail. We used to be able to take 20 people with five crew on trips from Rock Creek to Mammoth. Now it would take three trips to get the same number of guests down the trail. As a result, there is a lot more use by fewer people.

Response: The commenter clearly believes that larger group size will have fewer impacts. This opinion will be noted in the analysis, and further discussion on the disagreement on this issue from various respondents will be provided.

Comment: *56a. Failure to evaluate the effects of trail head quotas and group size on the environment.*

Response: Substantial analysis of the effects of trailhead quotas and group size is provided in the “Wilderness” section for each alternative. Although it may not reflect every individuals opinion on these matters, there is not a failure to evaluate it.

Comment: *Page IV-244. It is good that you mention that Alternative 2 reduces Rock Creek Pack Stations ability to use this Ansel Adams Area. This will eliminate most of the opportunity for the general public to take a packer assisted pack trip the length of the John Muir Trail; this*

should be clearly stated. Why should you allow non-historical day use to increase and eliminate historical use of commercial pack stock that travel along the John Muir Trail?

Response: Many opportunities still exist for the public to take a packer assisted trip the length of the John Muir Trail. Some of this use is also regulated by Yosemite National Park, a terminus for the John Muir trail. Alternatives provide different levels of use that are determined to be appropriate and necessary in meeting the purposes of Wilderness Act and preserving wilderness character.

Comment: *I am not clear what is meant by the last paragraph of Chapter IV-247 regarding not controlling use into the Park. This is the only example I find in this EIS where the Forest Service has altered its plan following last year's document about pack stock use. Does this mean that Rock Creek Pack Station will have no control to enter Yosemite? Or, is this a specific courtesy granted to Frontier Pack Station?*

Response: The discussion on page IV-247 is in regards to the effects analysis for Alternative 3. Alternative 3 only controls use at trailheads, not by the direct methods of the Proposed Action where destination quotas specifically limited the number of trips into the Park. No, this does not mean that Rock Creek's use will be eliminated, in fact the next sentence states "It is likely that unless Yosemite National Park was to control the use over the boundary, there would be a possibility that more use could be along this corridor" (IV-248).

Comment: *Chapter IV-337. Fourth paragraph says that crowding will only be high in Cascade Valley and Iva Belle. Where is the crowding in Cascade Valley? Look at the use levels for the last 25 years. You can't find the campsites hardly in Cascade.*

Responses: There were two campsites in Cascade Valley identified in this discussion, one at Third Crossing and one at Second Crossing. Although conditions may have improved in the last fifty years, these sites continue to see impacts and are as the statement says "noticeable."

Comment: *You say trailhead quotas are not limiting use. False. You have no destination quotas in the existing management plan. There was never any intent to reduce use in Cascade Valley. Why would you reduce use in Cascade Valley when the use levels continues to decrease?*

Response: The statement is the trailhead quotas are currently not limiting use. Commercial pack stock use could, under current management continue to grow." This is merely stating the effects of current trailhead quotas, where commercial pack stations are not to any significant degree being limited by the daily quotas and the use continues at a similar level as it did prior to the Wilderness Plan.

Comment: *Chapter IV-337. Document is flawed in that there is a grazing plan and the only problem is that the Forest Service didn't enforce the plan. And, the Forest Service has allowed growth by numerous people. This is a poor analysis of Alternative 1. The Forest Service is currently obligated to work with packers on an operating plan. Under Alternative 1, the Forest Service is supposed to manage the wilderness correctly. Any adverse affect to commercial grazing, campsite use, etc may be managed with the operating plan. There is no need to put Alternative #2 in place to achieve management objectives.*

Response: It is true that the Forest Service uses the operating plan to address site-specific management issues not typically included in LRMPs. And, it is true that grazing management direction was developed in the 2001 Wilderness Plan. However, it was not until site-specific

data was collected in 2002-05, that range suitability and other site-specific grazing determinations could be decided. The 2005 FEIS incorporates the new data and analysis, and includes and evaluates minor adjustments to the grazing management direction in the different alternatives.

Comment: *A statement on IV 337 “There are few limits on grazing currently and management of grazing will likely respond reactively to impacts”. This is the situation that has occurred in Cascade Valley, even recently, as Second Crossing was closed after impacts had been identified. Current direction has not fully been implemented and it will be noted that within this Alternative there could be responsive management.*

Response: see response to comment above

Comment: *Chapter IV-338 You state that you will cut Rock Creek’s use by 46%. Where will these people go in the wilderness? If you are going to propose an alternative that reduces this much use you should identify what the effect is going to be in the wilderness. This EIS fails to give a reasonable alternative.*

Response: If the use is cut, the people will not be in the Wilderness. There will be fewer commercial clients and the effects of such are described.

Comment: *You state that you are going to increase Upper Fish Creek by ten trips and 9 trips to Cascade Valley and show a sizeable increase in spot and dunnage trips. Your analysis suggests that this will reduce impact. Yet, on page IV-339 you say that there will be 100 less stock using the unit by removing Rock Creek Pack Station’s Use. However, you replace Rock Creek’s use with 20-30 other trips without stock and service day units and say that there is less chance for stock use? What is going on? The implication is that you can increase 20 trips by McGee and Mammoth and reduce a couple of Rock Creek Trips and there will be less impact?*

Response: The reduction in full service stock supported trips will have a beneficial effect on grazing and campsites in the area. Spot and dunnage trips do not utilize these resources to the degree that full service trips do.

Comment: *Chapter 4 page 342. First paragraph is misleading. Historical use patterns have changed. However, the change is that there is little use from Red’s Meadow compared to considerable use year ago. And, there weren’t pack trips from June Lake. The increase in use is from June Lake.*

Rock Creek Pack Station has been trucking livestock to Red’s Meadow, Mammoth Pass and occasional other trail heads since the 1940’s. Rock Creek Pack Station has used Mammoth Pass as a trailhead since the 1970’s and continues to service some of the same clients.

The Forest Service has permitted significant increases of Hilton Lakes by the packer at McGee Creek.

The Forest Service fails to mention that the problem is that the packer at Mammoth and Red’s Meadow doesn’t want competition. They want to eliminate traveling trips over Mono Pass. Then, they don’t want anyone to truck to another trailhead. The real issue is one of restraint of trade and has very little to do with resource impact.

Response: This is not consistent with use data and other comments from packers using the area and demonstrates the various opinions and perceptions that exist on use levels and effects. The analysis attempts to not assign blame to individual operators. Over twenty years ago the Forest

Service limited Rock Creeks use from Rock Creek to Mammoth and Yosemite trips. This apparently is not a new issue. Over time the limitation either lacked enforcement or was forgotten. The actions of Alternative 2 very much mirror the actions that were in operating plans in the 1980s.

Comment: *There is so much less use than twenty years ago that this whole discussion of cumulative impacts is almost ridiculous. Our crews seldom see other livestock and there are few outfitted pack trips that we encounter in the Fish Creek and Jackson/Grassy Lake area.*

Response: See response above on perceptions of impacts. The court has required the Forest Service to do a cumulative impact analysis because of evidence of resource impacts. It is the Forest Service's responsibility to establish the record on the type and level of severity of resource impacts from commercial pack stock in these wildernesses. As difficult or ridiculous as the descriptions may seem to those with more tolerant views of impacts, it is nonetheless a requirement.

Comment: *This DEIS is so deceitful in creating a perception of overuse and conflict of overlapping commercial use in the wilderness. Unfortunately, there is a lack of thoughtful analysis and field work that backs up the conclusions suggested in the DEIS.*

Response: We disagree that a 500-page effects analysis that considers effects at a very localized levels for five alternatives could be considered lacking in thoughtfulness. It may not match the opinions of others.

Comment: *Why doesn't the EIS give a physical description of the camp and explain how many feet are taken by tents, picket line, paths, etc. Why not mention the actual number of camps in a particular area and the percentage used of camps. And, why not mention the duration of the use? An environmental analysis should focus on concrete physical analysis and quantitative data. It is lacking in much of the document.*

Response: This is a programmatic document that provides direction of site-specific management of campsites. There seemed little need to discuss the level of detail suggested in the comment above in a programmatic document. As it stands the level of detail is far more than is required of an environmental analysis at the programmatic level. Perhaps a false expectation had been created with some of the details. An environmental analysis needs to focus on the relevant issues and information for the decision to be made. We hope that the Final EIS provides adequate direction for annual operating plans to fulfill the goals and objectives laid forth.

Comment: *Grazing at Jackson Meadow and Grassy Lake Area: There needs to be a wide variety of campsites and grazing options that allow people to stay for more than one night. Most people go to a central area so that they can fish and explore this area's lakes.*

Response: Given the resource impacts in this area, it is a proposal in one of the alternatives to limit camping to a one-night stay. This is a fairly common tool to use in wildernesses in locations where conditions warrant a reduction in use, but not a total closure.

Comment: *Chapter IV-383: Whether or not you have designated stock camps there will be similar uses. Perhaps the Forest Service should maintain the trails. No appreciable maintenance since 1968 of almost all of the trail from Rock Creek to Hilton. Could that be the reason for deterioration of trail resources?*

Response: Substantial repair efforts were performed on much of the Hilton trails in 1980 and in the early 1990s. Basic maintenance is performed annually or as often as funding allows. It is likely that more maintenance will be required on trails in the Hilton Lakes area that continue to receive heavy commercial stock use. Some responsibility for assisting with trail maintenance lies with the commercial operators who primarily use the trail systems.

Comment: *Why allow multiple operators in Hilton and not in Cascade Valley or other regions of the wilderness?*

Response: Multiple operators are allowed in both Hilton and Cascade Valley. However, only one primary operator—for spot and dunnage trips—is allowed in Cascade Valley. In Alternatives 2 and 3, three primary operators are identified for Hilton primarily because there are multiple way of entering into Hilton, from the Rock Creek side and from the Hilton Creek side, and that three operators had been using these access points for a number of years, and two of the operators had very little use.

Comment: *IV-385. Lie that Pioneer Basin has seen a proliferation of use trails. Less use and many of the trails used in the past are not possible to see.*

Response: The statement has been modified in the Final EIS to reflect that there are a high number of use trails with resource concerns. It was noted as a cumulative effect of past use and present general public and commercial pack stock use. Observations from the public, Forest Service and other packers indicate that there has been a proliferation, which again points to a difference in perceptions.

Comment: *Chapter IV-391 The discussion of trails into Fourth Recess and Pioneer Basin is ludicrous. There are multiple trails into Fourth Recess to get to various camps...primarily for spot and dunnage trips.*

Response: The discussion on page IV-391 of the DEIS predicts the effects of fewer stock camps. It has been modified in the Final EIS to add that trails will persist to spot and dunnage sites, as this use will not be controlled.

Comment: *The comments about Pioneer Basin are incorrect. There are not excessive amount of trails in Pioneer Basin. The trails are all going someplace and allow someone to ride around the Basin in one day. By closing trails you will have people spending several days trying to get to various lakes. Therefore, by closing trails you will be causing a lot more impact.*

Response: It is highly unlikely that by closing some of the impacted trails to commercial stock use it would take the public several days to get to the lakes. For example, the distance from Mudd Lake (where commercial pack stock can travel to) to the upper most lake is approximately 2 miles. Perhaps there will be some people who will be excluded from some of the many lakes in the basin if they are unable to walk the distance, but it is not likely that most people will be excluded, nor would it require several days of walking.

Comment: *Chapter IV-480-485—Where is Orchid Lake's use described. Rock Creek pack station wants to go to Orchid. Need to mention the permanent camps and trails built in the 1950's and 1960's.*

Response: Orchid Lake's use is described in Chapter III in the Florence- Edison Geographic Unit. There currently is not a visible trail to Orchid. There is not recorded use in the past five years. Orchid Lake is mentioned in Arn Snyder's 1962 report where he proposed permanent type

camp at various locations, including Orchid, but there is no record that this was done at Orchid, nor is there any evidence of any heavy use from the past.

Comment: *Chapter IV-530 Limiting stock number to Taboose and Sawmill essentially prevent use by Mt. Whitney and Rock Creek Pack Station. The restrictions in Alternative 3 are awful and essentially close the use to stock.*

There currently aren't resource problems from the trails and there is no reason to put more restrictions.

Response: Page IV-53 of the DEIS describes Alternative 3 for Taboose and Sawmill. Both trails access Sequoia-Kings Canyon National Park and these numbers respond to both current use levels and the park's stated desire not to increase use on these trails into the Park. This analysis must consider use that is affecting adjacent lands administered by other agencies. We have worked closely with the park to insure that our actions are consistent with their management objectives.

Comment: *Chapter IV-531. You state that Cottonwood will be one operator. Mt. Whitney has been using the Basin since 1921 and this statement is wrong.*

Response: In Alternative 3 (IV-p.531 discussion) there will be one operator in Cottonwood Basin. It is not relevant to the discussion that there was historic use to the basin by a second operator. There are no current records for use by other operators, so no effect to a second operator was described.

Trails, General

Public Concern #196: *The writers of this document refuse to research the files and extensive public historical collections of pictures, maps and journals that explain where, why and how these trails were built.*

Response: The scope of this project is to determine the management of commercial uses and trails of the planning area. Where, why and how trails were built while interesting, is not necessarily a relevant factor that needs to be considered in any detail. Where this information is relevant, it has been noted. The EIS is not intended to be an account of the history of all management and uses in these Wildernesses. References are noted and cited when applicable.

Public Concern #197: *Trails improved to stock standards have a greater effect on wilderness character, and are more costly to maintain than trails with little or no packstock use. (response # 301)*

Response: As disclosed in the DEIS, the somewhat higher profile of high-use stock trails may be seen as having a greater imprint of human influence on wilderness. Pack stock—both private and commercial—are acceptable uses of wilderness lands and trails, so most trails are maintained for such use. Private equestrians are allowed on all trails in the AA/JM wilderness, though some lesser-used trails are of a very limited scale, and have a relatively small profile.

Public Concern #198: *An alternative should have been analyzed that restricts commercial pack stock to certain trails, and to campsites within a limited distance (1/2 mile) from those trails. (response # 301)*

Response: Alternatives 2, 3 and 4 in the DEIS and the selected alternative in the FEIS restrict commercial operators to certain system and use trails which are determined suitable for commercial stock. They are also limited to traveling off-trail to less than ¼ mile to access camp sites.

Public Concern #199: *No alternative considered charging fees to maintain or repair trails. (response # 301)*

Response: This suggestion is outside the scope of this project.

Public Concern #200: *The Forest Service should limit pack stock to trails that were designed for that use.*

Comment: *Trails that have not been adequately located, designed, constructed, and maintained to fully withstand the heavy impacts of stock use should be closed to all commercial stock animals. As a starting point, all "Class 1" trails identified in Alternative 4 should be closed to commercial stock. (response #form letter C, form letter D, form letter E, form letter B, 65)*

Comment: *Trails such as Mono Pass, Taboose Pass, and Sawmill Pass should be completely closed to stock animals. It is clear that neither the Forest Service nor our country can afford to repair the destruction of constant pack animal use in the high country nor should we have to. (response # 178)*

Comment: *Commercial pack stock should not be allowed on trails in poor condition or subject to excessive degradation by the use of pack stock on them. (response #36, form letter B)*

Response: The 2001 Wilderness Plan allows private stock on all wilderness trails except Mt Whitney and Meysan Lakes, but does allow for certain trails to be closed to commercial pack stock. In the selected alternative, commercial stock is restricted from approximately 90 miles of trail in the AA/JM Wilderness, which were determined to have the greatest potential concern with recurring pack stock use. Another 9 miles of trail are temporarily closed until concerns can be mitigated. Other trails, which can only stably handle limited numbers of stock are allowed for commercial use, but use is restricted to sustainable levels through quotas and destination limitations. Use trails (non-system) have only been approved when it appears that anticipated uses will not lead to unacceptable resource effects.

Public Concern #201: *Trails that are frequently used by pack groups should be actively maintained throughout the peak months to minimize or eliminate the horrible and unpleasant dust problems for users. (response # 318)*

Response: While dusty trails are unpleasant, attempting to eliminate dust from stock and/or hiker trails is neither a practical action, nor within the scope of this analysis.

Public Concern #202: *Designate a network of hiker-only trails in the AA/JM Wilderness. (response # 345)*

Response: The 2001 Wilderness Plan specifically "...permits recreational pack stock and hiker use on all trails except Mt Whitney and Meysan Lake, which are closed to pack stock." (Record of Decision, pg. 4)

Trails, Off-Trail Travel

Public Concern #203: *The Forest Service should not allow off-trail travel by commercial pack stock.*

Comment: *For travel off of designated trails (i.e., off-trail or across-country travel), we recommend the following group size limits as indicated by the latest research for the protection of wilderness resources and values: maximum eight persons per group, with no stock animals allowed off-trail, except for grazing at approved forage areas. The suggested limit of eight persons/group for off-trail travel would provide important protection for resources and visitors experience in little-used areas (see Cole 1989a, 1990, 1997), and would be consistent with limits in effect at the adjacent Yosemite National Park and Hoover Wilderness. In addition, given the high likelihood for significant impacts whenever stock animals leave designated and maintained trails, your final plan should also specify that off-trail travel by stock animals shall be allowed only on specific routes identified after careful site-specific NEPA analysis with full public involvement. (response # 196)*

Comment: *Scientists have long recommended that stock animals should stay on trails that have been designed, constructed and maintained to withstand the impacts of stock use. Commercial stock should be required to remain on designated trails, with no exceptions. No off-trail travel by commercial stock should be allowed. In Alternative 4, commercial pack stock use must stay on existing trails. Off trail travel must not be allowed, and any commercial pack stock travel must be restricted to designated maintained trails and identified grazing areas only. Allowing off-trail use will result in negative impacts of pack stock into areas where trails do not reach. (response #form letter B and D, 33, 35, 36, 153, 372)*

Response: In the selected alternative, commercial operators are limited to certain system trails and approved use trails. A small number of the “use trails” were relatively undeveloped and undefined “cross-country” routes. Generally these were approved for very limited numbers and during a specific season of use (i.e. “Hunting use only”), with the intent of maintaining the undefined character of these routes.

Trails, Settlement Agreement

Public Concern #204: *The Forest Service should comply with the terms of the Settlement Agreement between the Backcountry Horsemen and the Forest Service. (response # 276, 278)*

Response: The April 2004 Settlement Agreement with the Backcountry Horsemen of California (BCHC) contained five key items. The first three ensured that the inventory in Appendix C of the Wilderness Plan would not be used to change the management of trails in the AA/JM Wildernesses, and that the forests would maintain trails to their “current assigned levels” to the best of their ability.

Item four states “Defendants will complete a Trail Transportation Plan pursuant to a public process, with the objective of completing it by December, 2006.” Item 5 states: “In preparing the NEPA analysis for the Trail Transportation Plan, defendants will use the 1987-88 trail inventory as the “No-Action” alternative for the Inyo National Forest.” The “no action” inventory for the Sierra NF was not addressed in the settlement, and no pre-2001 inventory for the Sierra was available.

No part of the agreement related to any other guidance in the 2001 Wilderness Plan, including the use of three Recreation Categories, which provide “desired conditions” for various areas in these wildernesses and which affect future development and maintenance of trails accessing these areas.

Public Concern #205: *The DEIS does not meet the intent of the Court Order requiring that the agency look at “trail suitability for various types of use.” (response # 276, 278)*

Response: Within the context of the Court Order, “trail suitability” is interpreted as relating to the suitability of commercial stock on Forest trails in the AA/JM Wilderness.

Trails, Trail Management Plan

Public Concern #206: *Rather than reduce trail quality and trail miles, why don’t you use volunteers and other community groups that would love to help maintain trails? (response # 180)*

Response: The Inyo and Sierra National Forests frequently utilize the volunteer efforts of many groups and individuals to maintain trails. These efforts have helped the forests to maintain trails and reduce resource impacts. In cases where Trail Class designations have been reduced in the Trail Plan, it is generally to meet the intent of the desired condition of a destination, and the anticipated use types and levels on a particular trail. The trail class defines the level of development and maintenance, whether the work will be accomplished by volunteers, permittees, or Forest staff.

Public Concern #207: *The Forest Service should not engage in destructive practices such as blasting to accommodate stock use of trails. (response # 221)*

Response: While certain maintenance activities, such as blasting may be seen as “destructive”, the goal of trail maintenance is to ensure that there is one stable route, passable to anticipated trail users—both pack stock and hikers. Blasting is one of the tools which is occasionally used to provide this system. Failure to employ such techniques could make a trail impassable to both stock and hikers and has potential to cause resource impacts from trail users bypassing obstacles.

Public Concern #208: *The Forests should allow commercial pack stock to use all trails and areas historically used by stock, and these trails should be maintained accordingly. Commercial stock should not be restricted from trails that private stock are allowed to use, since all stock have the same impacts, and commercial operators can handle safety issues on the trails. (response # 198)*

Response: The 2001 Wilderness Plan specifically “Permits recreational pack stock and hiker use on all trails except Mt Whitney and Meysan Lake, which are closed to pack stock” (Record of Decision, pg. 4). The plan also provides for designating certain trails as “Not Recommended for Stock,” which would directly prohibit commercial operators from using such trails. This designation in the FEIS is now “Not Suitable for Commercial Stock” (NSCS), to clarify the intent. The Pack Stock Management analysis is focused on commercial pack stock operators, and is not intended to make actions directly affecting private stock or other Wilderness users.

The NSCS designations are primarily focused on resource impacts and/or destination limitations, and are not intended to deal with safety issues. Commercial operators are capable of making judgments regarding the safety of their clients, stock, and wranglers related to relative risks on a

trail, but where there are trail or resource instability concerns, it may be necessary to remove recurring stock use. Since private stock makes up such a small fraction of stock use, and an even smaller level of total trail use; and since most of the private equestrian use is on higher level trails, the comparative impacts are relatively low.

Public Concern #209: *On page IV-46, the Forest Service seems to not want to invest in maintenance resources and by keeping commercial stock off the trail; they believe they might not need to maintain the trails. "Hikers can go anywhere". On page IV-109 "Trails with severe water and soil resource impacts may be repaired within 10 – 30 years". This does not sound like a high priority issue! (response # 198)*

Response: It is the intent of the Forests to maintain trails in a manner that keeps them stable under the anticipated uses. Recurring use by commercial stock—especially on less-developed trails—is a factor which can increase the instability of a trail without high levels of maintenance. In areas with high risk factors and/or other limiting factors, reducing pack stock may increase trail stability. Funding for both the Sierra and Inyo NF is inadequate to equally maintain all trail infrastructure and resource stability on every trail with every use type and level. Prioritizing these limited financial resources allows the Forest Service to focus on trails receiving the highest levels of commercial and private use.

Public Concern #210: *The trail inventory [for the Sierra NF] referenced in the DEIS is incorrect, incomplete, and improperly referenced. A more accurate trails inventory than the 2001 Wilderness Plan was made available during the Backcountry Horsemen lawsuit. (response # 273)*

Response: An inventory was in place for the Inyo NF at the time of the last FLRMP (1988), but no comparable inventory was found for the Sierra NF, and was not directly referenced in the Settlement Agreement with the BCHA. As stated in this comment above and in the Purpose and Need for the DEIS, all known inventories—including the 2001 Wilderness Plan inventory (Appendix C)—had a variety of errors, omissions, improper inclusions, and other inaccuracies. This is part of the need for completing the analysis.

Public Concern #211: *The decision related to commercial pack stock may have a profound effect on the future of private stock in these two wildernesses. Private stock use, according to the Forest Service records reported in the DEIS, comprises a very small percentage of total use (3%). It may become increasingly difficult to justify expenditures related to managing the trail system for such a small amount of use. (response # 273)*

Response: While private equestrians account for a small number of total users, trails will continue to be maintained in a manner which accommodates their use, within budget constraints. The vast majority of private equestrian use occurs on higher level (Class 2 and 3) trails, in part due to the long-term awkward conditions historically found on most lower-level (Class 1) trails.

Public Concern #212: *The DEIS violates NEPA by failing to adequately consider the effects of reducing trail standards on historic users. The DEIS choose not to address the issue that trails in Recreation Category 1 areas will become impassable to stock because the issue was decided in the 2001 ROD. Although the proposed alternative does not specifically close trails in Recreation Category 1 to stock use, design attributes for Trail Class are not sufficient to accommodate passage with pack and saddle stock. (response # 276, 278).*

Response: When Recreation Categories (RC) were determined in the 2001 Wilderness Plan, the existing uses and development of facilities (including trails) were considered. In general, these areas have low-development trails, because historical and existing uses are relatively low. There are generally very few trails in RC1 areas, and these are often assigned lower Trail Classes (TC1 and TC2) since the trails can remain open and stable with low use and with minimal development and management. It should be noted that approximately 40-50% of all trails accessing RC1 areas are TC2 or TC3. All Trail Classes have maintenance standards which are intended to allow passage of pack or saddle animals, though TC1 trails are much more difficult to travel than higher-development trails.

Public Concern #213: *The DEIS concludes that establishing trails not recommended for stock and prohibiting commercial packstock on some trails may reduce conflicts between users. The document uses conflict management as part of the justification for selecting Alternative 2, yet fails to consider a full range of alternatives for accomplishing that objective. We suspect that the real motivation of these restriction is to accommodate a relatively small minority of ‘wilder-extremists’ (both inside and outside the agency) who object to seeing stock in the wilderness and object to knowing that commercial packers are providing services for profit. (response # 276, 278)*

Response: Reducing conflicts was described as an effect or byproduct of the designations, not as a purpose or need for the analysis. In the FEIS selected alternative, trails are no longer described as “Not Recommended for Stock.” Similar advisories may be provided in public information to help trail users with expectations of conditions. Trails closed to commercial stock are based on resource concerns, as well as potential effects on various factors, including wilderness character at the destinations. The criteria are described in the summary section of each alternative in Chapter 2.

Public Concern #214: *The DEIS violates NEPA by failing to analyze the effects of allowing stock use on trails that are not managed to accommodate that use. For example, insufficient clearing widths and heights on TC 1 will likely result in stock users leaving the trail to go around logs and other obstructions. (response # 276, 278)*

Response: Most Trail Class 1 trails receive very low equestrian use, and the trails should remain generally stable under such limited use. The potential effects of stock use on underdeveloped trails were disclosed in the DEIS Chapter 4. Standards for Trail Class 1 trails are clarified in Chapter 2 to ensure that obstacles will be removed to accommodate packs and saddles when such use is present, so that stock can stay on the trail.

Public Concern #215: *The Forest Service should not implement the proposed “National Trail Management Classes.”*

Comment: *The Purpose and Need Section makes assumptions, or inaccurately interprets legislation, that are inconsistent with the intent of law or policy. Specifically, the use of proposed trail service levels and maintenance standards in the DEIS does not conform with direction in the Forest Service Directives system. The National system of trail classes or service levels and the classification system they are a part of has not been subject to NEPA analysis nor has it been approved by the Chief of the Forest Service. Current direction in the Forest Service directives system calls for a three classification system of “easy, more difficult, and most difficult” and provides design guides for these three classes that are substantially different than those for the service levels in the DEIS. (response # 276, 278)*

Comment: *In accordance to the Wilderness Plan, in all of the proposed alternatives within the DEIS, inventories of trails within the wilderness areas will be subjected to a "National Trail Management Classes," which does not exist at the present time (DEIS at II-2). How can there be so much discussion about "trail classes" and levels of management when the National Trail Management Classes, and the attendant "service levels" ascribed to each class, have not been determined? Since its does not yet exist, there is, presently, no way to determine whether the National Trail Management Class formulated in the hills and woodlands of the eastern United States will have relevance to the Sierra. (response # 357, 348)*

Comment: *The National Trail Use Standards listed in this document are not yet approved nationally. These standards are being applied in this document improperly and used as if they were approved. (response # 273, 278)*

Comment: *Although an improvement from the 2001 Wilderness Plan, there is concern over some of the trail design standards. Specifically, the TC-1 tread width is insufficient to accommodate anything but very light stock without resource impact. Surface obstacles are also a problem. For TC-2 standards, there is still a concern with the standard for surface obstacles. (response #273)*

Response: While the national direction regarding Trail Classes is not currently in the Forest Service Trails Handbook (FSH 2309.18), it has been interpreted as an expansion and clarification of management and design in existing similar classifications (described as "Difficulty Levels" in the 1991 Handbook). The five-level National Trail Class system was based on a long-standing five-level system used prior to 1991, and has been in development and use since 2001, as a way to more accurately classify trails for costing and consistent management.

The Inyo and Sierra Forests described intended management for each of the AA/JM Wilderness trails in the DEIS, using the Draft National Trail Management Classes as a baseline. These were then modified slightly, to clarify specific direction for these two wilderness areas. Design guidance for trails within the AA/JM was also based on the Draft Design Parameters, which take into account the Trail Class and use type in managing trails.

While there are slight differences between the "Difficulty Level" system and the Trail Class system, the definitions in the new system—especially as clarified in the AA/JM document—make clear the intent to accommodate varying levels and abilities of pack and saddle use on trails in the AA/JM Wildernesses. Standards in FSH 2309.18 for trails designated "Most Difficult Pack and Saddle Trails" specifically state that "pack animals are normally not accommodated on most difficult trails." Since the JM/AA 2001 Wilderness Plan allows private stock on all trails, TC1 standards are designed to at least minimally accommodate all users.

Public Concern #216: *The following statement of the "Purpose and Need for Action" is inconsistent with the intent of the Wilderness Act: "Use of inaccurate inventories and trail management objectives that were not be in compliance with the 2001 Wilderness Plan has led to ineffective management of the trail system, which in turn adversely affects both users and resources.. Past trail system inventories for these areas are incomplete, have a variety of inaccuracies, and in many cases are inconsistent with the management of the areas that they access." Unless it can be clearly documented that management actions since designation have resulted in development of the trail system to a higher level than that which existed when Congress determined the two areas as suitable as wilderness, or unless there is specific statutory wording directing that the trail standards be downgraded to a lesser standard than existed when*

Congress deemed them suitable, it must be acknowledged that “past trail system inventories” are consistent with Congress’ intent regarding the management of the areas they access. (response # 276, 278)

Response: By carefully assessing both the existing and anticipated needs of the trail system, an accurate inventory can be developed. As described in the purpose and need in the DEIS, some “trails” on the inventory clearly had never been a distinguishable trail, and others clearly had always been incongruent with their stated management levels. Management direction for these wildernesses that is more recent and builds upon the Wilderness Act (such as the Inyo and Sierra Forest Plans and the 2001 Wilderness Plan) provides more specific guidance regarding trail management in these Wildernesses. The selected alternative in the FEIS has an inventory which considers this specific management direction.

Public Concern #217: *The DEIS inadequately assesses the cost of managing a trail system to accommodate allowed use and correct the effects of deferred or otherwise inadequate maintenance. The Forests are using inadequate maintenance budgets as justification to exclude, limit, or otherwise discourage allowed and historical uses and to create a favorable setting for a special class of users. (response # 276, 278)*

Response: The FEIS has a more complete analysis of costs associated with managing the trail system. The Forests recognize that under current budgets, not all trails can be maintained to the designated standard.

Public Concern #218: *A comparison of any map published before 1964 with a Forest Service map available now reveals that there are less trails represented on Forest Service maps now than there were on maps published prior to 1964. The reason for this is open to speculation, but the fact that a trail is not represented on a current Forest Service map does not mean that it does not exist. Thus, the “trail inventories” submitted by the Forest Service probably exclude many trails which will no longer “exist” if the terms of the DEIS are adhered to. To wit, at page IV-33, the DEIS states, “Trails removed from the inventory generally [emphasis added] did not exist on the ground . . . In some cases, these trails appeared on published maps.”*

The DEIS contains references to the savings in cost of diminishing trail maintenance through the “reclassification” of trails to a lower trail class level. (IV-35) The exclusion of these “non-existent” trails (1) eliminates the cost of maintaining them, and (2) closes them to pack stock (II-3). To save a few dollars (and by not allowing volunteer trail maintenance efforts), trails will be lost or closed to pack stock. (response # 348, 357)

Response: See Response to Public Concern # 216

Public Concern #219: *The DEIS fails to evaluate the current as well as historical environmental impact of all uses in the areas in establishing a Trail Management Plan, notwithstanding that the DEIS recognizes that uses other than stock use have a significant impact. (ES-8) (response # 401)*

Response: The current analysis is primarily focused on commercial pack stock operations. The trail plan attempts to respond to anticipated use types and levels, whether hiker, private equestrian, or commercial equestrian. As stated in the introduction for the trails section in Chapter 4, all trail users have a variety of effects on a trail system and resources in the immediate corridor. The effects of hiker use on a trail are different than equestrian use, and are described in that section.

Public Concern #220: *California Equestrian and Trails and Lands Coalition objects to the proposal in the DEIS to adjust trail maintenance levels to reflect recreation categories and desired conditions in the 2001 Wilderness Plan. Alternatives 2-5 will restrict the use of much of the trail system by historic pack and saddle stock, limit pack and saddle stock to heavily impacted portions of the wilderness and deny pack and saddle stock users the opportunity for solitude and a primitive or unconfined recreation intended by the Wilderness Act. (response # 278)*

Response: See Response to Public Concern #212 and #214.

Public Concern #221: *Have pack stations lost the use of trails by combining the Trail Plan with the Commercial Pack Stock Management EIS? (response # 311)*

Response: No. The analysis of the two planning efforts is being conducted jointly, in part because many of the considerations are the same. However, the actions for each planning effort are being undertaken separately, so that the Commercial Pack Stock Management actions are limited to commercial users, and the Trail Plan affects all trail users.

Public Concern #222: *When providing education about trails not recommended for private stock, limit signage within wilderness to the minimum.*

Comment: *We also would suggest that that warning signs on trails Not Recommended for Stock (NRFS) be done only in a general sense at the trailheads or perhaps listed in some sort of handout that could be given to stock users. Risk is inherent in Wilderness, and most of the wilderness areas surrounding the Ansel Adams and John Muir have policies against warning signs within wilderness areas. Signing within the wilderness may imply this sort of hazard is safe if not signed, and set precedence for those using other parts of the Sierra. Closing a trail to prevent resource degradation does not necessarily violate our policies in the park, although signing is kept to a minimum. (response # 426)*

Comment: *The level of signing for trails designated as "Not recommended for Stock." In general, wilderness should be as free from human installations as possible. Since these trails are primarily limited to commercial operators, it is reasonable to expect these operators to know where they can and cannot go. To place signs to assure no use seems unnecessary and counter to wilderness management practices. (response # 425)*

Response: Trails "Not Recommended for Stock" will not be designated in the FEIS, and will be designated as a future administrative consideration. This comment will be considered when evaluating the best and most appropriate methods to communicate this advisory to the public.

National Trail Management Class

Public Concern #223: *The DEIS promises, at ES-5, "The Wilderness Plan direction is to adjust trail maintenance levels to match the three recreation categories (cite). This does not prohibit stock in recreation category 1 areas. Trails may be more primitive and rough, but this does not exclude stock use." And yet the DEIS contains a lot of discussion of just how pack stock WILL BE EXCLUDED from "Class 1" trails! (At pages I-2; II-48; IV-45; I-8; II-3, just to name a few examples.) In fact, the DEIS recommends, at page D-40, "Trail Management Direction: Do not upgrade any trails from maintenance level 1 and 2 solely for the purpose of facilitating stock use." But this statement is contradicted by other citations within the DEIS which show that, in fact, "Where the trail is of poor quality or blocked, thereby forcing detours, additional impacts may occur," (IV-66, Table 4.1.19) and also, "In many cases, designating a higher trail class to*

meet an immediate or expected demand will have beneficial effects on the physical environment. If a use trail or low-development system trail with minimum management is not so difficult to travel that use is limited, and it is currently receiving heavy use, it is likely that the trail is already causing some physical resource impacts that could be corrected by more intensive management. In these cases, designating a higher class and bringing the trail to standard would likely have a beneficial effect by stabilizing damaged sections of trail, improving drainage and reducing effects on various resources without significantly changing use patterns" (at IV-35). It would appear that trails used by pack stock actually benefit the ecology of those trails, and that would be consistent with the fact that the majority of the trails in existence today were created by stock users before 1964. (response # 348)

Response: See Response to Public Concern # 212 and #214.

Public Concern #224: *An economic analysis of trail maintenance funding, including historical, current and anticipated funding, as well as maintenance backlogs by various alternatives must be provided for the public to understand the consequences of the alternatives. (response # 196)*

Response: An economic analysis of trail maintenance and funding is in the FEIS document. As described in the FEIS, very few trails are likely to receive “upgrades” from their current development level, though various adjustments have been made—both up and down—in response to a variety of factors. It is also understood that under the current funding regime, it is unlikely that every trail will be fully maintained to the desired standard to meet area management goals.

Public Concern #225: *System trails listed in the DEIS are in conflict with what is found on the ground. In a document in the DEIS project file, the Interdisciplinary Team Leader for the project stated in August 2002:*

“System trails listed in the plan were in conflict with what was on the map as a system trail. Many of the system trails were listed as a higher class than what we observed on the ground. Some of the system trails were not listed in the FEIS, but in a subsequent SNF inventory. “

The plan must include an accurate, objective inventory of system trails as they actually exist. (response # 196)

Response: As pointed out in the above quote, made during the planning process, as well as disclosed in the DEIS Purpose and Need, all known inventories of the trail system had inaccuracies, omissions, and other errors as compared to what was found on the ground. This is one of the key purposes of the trail plan. In the FEIS, a summary of the comparison between observed trail development and various alternatives is displayed.

Public Concern #226: It is not clear whether the trail management plan is intended to be a programmatic or site-specific document. This is very problematic because it’s not clear when the Inyo and Sierra NFs will evaluate the environmental consequences of upgrading the trail designations. What will be the impacts of upgrading a specific trail to the standards identified? What will be the cumulative consequences of upgrading all of the trails in the planning area to the new standards? Forest Service staff has said in the past that the site-specific impacts will be evaluated in project-specific documents. But when it’s time for project-specific analysis, they say that the decision on trail class has already been made they’re just upgrading the trail to the identified level, and the trail class/level designation is not up for discussion. The Forest Service cannot have it both ways: the Forest Service must either evaluate the impacts of upgrading trail

designations at the programmatic or site-specific level. And the Forest Service cannot properly adopt inflated trail classes/designations that would allow substantial upgrades, putting off the issue until project-specific analyses, and then argue during project-specific analyses that such analysis is unnecessary (or that trail class is not up for re-consideration) because the decision has already been made at the programmatic level. (response # 196)

Response: This document designates the Trail Classes which will be used in future trail management. Project specific NEPA will be undertaken to analyze site specific physical effects of the repair work, which will use the Trail Class design guidance as the basis for the proposed design of the project. That analysis will not change the trail classes designated in this effort.

Public Concern #227: *The National Trail Management Class system is still in Draft form, and there is no national directive that it must be used. Additionally, the design guides for the Trail Classes have direction that is inconsistent with wilderness management, and should be modified for wilderness trails.*

Comment: *The Trail Management Classes (TMCs) have never undergone any formal rulemaking, and they are not included in the Forest Service Manual or Forest Service Handbook. Thus, they do not constitute law, regulation, or policy. The proposed action claims that they are national direction, yet there is no binding national directive that requires their use. The DEIS does not adequately describe what actions will be taken on what trails to bring them up to the identified TMCs. Thus, decision-makers and the public are not able to understand the extent of the proposal, or the environmental consequences. (response # 196)*

Comment: *The plan must acknowledge that elements contained in the TMCs are inappropriate in wilderness. Trail Class 2 allows for destination signs. Trail Class 3 mandates that destination signs will be Atypically present, that signs will be provided for user reassurance, that trail bridges will be constructed as needed for appropriate access, and that maintenance activities will be conducted for user convenience. Trail Class 4 provides that substantial trail bridges are appropriate at water crossings, that trailside amenities may be present, that a wide variety of signs is likely present, and that trail maintenance activities will be implemented to provide user comfort and ease. None of these things are generally appropriate in designated wilderness. The Inyo and Sierra NFs must not simply incorporate the national Trail Management Classes as written into their trail management plan for these wildernesses, but must both modify them to make them appropriate for designated wilderness, and analyze and disclose the environmental consequences of doing so. (response # 196)*

Response: See Response to Public Concern # 219 regarding the intended use of Trail Classes for the AA/JM Wildernesses. Design Guides for the trail classes were clarified in the Draft EIS to show how trails in the AA/JM Wildernesses would be managed. These have been further refined in the FEIS.

Public Concern #228: *More trails should be closed to commercial stock. (Attached list of approx 60 trails). Stock should not be allowed to travel cross-country unless site specific analysis shows that this can occur without affecting erosion rates or wilderness character. (response # 196)*

Response: Trails which have been determined by the IDT to be most unstable under continued commercial use are closed to commercial pack stock (NSCS). Other trails accessing areas where destination concerns about commercial use were also considered, and in some cases, use is either

prohibited or limited to levels which should be appropriate at these destinations. See Response T5 for similar comment.

Public Concern #229: *Use Trails Adaptive Management Strategy is inadequate. The so-called adaptive management strategy for user trails is subjective, non-scientific, and so full of loopholes that it would be incapable of ensuring protection of the wilderness character. (For example, visible tread is allowed to increase by 20% on trails rated 0 before use could be reduced; this number is absolutely arbitrary and does not take into account sensitive resources or provide objective triggers for action.) More simply, scientists have long recommended that commercial pack stock should not be allowed on any non-system user trail(s), except where site-specific environmental analyses demonstrates that a specific route can be open to stock use without increasing erosion rates or otherwise adversely affecting the wilderness character. No user trail should be open to commercial stock travel unless it is: (1) evaluated and cleared by resource specialists, and (2) designated as open to commercial stock in a public NEPA process. At minimum, this highly questionable adaptive management strategy should undergo scientific peer review (by qualified external scientists) before it is utilized by managers. (response # 196)*

Response: Use trails approved for use by commercial packstock have been analyzed to determine the likelihood of current and future unacceptable impacts to resources, including wilderness character. Some have had intensive field survey, while others were analyzed based on available information. Since conditions may change over time, monitoring and future management activities will be implemented in response to unacceptable changes. Measuring the percent of visible trail on otherwise undefined routes is just one measurement that is monitored, in addition to point feature impacts. Generally, point feature physical effects on lightly used routes are not as severe as those on heavily used, defined routes, however. Depending upon the type of effect, a variety of actions may be implemented to mitigate effects. Over time, these actions may lead to fewer trails being approved over time, or may allow for other changes in use.

Trails, Specific Comments on Trails/Trail Inventory

Public Concern #230: *Lamarck Col Trail should be closed to commercial stock. Such use is unnecessary, and the trail is being impacted by the stock use. The very small amount of stock supported hiker use is contributing to the notable resource effects in the National Park west of the col.*

Comment: *While hiking over Lamarck Col I encountered a group a people hiking without backpacks. They had hired the commercial packer to carry their packs to the base of the Col (very near the top). They said to me: "It's only \$120 each and we'll be fresh when we get to the top." These were all strong, able-bodied men who could have easily carried their own packs, and in fact were planning to carry their packs over Lamarck Col on a rugged backpack trip into Kings Canyon NP and beyond. How is this commercial use necessary? I repeat: How does the Forest Service rationalize this commercial use as necessary?*

It is of course not necessary. Such one-way dunnage trips are the ultimate in elitism. If you have enough money, you can have a mule carry your pack to the top of the first pass, to get a head start on everyone else, to get quickly past the dust and crowds that the Forest Service has allowed to degrade the trailhead areas, and never mind the erosion it causes, because the Forest Service and the packer don't care. It's all about convenience, luxury, comfort---and money.

So in my earlier letters, I asked for some information. And what did I find?

The Forest Service approved commercial use of this route for one-way dunnage trips, despite known and documented resource concerns (i.e., “impacts to riparian and meadow areas,” “known mountain yellow-legged frog populations,” “multiple trails and erosion concerns”). Without any elaboration or further study of the issues, the Forest Service simply approved commercial stock use to continue.

Despite the fact that the route has never been adequately designed, constructed, or maintained to withstand stock travel, despite the fact that the route is actively eroding and the erosion is being significantly exacerbated by stock travel, despite documented impacts to riparian and meadow areas, the Forest Service allows unnecessary commercial stock use to continue. (response # 346)

Comment: *Some specific aspects that we [Sequoia and Kings Canyon National Park] do not support are: The classification of Trail 3004C, Lamarck Col, as Trail Class 2. We previously communicated our concern that stock support will contribute to the amount of use over the Col and into a fragile and untrailed area of Kings Canyon National Park. This area has received notable resource impacts, including multiple braided use trails and user-built cairns, and a demand for emergency medical services to people who become injured due to their ability not meeting the technical nature of the route. Though the level of use facilitated by stock may seem small, we believe that each incremental effect adds up to an undesirable cumulative impact. We again encourage you to designate Trail 3004C as “Trail Class 1*, Not Suitable for Commercial Stock.” (response # 425)*

Response: In Alternative 2 - Modified, the Lamarck Col Trail is designated as “Not Suitable for Commercial Stock,” with a Trail Class of 2. The trail class 2 designation will allow for adequate structural mitigation to handle the moderate to high number of hikers on the trail. The trail used by pack stock has always ended before the top of the col, at a tarn, and this will remain the ending termini. Use trails continue over the pass into the park, which will be consistent with the unmanaged travel on the west side of the pass.

Public Concern #231: *Trails are closed such as the trail from Long Lake up towards Morgan Lake where the Sierra Club trip of 1963 camped. An ideal campsite and the area is beautiful and in excellent shape. However, the Forest Service restricts use to this camp. Access is good and the resource is protected. (response # 275)*

Response: The Little Lakes Valley Trail, which goes from Long Lake over Morgan Pass (and on to Morgan Lake) is open to all users—including commercial pack stock—under every alternative. All other system trails in this area are open to all trail users and commercial stock, with the exception of the Gem Lakes Trail, which was designated as Not Suitable for Commercial Stock in Alternative 4 only. Access to camps on the bench above Long Lake (toward Treasure Lakes) is also provided.

Public Concern #232: *Trail closures due to lack of maintenance or need for structures should have a ‘sunset’ date. We should all be working to find a solution to problems and then fix them, rather than close use. (response # 355)*

Response: In cases where trails could be readily repaired and few risk factors were present – aside from the need for physical mitigation – these trails were only temporarily closed to commercial stock. After repairs, some level of use would be allowed. In cases where stabilizing a trail would demand an inordinate amount of repair, or would require repairs that would be inconsistent with area desired conditions, or where risk factors are present that would make

repairs unlikely to succeed with continued stock use, trails were designated as closed to commercial stock use.

Trails, Comments on Chapter 2

Public Concern #233: *II - 31: System Trails - what “educational efforts” will be implemented? The public should be able to review this before trail closures take effect that would punish only those visitors who use Pack Station services. (response # 355)*

Response: The “educational efforts” mentioned in this section refer to signing and other notification of private equestrians to ensure awareness of which trails are designated “Not Recommended for [private] Stock”, and what type of conditions should be expected on these trails.

Public Concern #234: *We are frustrated with the Trails Plan because the Forest states that impacts to trails are caused by pack stock, yet recognize that in most cases these impacts can be mitigated and stopped by routine maintenance and appropriate structures. The Forest also recognizes that high backpack use causes the same type of impacts. Further, these impacted conditions (in the scope of 1.1 million acres) are extremely minimal and likely will not improve even if pack stock is re-moved. Since hiking/backpacking/day hiking has increased dramatically over the last 40 years, while at the same time stockpacking use has declined drastically, it is reasonable to assume the impacts of concern can be attributed to hiking use. Yet no disclosure is made of what these impacts are attributable to, pack stock is the only use being restricted, thereby denying access to certain lakes, trails and campsites used by families and groups for generations. (response # 355)*

Response: It is recognized that many impacts occur to trails and other areas within wilderness that are not attributable to commercial pack stock. While certain impacts can be traced to certain activities, the intent is to evaluate the current situation, and address or reduce impacts where possible. Actions within this document are focused on the permitted activities of commercial operators. While these actions will not solve every impact of every wilderness user, or even every impact of commercial stock, it is expected that these actions will have beneficial effects toward meeting desired conditions of these wilderness areas.

Public Concern #235: *2.3.1 Trail Management Plan - Construction of new trails needs to be left as an option. Should be only allowed on a case by case basis. (response # 355)*

Response: The 2001 Wilderness Plan provided direction that the current trail system adequately served the needs of access within the wilderness areas, and that no new trails would be needed. Realignment trails or placing an existing use trail on the trail system are actions specifically allowed within the Wilderness Plan, when such actions will have a beneficial effect on the wilderness resource.

Public Concern #236: *2.3.1, Trail Management Plan - Trails should never be removed from the “trail system” once access to an area has been established. If it is to be allowed, it should be a last option and only case by case. (response # 355)*

Response: In general, this is the approach that the Forests are taking when trails are removed from the system. As stated in Chapter 4, some “trails” removed from the system have never been an actual defined trail; others have different purposes and levels of use currently than when the trail was originally constructed. For example, mining roads or trails that are not used for

mining any longer combined with a lack of recreational demand has eliminated the need for a maintained trail. In some cases, trails were removed from the inventory if they duplicated a stable system trail to the same destination. Trails which require management to remain stable and available to anticipated uses were not removed from the system.

Public Concern #237: *2.3.1 - Trail Management Plan - Bullet pt. 11 is contradictory - Trails should be available to provide access for the public. (response # 355)*

Response: The referenced comment is from the 2001 Wilderness Plan, and is intended to clarify that the existing character of a trail will not be changed solely to improve the accessibility of an area – rather, that improvements will be based on an overriding benefit to the wilderness resource.

Trails, Comments on Chapter 4

Public Concern #238: *Trails: page IV-41.. Why doesn't the Forest Service fix the Mono Creek Trail? Why would you fund the McGee Pass Trail for reconstruction and not fix the Mono Creek Trail.*

The Forest Service fails to have a system in place to fix trails based on need and the public interest. In many cases, the wilderness management team refuses to maintain trail or propose new funding to threaten and penalize commercial packers who refuse to do the bidding of the local wilderness managers. And, perhaps there is money allocated to fix certain trails as quid pro quo for not challenging the Forest Service. COMPLETE LIES!!!

Often times trail maintenance is done so that it is convenient for the Forest Service people to be back home by closing. And, for many years an elitist attitude has prevented maintenance of any project that doesn't fit the personal philosophy of the wilderness managers. More LIES!!!

The Forest Service has refused to fix or maintain the Mono Creek Trail and the trails to Second and Third Recess. And, they refuse to fix the Shepherd Pass Trail. Another good example is the failure of the Forest Service to fix the trail to the Third Lake in Hilton.

The Trail plan lacks a previous history of trail maintenance and a plan for the future. (response #275)

Response: Each Forest submits proposals for special funding to repair trails based on that Forest's priorities and driving issues. McGee Canyon and Mono Creek trails are on different forests, so their funding structures are different.

The Inyo National Forest has invested funds in the Shepherd Pass trail during the past 20 years, including a substantial reconstruction effort in 1989. Each year since (including 2005), obstacles are removed, and basic recurring maintenance performed. This trail, like certain other eastside trails is only occasionally used by stock, and is lightly used by hikers, compared to most other trails in the AA/JM Wilderness. Expending large portions of the limited forest trail budget on such a trail would make very poor economic sense. The upper headwall has unique problems, which make long-term repairs impractical or impossible. As funding or volunteer resources are available, this trail will be maintained to the standards laid out in the FEIS.

Heritage Resources

Public Concern #239: *The document fails to acknowledge Packing as a “Heritage Resource” as required by law.*

Comment: *The National Environmental Protection Act (NEPA), as well as the California Environmental Protection Act (CEQA) provides protection to historic resources as it does for the natural environment. Pack operations as an historic activity which have remained in place through the present, as well as the historic trails and pack stations from which they operate, must be considered as valuable historic resources. Impacts to this activity, the trails, and the stations, must be considered under this review to comply with NEPA and CEQA, and mitigation measures must also outlined should your decision alter packing activities as they are currently in place. (response #form letter F, 104)*

Comment: *By law, pack stations and the packing industry are recognized as Heritage Resources. These resources are not limited to prehistory Indian usage sites. Nowhere in the document did we note that the Forest Service acknowledged the cultural and historical resources of pack stations and the professional packing industry. The only historical concern is primarily obsidian chipping grounds. Transportation with livestock is as old as the history of man and to imply that it is out of character in wilderness is absurd. Packing has been going on in the Sierra Nevada Mountains for over 150 years. This was long before there was a Forest Service or a Park Service, or environmental groups who have been born since the advent of technology and have no clue over what the real natural world actually is. The land is constantly changing naturally without the help of environmentalists who think it was in a mythical pristine condition 1,000 or so years ago and we must return to that imagined perfect condition. (response # 198)*

Comment: *It is clear that the USFS does not value the horse and mule packing industry as a cultural or historical resource. In looking at the Appendix C Literature Cited, a heavy tribal bibliography is cited, but only one book that addresses horse and mule packing and pack stations is included. By the very omission of good historical essays on the history of horses and mule packing in the Sierra, the forests have proven their continued indifference of packing as a cultural and historical resource that is valuable to our modern day society. (response # 279)*

Comment: *The DEIS does not address the use, history, or impacts of any reductions or loss of services of commercial packing that would result in each of the alternatives. The Heritage sections are remiss in not meeting the direction in the Programmatic Agreement. The PA clearly directs the agency to identify impacts, as it states “equestrian ... and stock packing are cultural resources that contribute to the significance of historic properties, and accordingly must be considered in addressing impacts on such properties.” (response # 279)*

Response: CEQA is not applicable to this project. NEPA does not have a term “heritage resources.” As stated in the DEIS “Heritage resources include archaeological sites, historic buildings, cultural landscapes, objects, and environmental features that inform us about human activities.” There is no legal definition of this term. A pack station over 50 years old is a heritage resource and as such needs to be evaluated to determine whether it is an historic property as defined in the implementing regulations for Section 106 of the National Historic Preservation Act (36 CFR 00.16.1[1]):

Historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by

the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

Section 106 requires that federal agencies take into consideration the effects of an undertaking on historical resources, not historical activities or industries per se. Compliance with 36 CFR 800 meets the NEPA requirement that the agency consider

“The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places (40 CFR 1508.27(b)(8)). See Chapter 4.1.1.4 for a discussion of identification and monitoring efforts.

All heritage resources within the inventoried areas were recorded and considered. In determining which were impacted by the pack station operations, the forests used monitoring data collected at over 300 historic properties in the wildernesses to derive “resources of interest”, i.e., those potential historic properties that may be adversely affected by the proposed action. The list of resources of interest does include some heritage resources associated with packing such as trash dumps and drift fences.

There are no actions planned that will adversely effect the historic values of trails. Future trails work will include consideration of historic values under Section 106 (Chapter 2: Direction Common to All). The pack stations themselves are being evaluated under SUP EIS and appropriate Historic Property Management Plans developed for each that will include mitigation where needed.

An expanded history of packing is included in the Final EIS.

Public Concern #240: *The proposals will have an adverse effect on historic pack station properties protected under the National Historic Preservation Act. (response # form letter A)*

Response: There are no planned activities that will adversely affect pack station properties.

As stated above, Section 106 of the National Historic Preservation Act requires federal agencies to take into consideration the effects of actions on historic properties. It does not require preservation of historic properties.

Response: The FEIS will address the use, history and impacts of the alternatives on commercial packing.

Public Concern #241: *Closing historic trails, destroying historic sites, denying historic usage of trails to any one group, is in clear violation of the Historic Sites Act of 1935. (response #103)*

Response: No destruction of historic sites is planned. Studies have shown that trails follow various alignments within corridors over time depending upon a variety of human and environmental variables. Historic trail corridors are not being closed.

Public Concern #242: *It should be explained why tephra deposits are singled out from other geologic materials as a heritage resource (section 3.1.1.4). Also, while shod hooves may trample flaked stone tools, what is the probability of that occurring per mile of trail and does that exceed the probability of a hiker or backpacker picking one up and putting it in their pocket. (response # 248)*

Response: Tephra deposits are singled out because of their chronometric importance and the paleoenvironmental information they contain.

Both shod and unshod hooves have been demonstrated to trample flakes and other artifacts such as pottery. The probability of a flake being trampled on a given stretch of trail would be dependent upon flake density, trail condition, the length of the stride of the horse, mule, or llama involve, the weight of the load the animal is carrying, and possibly other variables. All of which is moot as it is stated in Chapter 4, Table 4.1.19 Effects on Resources of Interest, that “Continued [trail] use in and of itself does not appear to be an adverse effect.”

Soils and Hydrology

Water Quality

Public Concern #243: *The NEPA document should contain appropriate measures to ensure compliance with water quality standards and control measures of the Regional Board’s Water Quality Control Plan (Basin Plan). The NEPA should consider potential impacts from both short and long-term effects resulting from pack animal and human usage of trails and wilderness areas. Impacts such as stream crossings that have habitat destruction due to stomping or water quality issues due to animal or human fecal material. The continued use of the same campsites could potentially cause long-term erosional impacts. Water quality could be degraded from surface runoff as a result of increased erosion from pack animal and human activities. Best management practices for mitigation of potential impacts need to be included in the NEPA document for both temporary and permanent impacts to streams and wilderness areas due to pack animal and associated human activities in the John Muir and Ansel Adams Wildernesses. (response #5)*

Response: The FEIS includes a revised and lengthened discussion of the water quality standards in the Water Quality Control Plans in Chapter 3 Hydrology Section (under the heading “Water Quality”). The potential impacts to water quality from commercial pack stock and the associated human use throughout Chapter 4 Hydrology Section (under the headings “Water Quality – Animal Waste” and under each wilderness-scale effects analysis, “Grazing water quality effects,” “trails,” and “Cumulative Impacts”).

In Chapter 4 Hydrology Section, the effects of commercial pack stock campsites are discussed under each Alternative at the wilderness-scale and at the Geographic Unit scale. The current level of compliance with BMPs related to campsites is in Chapter 3 Hydrology Section under the heading, “Campsites.”

Methods proposed under each alternative to manage the effects of commercial pack stock use on water and soil quality are included in the DEIS and FEIS throughout Chapter 2, especially in Sections 2.2 and 2.3.

The effects to wetlands is discussed in Chapter 4 Hydrology Section, under each alternative at the wildness and geographic unit scales, under the headings “Meadows/wetlands,” “Meadow hydrologic function,” “meadow stream functional condition,” and “meadow soil effects.”

Public Concern #244: *The Forest Service should not allow stock animals to roam freely where they can deposit manure into drinkable surface waters. The Forest Service should prevent such*

water contamination by requiring stock animals to be tied or fenced away from surface waters (response # form letter G)

Response: The FEIS includes a revised and lengthened discussion of the possible effects of pack stock manure on water quality in Chapters 3 and 4, Hydrology Section (under the headings “Water Quality” and “Water Quality – Animal Waste, respectively).

The FEIS contains a more thorough discussion of potential pathogen transmission from pack stock to surface water and humans than was in the DEIS (in Chapters 3 and 4, Hydrology Section). The Forest Service reviewed more articles pertaining to pathogens in pack stock manure and in Sierra Nevada wilderness water. In our review, we could not find any data that showed a connection between pack stock use and degraded water quality or pathogen transmission to humans. We could also find no data that suggest significant levels of human pathogens or other pollutants are in surface water within the John Muir and Ansel Adams Wildernesses. While it is acknowledged that pack stock deposit manure in water when crossing streams, watering, or grazing, there is no evidence that beneficial uses of water (such as drinking, swimming, fish spawning habitat) in the AA/JM Wildernesses are being substantially affected by this manure.

Due to the lack of evidence that enough manure is entering surface water to degrade current water quality or affect beneficial uses except very locally at the site of manure deposition, management actions were not taken to address this issue.

Public Concern #245: *Pathogens. The analysis of pathogens in the DEIS (IV-98) is less than one page long, and is totally inadequate. Scoping comments from interested parties clearly alerted USFS to the issue of pathogens in packstock manure. The USFS allows commercial packstock (i.e., horses and mules) to freely roam and deposit manure into surface waters that are consumed by wilderness visitors. There are NO fences to keep packstock from depositing manure directly into streams and lakes from which wilderness visitors drink.*

The DEIS properly cites a recent study by Derlet and Carlson, but fails to acknowledge that these scientists found pathogens in 18.5 percent of packstock manure samples. This means that approximately 18.5 percent of packstock manure that is deposited directly into surface waters is polluting surface waters with human pathogens (in addition to nutrients and other pollutants). In short, packstock are polluting streams and lakes in the Muir-Adams Wildernesses with human pathogens.

This is in spite of the fact that management practices (i.e., portable electric fencing, packed in feed, pickets, diapers, etc.) are now readily available to keep packstock manure out of surface waters. The DEIS must evaluate all available options for preventing this on-going pollution.

The DEIS fails to mention any State water quality standards for pathogens, nor does it mention Antidegradation requirements. Neither the Forest Service, nor the Central Valley Regional Water Quality Control Board, nor the Lahontan Regional Water Quality Control Board have made the findings required by State Water Resources Control Board’s Resolution 68-16 to allow degradation of water quality by packstock manure and urine that is deposited directly into surface waters.

The DEIS concludes that: pack stock manure is not known to have contaminated water with human pathogens. This is a ridiculous statement. We know that packstock manure contains human pathogens. The study by Derlet and Carlson (cited in the DEIS) documents this fact. And

we know that packstock roam freely to graze when they are not working, and regularly deposit manure directly into surface waters. This is enough evidence to know that water is being contaminated with, and polluted by, human pathogens.

The analysis of pathogens in the DEIS is also flawed because it implies that the only pathogens in packstock manure are bacteria. In fact, Derlet and Carlson also found that packstock manure contains giardia, which is a protozoal parasite more resistant to disinfection than bacteria.

The DEIS's analysis regarding pathogens is woefully inadequate. We know that packstock manure contains pathogens (not only harmful bacteria, but also giardia). We know that packstock manure is deposited directly into surface waters, because packstock are allowed to roam freely and have many times been observed defecating directly into surface waters (in addition to contaminated runoff from manure deposited in near-stream areas). And we know that such impacts are avoidable, because modern management practices could be applied to prevent the contamination, even in remote wilderness settings. (response # 196)

Response: The FEIS contains a more thorough discussion of potential pathogen transmission from pack stock to surface water and humans than was in the DEIS (in Chapters 3 and 4, Hydrology Section). The Forest Service reviewed more articles pertaining to pathogens in pack stock manure and in Sierra Nevada wilderness water. In our review, we could not find any data that showed a connection between pack stock use and degraded water quality or pathogen transmission to humans. We could also find no data that suggest significant levels of human pathogens are in surface water within the John Muir and Ansel Adams Wildernesses.

There is evidence that areas heavily used by backpackers and pack stock, or areas grazed by sheep or cattle, have increased levels of pathogens and fecal coliform in the water (Suk et al. 1987, Suk et al. 1986, Derlet et al. 2004, Derlet and Carlson 2003). The Suk studies found that giardia existed in low concentrations in sites used heavily by backpackers and packstock, but in some other areas heavily used by pack stock and backpackers, no giardia were found. There is plenty of circumstantial evidence that drinking water in the wildernesses has made hikers sick, but this evidence is difficult to substantiate. The connection with pack stock manure is unknown.

The few limited studies completed on human pathogens in pack stock manure in the Sierra Nevada (Johnson et al. 1997, Derlet and Carlson 2002, Atwill et al. 2000) found that there are pathogens in a minority of manure from packstock used in Sierra Nevada wilderness areas. Johnson et al. (1997) and Atwill et al. (2000) found that less than 5% of pack stock manure sampled contained giardia, and found no cryptosporidium. Derlet and Carlson (2002) found pathogenic bacteria in 15 of 81 samples, and giardia in one sample taken on trails in Yosemite, Sequoia and Kings Canyon National Parks.

While these studies suggest that there is a risk of pack stock manure carrying human pathogens and depositing these pathogens in water when crossing streams, watering, or grazing, there is no evidence that water quality in the AA/JM Wildernesses is being substantially affected by this manure.

Page IV-98 of the DEIS (section 4.1.2.1) states, "Derlet and Carlson (2002) found that 15 of 81 samples of fresh pack stock manure on trails in Yosemite and Sequoia/Kings Canyon National Parks contained pathogens capable of causing human disease." This corresponds to 18.5%. In the FEIS, we included the percentage, for greater clarity.

Public Concern #246: *Nutrients. The DEIS acknowledges (at p. IV-98) that packstock manure and urine could lead to increased nutrient levels in lakes. Alteration of nutrient levels can lead to alteration of aquatic ecosystems and create a more fertile environment for bacterial preservation and reproduction. Such human-caused alterations of nutrient levels are potentially significant, and are not allowable, because no antidegradation findings have been made to allow nutrient increases in the high quality waters normally found in the John Muir and Ansel Adams Wildernesses. The USFS needs to evaluate and implement modern, feasible, reasonable, and readily-available management practices to keep packstock manure and urine out of surface waters and wetlands (i.e., portable electric fences, diapers, etc.). And the USFS must address federal and State Antidegradation requirements before it allows any further human-caused increases in nutrient levels due to recreational practices. (response # 196)*

Response: There is very little research available discussing nutrient levels in Sierra Nevada waters. We could not find any that relate nutrient levels to commercial pack stock or other recreational use, although as stated above, the DEIS does acknowledge that there is a potential for such increases.

The FEIS includes a more thorough discussion of nutrient levels in the Sierra Nevada than was included in the DEIS in Section 3.1.2.2. The discussion is as follows:

There have been few studies about nutrients in Sierra Nevada Lakes, and no studies were found that discussed terrestrial nutrient inputs. A few studies suggest that algae and phosphorous levels have increased in Sierra Nevada Lakes over a wide area in the past two decades (Sickman et al. 2003, Schindler et al. 2001), but these studies cite introduced fish and atmospheric deposition as causes. Sickman et al (2003) suggested that the widespread nature of eutrophication suggests that nutrients entering lakes are airborne. Nutrient contributions from recreational activities are unknown, but could occur from human waste, soap used for washing, sunscreen washed off in lakes, or packstock or cattle manure.

The FEIS also includes discussion of the antidegradation requirement included in the Water Quality Control Plans, and the effects of each alternative on water quality pursuant to the antidegradation requirements. The discussion in Chapters 3, Hydrology Section under the heading, "Water Quality" is as follows:

Quantitative water quality data was not collected as part of this project, partially because beneficial uses, such as swimming, municipal drinking water, and fish spawning habitat, were not observed to be affected by water quality. Downstream water quality at the areas of municipal use is assumed to be an indication of wilderness water quality, because the water originates in the wilderness. Municipal water quality is not completely indicative of wilderness water quality. Some wilderness values and beneficial uses within the wilderness, such as wildlife habitat, may be more sensitive to water quality than municipal uses downstream. Further, any pollutants become diluted downstream. Because it is assumed that the water quality currently meets or exceeds water quality standards from the Lahontan Water Quality Control Plan (standards can be found in *Water Quality Standards* document in the project record), the water is subject to the "nondegradation objective" (LRWQCB 1994). This object requires, "continued maintenance of existing high quality waters" that exceed quantitative standards, with no degradation. There is no indication that water quality has been degraded by recreational uses, according to the small amount of quantitative data available.

There are not enough quantitative data to determine whether that assumption is correct.

While the FEIS acknowledges that manure enters water and can affect local water quality, it is assumed that there is not enough manure deposited in the water to affect beneficial uses or degrade water quality away from directly adjacent to the site of manure deposition relative to past conditions.

Public Concern #247: *It has long been known that stock holding areas pose the potential to cause significant nonpoint source water pollution. The Forest Service's own Best Management Practices Evaluation Program has shown that backcountry stock holding areas have among the lowest implementation and effectiveness scores of any nonpoint source pollution category. The DEIS states that the Forest Service and/or permittees will prevent nonpoint source water pollution from stock camps by installing BMPs within five years of permit issuance. The Forest Service cannot legally put these problems off for up to five years. It must move more diligently to prevent water pollution from stock holding areas. (response # 196)*

Response: Under the selected alternative, Alternative 2 – Modified in the FEIS, implementation of designated stock holding campsites that meet BMPs will occur within two years, not five years as written in the DEIS.

Public Concern #248: *The description of the affected environment clearly states that many areas contain meadows, streams, and trails with degraded conditions and hydrological functions which may adversely affect water quality and sensitive critical areas. Although the action alternatives include elements to protect critical areas and reduce adverse impacts, the alternatives do not significantly improve the degraded conditions of these areas. We recognize the contribution of historic high-levels of grazing, mining, and other wilderness uses to current environmental degradation. However, EPA remains concerned with the minimal water quality and ecological improvements provided by the proposed action alternatives.*

EPA recommends additional management actions be integrated into the preferred alternative to ensure full compliance with water quality standards and more rapid restoration of degraded meadows, streams, and trails. We urge the Forest Service to consider stock night quotas that are aligned with meadow hydrological conditions, closure of meadows with stream segments assessed as functional at-risk with a downward trend, and exclusion of stock from standing water and saturated areas occupied by the Yosemite toad during the breeding and rearing season.

A detailed description and commitment to monitoring measures and enforcement is not provided in the DEIS. The lack of this information is of significant concern. Projected improvements to degraded resources are based upon compliance with new, more stringent use standards. We understand that more detailed enforcement and monitoring measures and commitments may be provided in subsequent NEPA analyses for individual Pack Stock Special Use Permits (p. I-2 and telephone conversation with Mary Beth Hennessy, June 23, 2005). If this is the case, we recommend the Forest Service describe the general framework for enforcement and monitoring in the Final Environmental Impact Statement (FEIS) for the Use Authorization action and commit to NEPA analyses for the individual Pack Stock Special Use Permits. These individual Special Use Permit NEPA analyses should include a detailed description and evaluation of monitoring and enforcement measures that will be applied to each permit.

Response: This EIS is a programmatic document addressing commercial pack stock use in the Ansel Adams and John Muir Wildernesses. It does not propose management actions for all uses of the wilderness including other recreational use, mining, or non-commercial pack stock grazing. Site specific actions to more rapidly improve conditions of trails, meadows and campsites than possible by altering management of commercial pack stock use will be addressed in future processes, as necessary.

We considered and analyzed the effects of closure of meadows with stream segments assessed as functional at-risk with a downward trend, and all meadows with severe hydrologic function alteration in Alternative 4. We included exclusion of grazing stock from saturated areas occupied by the Yosemite Toad as a management actions under Alternatives 2-5. As stated in the Wildlife section of Table 2.2 in the DEIS, Yosemite Toad breeding habitat areas would be considered critical areas, where a 5% use standard would apply. The 5% use standard is basically a tool to exclude grazing, while allowing for accidental entry with negligible effects at the limit of measurement.

Alternative 5 considers and analyzes the effects of having no commercial pack stock use in the Wilderness. It therefore analyzes the effects of the maximum protection possible with management changes only commercial pack stock.

The FEIS includes a monitoring plan that will describe monitoring procedures and the specific monitoring findings that will trigger management changes. In the future Special Use Permit EIS, enforcement procedures will be described.

Water Quality

Public Concern #249: *The Sierra streams provide drinking water to millions of people. It seems strange that the problem of water pollution from wilderness recreation has received so little attention. Water pollution is so prevalent that even travelers in remote, high-altitude parts of the wilderness have to treat the water. Yet there have been few studies to identify the pollution sources.*

Cattle grazing is known to be associated with the spread of the giardia organism, and it seems likely that pack stock also transmits this pathogen , especially since it appears in high altitude areas that are not subject to cattle grazing. Removal of pack stock should improve water quality in the wilderness although, of course, other pollution sources would remain.

It is recognized that pack stock manure can be a source of increased nutrient levels in lakes. The amount of nutrient increase traceable to this source is not known, but it seems clear that this poses a potential threat to amphibians and aquatic wildlife. (response # 392)

Response: See response to Public Concerns #245 and #246

Public Concern # 250: *As the designated water quality management agency under the Clean Water Act Section 208 Management Agency Agreement, the Forest Service is required to implement Best Management Practices (BMPs) and other measures to achieve full compliance with all applicable State water quality standards. Implementation of BMP measures alone do not necessarily ensure full compliance with State water quality standards. For instance, the 2002 Clean Water Act Section 303(d) list identified over 50 streams impaired by excessive sediment, nutrients or pathogens associated with roads, silvicultural activities and/or grazing throughout the Sierra Nevada. Additional management actions beyond BMPs may be required to achieve full compliance with all applicable water quality standards. The Final Environmental Impact*

Statement (FEIS) should describe water quality standards and BMPs for the project area, including standards for pathogens and Clean Water Act antidegradation requirements. Evaluate the Forest Service's ability to ensure full compliance with water quality standards through the use of BMPs and identify additional measures that may be necessary to achieve compliance.

Response: In response to this comment, the FEIS includes a more thorough discussion of water quality standards and BMPs for the project area (Chapters 3, Hydrology Section), Water Quality subsections. It includes a list of the applicable BMP measures and describes the nondegradation requirement in the state Water Quality Control Plans (Section 3.1.2.2). Throughout the sections of the DEIS on water quality, meadows/wetlands, campsites, and trails, the DEIS describes the known and suspected effects of commercial pack stock use on water quality. The analysis includes estimates about whether actions will degrade water quality or not.

In Alternatives 2-5, measures beyond BMPs are described that are intended to reduce water quality degradation. These measures include more strict grazing management, trailhead and destination quotas, campsite designation, closure of sensitive grazing areas, trails and destinations, exclusion of commercial pack stock from many areas that currently receive little use, and others.

Public Concern #251: *Survey results of meadow hydrologic function alteration, properly functioning stream conditions, soil compaction, sod fragmentation, campsite and stock holding area conditions, grazing effects, and trail conditions clearly demonstrate the potential for continued water quality and ecosystem impairment under all alternatives (Chapter 3 and Chapter 4). For example, 8% of trails analyzed are causing severe alteration of soil or hydrologic processes (p. III-25). Under Alternative 2, the Proposed Action, five meadows determined suitable for grazing would continue to have a high potential for increased sod fragmentation (p. IV-115). Continuing current practices where commercial pack stock use appears to be contributing to adverse water quality effects is of concern, especially given the adverse effects of past grazing and mining practices.*

Recommendation: EPA recommends that destination quotas, grazing allocations, daily and seasonal stock quotas, and other levels of use controls be aligned with management direction to improve resource conditions. Where commercial pack stock use is clearly contributing to continued impairment of water quality and ecological function, we recommend implementation of more stringent use limits, temporary closures, grazing rotation systems, and other management practices to reduce and eliminate these impacts. We recommend all meadows with severe hydrologic function alteration, nonfunctioning streams, or streams with functional at-risk downward trends be designated not suitable for grazing and closed to grazing.

Response: See response to Public Concern # 248

Public Concern #252: *The DEIS states that some meadows might continue to have a minor reduction in hydraulic function under Alternative 2 if the recommended number of grazing nights are fully utilized (p. IV-111). However, the DEIS states that it is unlikely that proposed stock nights would all be used in all meadows. Meadows with streams that are functional at-risk with downward trend would continue to have a high number of grazing nights similar to, or more than, recent use (p. IV-113). We recommend the number of maximum grazing nights be allocated based on reduction of hydrologic function alteration and functional at-risk criteria, whether or not these grazing nights are used in their entirety in all meadows. Use limits should not be determined on the assumption that an area will not be grazed at the allocated high stock night*

numbers (e.g., p. IV-262). We recommend the grazing night allocations respond more aggressively to recorded sod compaction, functional at-risk and other identified water quality and ecosystem impairments. The number of maximum stock nights should be aligned with the carrying capacity of the resource or, if use is low, with current practice. For example, the proposed stock nights for Johnston Meadow is 193 stock nights. Even though current reported use is 20 stock nights, the stream is incised, and the meadow has moderate vegetation alteration and is expected to trend away from its potential under Alternative 2 (pps. IV-262 to 263). Because of these degraded conditions, the maximum number of stock nights at Johnston Meadow should be 20 nights or less.

Response: see response to Public Concern #248

Public Concern #253: *Most of the analyzed campsites within 50 feet of water, regardless of the site type, are contributing sediment and/or manure to surface water (p. III-34) with significant local adverse effects (pps. III- 27 to 34). Furthermore, of 9 stockholding sites and 11 spot/dunnage sites located less than 50 feet from water, over 90% are contributing substances to water and are water quality concerns (pps. III-33, III-34). These adverse water quality effects are of significant concern given the high use of surface waters by other wilderness users.*

Recommendations: The Forest Service should work closely with pack operators to address water quality impacts caused by stockholding sites and campsites less than 50 feet from water. Of specific concern is Fish Camp in Mono Creek which is located within 10 feet of the water with observable water quality degradation (p. III-34). Other sites causing water quality concerns should be addressed (e.g., Waterfall Camp in French Canyon, p. III-34; specific problems identified at the stockholding campsite near the junction of Shadow Creek and Nydiver Creek, p. III-60). We recommend closure or relocation of campsite and stockholding areas with significant and observable adverse effects to water quality.

Response: Under Alternatives 2-4 and Alternative 2 – Modified, stock holding campsites would be designated. As stated on page II-33 of the DEIS, all designated sites would be “contained in a manner that is consistent with Best Management Practices.” Fish Camp would not be open under any action alternative, because it is within 10 feet of water and therefore cannot meet BMPs. The Preferred Alternative in the FEIS (Alternative 6) also requires designated stock holding campsites that must meet BMPs.

Public Concern #254: *Although the DEIS describes concerns with water quality inputs from campsites, eroded/incised trails, stockholding, and grazing areas, it states the assumption that water quality in general is very good with impacts locally moderate to severe (p. III-27). The DEIS does not describe water quality monitoring or quantitative data to support this assumption. The FEIS should describe current water quality monitoring, if any. EPA recommends implementing a monitoring program in areas with known moderate to severe water quality degradation and high use. If funding and staffing resources are limited, the Forest Service should consider a limited, one-time water quality sampling project to validate water quality assumptions and determine if human health risks are present in drinking water sources (e.g. e-coli, guardia, other bacterial pollutants).*

The Forest Service should commit to the development of subsequent NEPA analyses for specific Pack Stock Special Use Permits. These NEPA documents should include water quality and management effectiveness monitoring plans.

Response: See response to Public Concerns #245 and #246.

Public Concern # 255: *The DEIS does not appear to describe or address packstock watering practices which could contribute to water quality impacts. The FEIS should describe packstock watering practices and the potential for environmental impacts to water quality, threatened and endangered species, fish and wildlife, and sensitive aquatic habitat. If potential impacts are likely, describe alternate stock management practices and mitigation measures to reduce these impacts.*

Response: In response to this comment, the FEIS includes discussion of the water quality effects of watering practices, under the headings “Grazing Water Quality Effects” in Chapter 4, Hydrology Section, at the wilderness scale.

The FEIS contains a more thorough discussion of potential water quality effects from pack stock than was in the DEIS (in Sections 3.1.2.2 and 4.1.2.1). The Forest Service reviewed more articles pertaining to pathogens in pack stock manure and in Sierra Nevada wilderness water. In our review, we could not find any data that showed a connection between pack stock use and degraded water quality or pathogen transmission to humans. We could also find no data that suggest significant levels of human pathogens are in surface water within the John Muir and Ansel Adams Wildernesses. While it is acknowledged that pack stock deposit manure in water when crossing streams, watering, or grazing, there is no evidence that beneficial uses of water (such as drinking, swimming, fish spawning habitat) in the AA/JM Wildernesses are being substantially affected by this manure. Therefore, mitigation measures were not deemed necessary.

Wetlands/Meadows

Public Concern #256: *Many of the high elevation, mountain meadows may meet the definition of jurisdictional wetlands under the Clean Water Act. We are particularly concerned that significant impacts to seasonal wetlands may occur due to uncontrolled trampling by packstock in the early season when soils are saturated during, and immediately following, snowmelt. No specific grazing start dates are described in the DEIS. The Forest Service should identify the location, extent, and functions and values of jurisdictional wetlands within the project areas and potential impacts to these wetlands from the proposed project. The FEIS should establish adjustable grazing start dates that prevent adverse impacts to the hydrology and biology of wetlands and meadows. These start dates should be based upon range readiness and monitoring results.*

Response: In the FEIS, Chapter 3, Hydrology Section, it includes more clear language that the Forest Service considers all wet and moist meadows as wetlands. The potential effects to those meadows/wetlands under all alternatives are described in Chapter 4, Hydrology Section. See also response to Public Concern #288.

Public Concern #257: *Wetlands. Most high-elevation meadows are wetlands, and the USFS does not control packstock sufficiently to protect these wetlands from degradation caused by packstock trampling. The most significant damage occurs in the early summer season, following snowmelt, when heavy stock animals trample saturated soils. The USFS's start dates for grazing were chosen more to continue current practices than to protect wetlands. The start dates do not consider in any way the site-specific soil or hydrologic conditions of the high-elevation wetlands in these wildernesses.*

Response: see response to Public Concern #288

Public Concern #258: *The DEIS says that 94 meadows in these wildernesses were grazed by packstock from 2001 to 2003. Yet it would allow 138 meadows to be grazed under Alternative 2 (June 2004 Proposed Action), 133 meadows to be grazed under Alternative 3 (currently favored action), and 113 meadows to be grazed under Alternative 4. Thus, impacts to wetlands will likely increase under all of the action alternatives (except Alternative 5, which would ban all packstock, and is not likely to be seriously considered), but the DEIS fails to admit this simple fact. Instead, the DEIS relies on unrealistic assumptions to conclude that wetlands will be adequately protected. (response # 196)*

Response: The FEIS includes, in the Meadows/wetlands Chapter 4, Hydrology Section, the total number of meadows requested for grazing by commercial pack stock operators. This was considered the realistic number of meadows that was likely grazed at least once in the long-term. Only 94 meadows had reported grazing between 2001 and 2003, but more were grazed in past years (some, such as those in Pioneer Basin and McGee Creek, were closed for resource protection within the past 10-20 years) and therefore have effects that may be at least partially attributable to commercial pack stock. As stated in the Meadows/wetlands Chapter 4, Hydrology Section, "227 of those [meadows] grazed regularly in recent years and most likely to be grazed were analyzed in the field." Therefore, about 1/2 of all meadows requested for grazing and reasonably likely to be used in the future were approved for grazing.

Standards for meadows in wilderness are that meadows and their streams should be in proper functioning condition and the meadows should be in satisfactory rangeland condition (Sierra Nevada Forest Plan Amendment, 2004). Although more meadows are able to be grazed, it is assumed that limits such as stock night allocations, 5% trampling allowed in critical areas such as fens and wetlands, and limits on traveling trips described in Alternatives 2 and 4 would allow meadows to meet resource standards.

The following is included in the FEIS, Chapter 4, Hydrology Section

Under Alternative 2, effects in meadows should be slightly improved from current conditions. Only 94 meadows were actually grazed between 2001 and 2003, and this alternative would allow 138 meadows to be grazed by commercial pack stock. However, meadows found to be unsuitable for grazing or have currently unacceptable impacts would be closed to use, and only meadows found to be suitable for grazing would be open for grazing.

Although 138 meadows would be open to grazing, it would be unlikely for commercial pack stock operators to have grazing in each of those meadows every year. Over the long term, it is likely that they would graze all or most of those meadows, some annually and some only every few years. The commercial pack stock operators requested to use 385 meadows, and are allowed to use about 1,500. However, they only used 94 between 2001 and 2003, and it is assumed that they would continue about the total number of stock nights used in the past, or less, under Alternative 2. They might use less because the number of overnight traveling trips would be reduced and therefore there would be less need for grazing.

Elimination of grazing on some meadows found to be unsuitable for grazing would allow for some local soil and hydrologic condition recovery. Of the 94 meadows that were grazed from 2001-2003, 20 would be closed or rested and 15

would have substantially reduced grazing (at least 20 stock nights less) under Alternative 2. Therefore about 1/3 of the meadows/wetlands that were grazed from 2001-2003 that are unsuitable for grazing would be closed or have reduced impacts from fewer stock nights. About 70 meadows with no reported grazing from 2001-2003 would be opened to grazing. It is assumed that because those meadows were found to be suitable for grazing, and because they were given a grazing allocation to meet utilization standards, the negative effects, although they may occur, will be minimal and within standards.

Under all alternatives, including Alternative 5, which would have no pack stock use, only slight improvement in overall meadow/wetland functional condition is expected (as shown in Table 4.1.31 in the DEIS). Under all alternatives, about 200 meadows are expected to remain in their current hydrologic functioning condition, with almost 40 expected to have improved condition under Alternative 5 and roughly 25 expected to improve under Alternatives 2-4.

Soils

Public Concern #259: *It is clear that pack stock can break up meadow sod and create unsightly areas where water will accumulate. However, in the eastern Sierra, I have not read of any studies that document plant species changes or changes in species composition or density.*

Without data to support measurable changes in stream channel morphology or turbidity increases, I respectfully suggest that the pack stock “problem” is one of perception and is best addressed by the methods used by social scientists. Vague and all encompassing jargon such as “resource concerns” is no substitute for clear and concise description of individual problems.

Commercial pack stock operations are a valid and long standing historic use that should continue to be available to those who desire or require alternative transportation and a different wilderness experience. (response #358)

Response: The interdisciplinary team used the best available literature as a part of this analysis. (see Literature Cited, Appendix C). The research considered and cited includes the most recent research specific to packstock use in similar, and adjacent, ecological settings. This research does assess plant species changes or changes in species composition or density associated with pack stock use in the Sierra Nevada mountains (see Literature Cited, Appendix C, especially the 2004 *Journal of Range Management* article by D. N. Cole, J. W. Van Wagendonk, M. P. McClaran, P. E. Moore, and N. K. McDougald: *Response of mountain meadows to grazing by recreational stock*).

Throughout Chapters 3 and 4, Hydrology Section, there are site-specific descriptions of stream morphology condition, meadow hydrologic function, soil compaction, and possible sediment increases in channels and lakes. The assumed causes are discussed, and the uncertainty in causes are also discussed. The term, “resource concerns” is often used in the Wilderness or Trails section of the DEIS to summarize the effects to many resources. However, within each specialty, such as “physical sciences” and “vegetation,” more specific terms, such as “stream functional condition,” “meadow hydrologic function,” and “increased fine sediment in streams” are used to describe observed effects.

Beginning on pages III-143 in the DEIS, there are a series of tables (Table 3.2) that describe specific effects to each meadow analyzed. These effects include, “hydrologic function change,” “PFC” (stream functional condition), “vegetation composition change,” “% that never reaches range readiness,” and “spring impacts.”

There are no qualitative data available regarding stream morphology or turbidity related in the AA/JM wildernesses. The observations uses were often one-time observations, using visual methods described in the Study Plan (available in the project record). While these observations are not measurable, many used established protocols, such as the Proper Functioning Condition (PFC) protocol, or the Best Management Practice protocol for stock campsites in the wilderness. These established protocols, and other methods described in the Study Plan, can be repeated by future specialists to determine whether the condition has changed over time. The PFC protocol estimates the ability of a stream to withstand high flows, based on the channel form and vegetation on the banks, and addresses stream morphology.

Public Concern #260: *Erosion and Sedimentation. The DEIS acknowledges that 30% of meadows visited by USFS specialists have moderate to severe sod fragmentation which is leading to soil erosion and sedimentation of surface waters (DEIS p. IV-126). Yet the USFS proposes to continue grazing in many of these meadows without controls to avoid exacerbation of the on-going erosion and sedimentation. The DEIS has at least three major flaws in its analysis of the potential for erosion and sedimentation: (1) It fails to evaluate management practices that could reduce trampling of sensitive streambanks, lakeshores, and wetlands by packstock (i.e., portable electric fences to keep stock animals out of sensitive areas, more meadow closures and better grazing start dates to avoid trampling of wet areas, etc.). (2) It relies on wholly unrealistic methods to keep packstock animals out of sensitive and closed areas. (3) It allows up to five years or more for BMPs to be installed at stock holding sites, with no plan for monitoring implementation or effectiveness of the BMPs. (response # 196)*

Response: The DEIS evaluates three alternatives (Alternatives 2, 3 and 4) where grazing is allowed, but is controlled by allocation of grazing stock nights, implementing a 5% trampling standard for critical areas, and closing meadows that are especially susceptible to erosion. Under the effects analysis in Chapter IV, section 4.2.2.1, the DEIS discusses the predicted effects of grazing strategies under each alternative. It assumes that simply closing sensitive meadows and allocating stock nights would reduce sedimentation overall, because there would be less grazing on those meadows susceptible to erosion.

The DEIS does not prescribe specific practices to meet the required standards: the Forest Service responsible official would work with the commercial pack stock operators to meet the standards using described and available tools in the selected alternative. If operating direction is not met, the responsible official would take appropriate actions to ensure compliance, which could include reducing or eliminating grazing.

Monitoring and Enforcement

Public Concern #261: *The DEIS states that there is a high degree of uncertainty in some locations regarding the feasibility of keeping grazing pack stock out of critical areas in accordance with the proposed 5% inadvertent trampling standard (p. IV-111). For instance, Alternative 2 would continue to allow grazing in Upper Spooky Meadow at levels similar to current grazing, even though trampling to the spring with fen characteristics would be difficult to keep at less than 5% without changes to stock management (p. IV-291). Monitoring, compliance, and enforcement of proposed management measures are key in ensuring that projected improvements are achieved. The Forest Service needs to demonstrate that proposed management measures are feasible and enforceable and that management direction will be fully implemented. The FEIS should describe present and future management, monitoring, and*

enforcement measures to ensure that proposed use limitations in meadows, campsites, critical areas, and trails are adequately implemented. Describe and evaluate grazing and stock management practices that can be used to keep pack stock out of critical areas and in compliance with use restrictions (e.g., portable electric fences, drift fences, pack lines). Include a list of mitigation measures that will be implemented if impacts are in excess of the allowable inadvertent level of use. We recommend monitoring to validate the assumption that packers can control grazing stock to prevent their use of critical and unsuitable areas from exceeding inadvertent use levels. The FEIS should include a commitment to implement an adaptive management program which can respond to changing conditions. We recommend working closely with pack operators to maximize implementation of proposed use limitations to prevent excess grazing impacts.

The NEPA analysis for individual Pack Stock Special Use Permits should include a specific monitoring and enforcement plan.

Response: The selected alternative, Alternative 2 – Modified identifies the conditions that must be achieved, and provides the responsible official and operator with various tools to do so. Prescribing the specific approach to achieve the condition for every destination given the many variations and differences in operations is not practical or necessary. If the condition cannot be achieved by the operator, the grazing will not occur.

The FEIS includes a monitoring plan that will describe monitoring procedures and the specific monitoring findings that will trigger management changes. In the future Special Use Permit EIS, enforcement procedures will be described.

Public Concern #262: *To protect sensitive areas from trampling and erosion, the DEIS relies on the employees of the commercial outfits to monitor stock movements, and to somehow, magically, to keep packstock from roaming into sensitive areas as they freely drift and graze throughout the night. The DEIS (IV-111) acknowledges that there is a large amount of uncertainty about the feasibility of keeping grazing pack stock out of critical areas when they are grazing at large. Yet despite the expressed doubts, the USFS proposes the business-as-usual approach (i.e., identifying critical areas but adopting no realistic measures to protect them). (response # 196)*

Response: The selected alternative, Alternative 2 – Modified identifies the conditions that must be achieved, and provides the responsible official and operator with various tools to do so. Prescribing the specific approach to achieve the condition for every destination given the many variations and differences in operation and operators is not practical or necessary. If the condition cannot be achieved by the operator, the grazing will not occur.

Soils/Hydrology, Comments on Chapter 3

Public Concern #263: *Clarification on page 111-82. This paragraph comes to totally incorrect conclusions because of the lack of some occurring facts. The Hurricane Olivia storm occurred in September of 1982. Severe flooding occurred throughout the Sierra. Jackson Meadow, Tully's Hole and Cascade Valley were lakes for many days. Fish Creek incised during that storm. It was not man caused and neither meadow impacts nor trail impacts had anything to do with it. It was days of heavy rains – a natural event. Streams and rivers throughout the Sierra were incised by the floodwaters. In Cascade Valley, prior to the flood, there were logjams and debris that slowed the flow of Fish Creek. These were washed out in a few days. In*

wet years Cascade Valley and Fish Creek have flooded but never like the “storm of 1982”. The flood event of New Years Day 1997 also seemed to have done some flood damage in Cascade Valley. There is a clarification on page 111-79 that relates to the Hurricane Olivia event in Convict Canyon. This was the storm event that originally washed out the trail in Sept. of 1982. Before this event, the trail was quite good for many years. (response # 198)

Response: The information you provided about the date of the storm and its cause were included in the FEIS in Chapter 3, Hydrology Section. Further, we added further discussion about the uncertainty regarding the cause of incision. The discussion now reads as follows:

In the Cascade Valley AU, Fish Creek is incised throughout Cascade Valley in the segments that are not bedrock. According to historical accounts (Michael Morse, Forest Service, personal communication, 2004), the stream incised in 1982 during a very heavy hurricane-induced rainstorm. It is unknown whether meadow or trail impacts adjacent to the stream or upstream made any contribution to Fish Creek incision, or whether it was a natural process due to high flows and previous drought conditions that reduced vegetative cover. Its current incised state makes it less able to withstand high flows without further incision and widening. The creek continues to widen, and it is possible, although not verifiable, that meadow conditions contribute to lack of recovery. Meadow conditions could contribute to lack of recovery because the compacted surfaces with reduced vegetative cover reduce infiltration rates. Rainfall and snowmelt therefore runs off on the meadow surface at a higher velocity and at greater volumes than under natural conditions. The high flows enter streams and are transported downstream at higher velocities and higher discharge more capable of eroding stream banks. This process has contributed to incision of streams in Grassy and Jackson Meadows, but it is unknown whether it has contributed to incision of Fish Creek in Cascade Valley downstream.

The storm in September 1982 that resulted in Fish Creek downcutting created the second largest flow in recorded history (since 1922) in the San Joaquin River, just downstream of its confluence with Fish Creek (at the Miller’s Crossing stream gauge). In December 1955, a larger flow was recorded, which did not incise Fish Creek. It is impossible to determine the combination of conditions required for incision, and whether human causes contributed. However, it is possible that there was some human contribution. Gully erosion may be triggered by any, “changes in the watershed or climate which result in more flow, less sediment, reduced vegetation cover, a downstream base-level change, and increased valley floor slope, or a change in subsurface process,” (Hagberg 1995). Both climate and grazing impacts can result in more flow and reduced vegetation cover, and therefore could contribute to stream incision.” Many researchers have correlated gully erosion and stream incision with grazing impacts (Hagberg 1995, Woods 1975, Warren et al. 1986), although there remains uncertainty about the exact conditions and mechanisms that lead to gully erosion.

The following comments are from response #275:

Public Concern #264: *III-82—The implication that meadow conditions are causing the incision and widening of Fish Creek are ludicrous. The banks are primarily lined by sand and silt. Incredible flash flooding and runoff creates erosion forces.*

There is no mention of weather and the drought followed by the occasional heavy snow year and flooding. The runoff in Cascade Valley is from up stream. The collapsing of the riverbanks is not from the condition of the meadow.

Anything is possible and the hydrology assessment fails as an adequate analysis of hydrologic function in Cascade Valley. At least on III-83 the commentator talks about natural occurring flood events. (response # 275)

Response: see response to Public Concern # 263

Public Concern #265: *III-84: What are the campsites that do not meet BMP's?. Aren't they backpacker camps? (response # 275)*

Response: The FEIS clarified the type of sites where BMP evaluations were completed in Chapter 3, Hydrology, under the Campsites subheading. The clarification states,

Commercial packers identified approximately 1,617 campsites that they have used in the past or would like to use in the future, and of those, 163 sites were evaluated for water quality effects using the BMPEP protocol and other observations. The sites evaluated were all identified by commercial pack stock operators as sites they use or would like to use. However, some of the sites evaluated did not have any evidence of pack stock use.

Public Concern #266: *III-98 The plan suggests that water degradation is due to the campsites of commercial use. For example it states on III-98 that many sites along Mono Creek are located less than 100 ft from the creek and can contribute sediment to the creek during rainfall or snowmelt. It doesn't state that almost all or 100% of the use in these campsites is due to non-commercial wilderness users.*

Response: The statement in the DEIS was not clear about the type of sites and the number intended by "many." The wording was therefore changed from, "Many campsites along Mono Creek are located less than 100 feet from the creek and can contribute sediment to the creek during rainfall or snowmelt" to "Of the four pack stock holding or spot/dunnage sites along Mono Creek analyzed for compliance with BMPs, all are located less than 100 feet from the creek and can contribute sediment to the creek during rainfall or snowmelt. An unknown number of sites that are predominantly used by backpackers are also located within 100 feet of Mono Creek. Although many of these sites exist, they tend to be smaller and individually contribute less sediment into Mono Creek."

Public Concern #267: *Campsites: Hiker caused BMPEP protocols. There is always a potential for local and lake-wide water quality issues. This document fails to note that the major threat to water quality issues is people and not stock.*

Picket lines are hundreds of feet to over a thousand feet from the lakes. The comment I heard in the last meeting regarding hydrology in the Basin was that the manure from picket lines would leach into the underground water and contaminate the lakes. Is this the concern noted? What doesn't the Forest Service look at actual water quality samples in Hilton Creek and use them?

There are evidence of picket lines close the water in occasional places. This is due to non-commercial stock users.

Where is the campsite along Hilton Creek that causing sediment? We don't use any camp on Hilton Creek. There is an old camp where backpackers occasionally use and was used in the 1960's. If this is the camp referred to...it should be so stated. It shows that there can be lasting effects to disturbed areas. What it shows is that non-commercial users often cause much more severe effects than commercial users.

In the second to last paragraph on page III-98 they refer to the Fourth Recess AU. They state that 40% of the campsites are contributing sediment to water. They fail to mention that many or most are camps that commercial users don't use. There is no attempt by the Forest Service to separate out use throughout the plan.

Yet, how does the Forest Service refer to the Bench Camp at Hopkins Meadow? Are they confused with a camp at Third Recess? It shows the lack of understanding of the Forest Service of what is actually going on in the backcountry.

The Forest Service refused to allow the commercial packer from Rock Creek to participate in meeting the id team in Mono Creek. And, we have provided information to our permit administrators over many years to prevent this type of miscommunication.

The writers of the section on campsites does not mention or show where we camp at Hopkins Basin, Hopkins and Mono area, Second Recess and the Fourth Recess Lake area. They do make a reasonable attempt at Pioneer Basin.

If this is an environmental assessment of campsites and pack stock use; why then doesn't the Forest Service separate out dunnage, spot and fully outfitted trips?

The DEIS overstates how many stock camps are less than 100 ft. from water and contribute to sediment. In an environmental document that is supposedly site specific...we should know the number and location of the sites.

In many cases, the campsites that have the most use show the least amount of impacts and potential for having water shed during runoff. Reading this analysis does not allow the public or decision makers to make reasonable assumptions about where and how much livestock is appropriate.

Response: This document focuses on commercial pack stock effects, and therefore only discusses impacts of humans not using pack stock in general terms and in the cumulative effects analysis. The following statements have been added to the FEIS to better address the impact of humans and other non-pack stock related uses.

Section 4.1.2.1: Analysis common to all alternatives/ Water Quality-Human waste subsection:

Humans, beavers, deer, dogs, and other animals can also carry human pathogens and deposit them in soil, on the soil surface, or in water (Derlet et al 2004, Derlet and Carlson 2002, Atwill 1995). While the few studies completed suggest that there may be a risk of pack stock transmitting human pathogens into surface water, the severity and extent of actual transmission is unknown. From the low prevalence of pathogens found in pack stock manure and in most Sierra Nevada water sampled, the risk appears to be low.

Section 4.1.2.1: Alternative 1, Cumulative Effects:

The effects of Alternative 1 on cumulative Wilderness water quality outside of grazed areas is unknown. Effectors to water quality within the wilderness include human waste, pack stock waste, human products such as soap and shampoo, domestic animal waste, wild animal waste, atmospheric deposition, cattle waste, and in some locations, possibly mine tailings. While there is evidence of increased coliform and bacteria below heavily used pack stock areas, there is also increased coliform in areas with little to no pack stock use, and no coliform found in areas with high levels of pack stock use. No studies have directly correlated heavy pack stock use with water contamination, although IDT

observations of pack stock defecating directly in water suggests that pack stock manure does enter water, and could have negative effects to water quality. What is known is that one or a combination of the above listed effectors has increased nutrient levels across the Sierra Nevada, and that there are levels of human pathogens and other bacteria in some lakes capable of affecting human health. Pack stock and the clients supported by commercial pack stock likely add some fraction of the contaminants to surface water throughout the AA/JM Wildernesses, but the degree of their contribution is unknown.

The concern about campsites in the Hilton Creek area is that camps are located too close to surface water. In the Wilderness Plan, campsites are required to be 100 feet from surface water, unless topography precludes this distance, and in no case should the sites be less than 50 feet from surface water. As stated on page III-33, "Table 5 in Appendix B displays the summaries of BMPEP protocol campsite results by analysis unit." In that table, it shows that of the 10 commercial pack station identified sites in the Hilton Lakes Analysis Unit, six are within 100 feet of water and six are contributing sediment to water.

In the Hilton Creek area, two commercial pack station operators identified a combined 61 campsites for requested use. Six of these sites were along Hilton Creek adjacent to Davis Lakes. It was assumed that the sites requested by commercial pack stations were used at some point by the commercial pack stations, and therefore the effects were assumed to be from groups using commercial pack stock. It is not stated whether the picket lines are less than 100 feet from the lake in the Hilton Lakes area, but the BMP protocol measures the distance to water from the edge of the campsite, not from the picket line.

As stated on page III-32 of the DEIS, all sites where BMP compliance was evaluated for pack stock related campsites only, and the sites evaluated were chosen out of the campsites identified by the commercial pack station operators. Campsites were recorded either as stock holding or spot/dunnage sites, and on page III-33, figure 3.1.10 shows how the two types of sites were separated for analysis of water quality effects.

The DEIS includes the number of sites that were found to be within 100 feet of water. On pages III-33 of the DEIS, it refers to analysis-unit specific BMP results in Table 5, Appendix B. In that table, it shows that out of the 163 sites analyzed for BMP implementation, 91 are within 100 feet from water. It also shows that 63 are contributing sediment to water. The location of the sites is described in more detail in hydrology portion of the Geographic Unit sections of Chapter 3, where site specific information is included.

The Forest Service does not have data for the amount of use at each campsite, so it was not possible to determine whether the campsite use levels affect the soil and hydrologic impacts. Through use information from the commercial pack stock operators and observations in the field, the IDT was able to determine whether a site was a stock holding site or a spot/dunnage site. Figure 3.1.10 shows that there was a greater percentage of stock holding camps with water quality impacts than spot/dunnage sites, especially with the sites 50-100 feet from water. The IDT assumed that stock holding camps were more likely to cause impacts to water quality because they are generally larger in size and therefore cause more surface runoff than smaller sites (p. III-34). breaks down soil structure.

To clarify the location of campsites where BMP analyses were completed, the Forest Service included a table in the FEIS project record with campsite locations and BMP results, referred to in Chapter 3, Hydrology Section, Campsites subheading. A map showing BMP locations is also

included in the project record, referred to in Chapter 3 in the FEIS. For clarification about campsite locations, in the FEIS the camp at the junction of Hopkins Creek and Mono Creek is not referred to as Bench Camp, but as the Camp at the junction of Hopkins and Mono Creeks.

Public Concern #268: *On page III-99 the Forest Service doesn't adequately describe the campsites in the Graveyard AU. Did the id team go up the Goodale Pass Trail? There are multiple large hiker camps alongside of the creek and on the trail.*

Where is the Bench Camp they refer to? Their assessment is wrong in the second to last paragraph. The camps they refer to is called the Bench Camp...never have been.

The picket lines are placed at the direction of the Forest Service. Easy to rectify by moving. What is substantial amounts of sediment?

Many sites along Mono Creek are located less than 100 feet from creek. But, they are from hikers. Not stock.

Response: The IDT did hike the Goodale Pass trail, and observed low campsite densities, as described on page III-99. The IDT was focused on effects of pack stock use, and therefore did not specifically visit campsites unless they were requested by commercial pack stock.

Bench Camp, as stated on page III-98, is at the confluence of Hopkins and Mono Creek. In the FEIS, it is referred to as "the camp at the confluence of Hopkins and Mono Creek." The name "Bench Camp" is not used.

The picket lines, as you suggest, would be moved over 100 feet from water (or far enough to meet BMPs) under all action Alternatives, as required in the Wilderness Plan.

"Substantial" amounts of sediment is not a quantifiable description. Here, it suggests that sediment was being observed entering water in visible quantities, outside the range of normal sedimentation.

The Mono Creek campsite discussion was changed in the FEIS to the following:

Of the packstock related campsites evaluated for BMP compliance in the Fourth Recess AU, 40% are contributing sediment to water. One of these sites, at the confluence of Hopkins and Mono Creeks, is one of the campsites of highest concern in the project area. The stockholding site is within 10 feet of a stream, with substantial amounts of sediment were observed entering the stream from the site. Of the four pack stock holding or spot/dunnage sites along Mono Creek analyzed for compliance with BMPs, all are located less than 100 feet from the creek and can contribute sediment to the creek during rainfall or snowmelt. An unknown number of sites that are predominantly used by backpackers are also located within 100 feet of Mono Creek. Although many of these sites exist, they tend to be smaller and individually contribute less sediment into Mono Creek.

Public Concern #269: *III-99-Absolute lie that there are many stock campsites within 100 ft of water.*

Response: The language in the FEIS was clarified. The DEIS read:

While a number of camps are located less than 100 feet from water, and social trails associated with the camps are contributing sediment to the lakes, campsites are generally not causing water quality problems or excessive soil productivity degradation." [regarding Pioneer Basin campsites].

The FEIS reads,

While a number of camps are located less than 100 feet from water, some are hiker related and some are pack stock related. Three commercial pack stock-related spot/dunnage sites were evaluated, and two were found to be less than 100 feet from water. These sites appear to be contributing minor volumes of sediment into surface water, but campsites are generally not causing water quality problems or excessive soil productivity degradation.

Soils/Hydrology, Comments on Chapter 4

Public Concern #270: *Chapter 4.1.2. The comment about pack stock manure contained pathogens capable of causing human disease implies that pack stock manure is causing problems. Their study is misleading and their paper is not the best way to address the public health concerns of livestock in the wilderness.*

The general public and decision makers can make better management decisions with appropriate public health data.

It is unsettling that the Forest Service didn't research the subject better and include citations that actually suggest the relative risk of people getting sick from manure from horses and mules.

This EIS should address water quality issues. The real danger is from the amount of people, where they camp and where they defecate. Commercial outfitters typically use pit toilets and bury the manure where appropriate. Probably the worst offender affecting water quality is day users of the wilderness. Why doesn't the Forest Service reduce day users and encourage better education to eliminate water pollution.

Response: See response to Public Concerns #245 and #246.

Public Concern #271: *Chapter IV-102: Third Recess Meadows always had commercial pack grazing. They state little grazing from 2001 to 2003 and in 2004 to 150 nights. The records of Rock Creek Pack Station bear little resemblance to what is being reported to the EIS. Someone lost the cards?*

Before going to the final EIS we first should look at what data the Forest Service is using and attempt to get a proper number and where the stock is grazing.

Response: The DEIS (and the FEIS) disclose the best information available on past grazing in the wilderness areas. Grazing numbers will be verified for the Final EIS.

Public Concern #272: *Chapter IV-117 The last paragraph doesn't make sense. Use is less now than ever. Look at use over the last 25 years. There has been considerable management of the area and in this section they mention adverse cumulative effects from campsite use. Elsewhere in the document on the affected environment on Fish Creek there are opposite claims.*

All alternative 2 does is give McGee Creek and Mammoth Lakes the right to control all of Fish Creek and eliminate Rock Creek and Red's Meadow Pack Stations from using the area.

This document does a very poor job of looking at cumulative effects from multiple pack stations. Where is the data? Where is the analysis through time that show what the impact is of multiple operators? Alternative 2 doesn't improve the environment. There is substantial regulations and the major effect of Alternative 2 is that because you can't graze, or stay in camps on the John Muir Trail there will be a lack of opportunity of people to travel the John Muir Trail and end up at Fish Creek. It has nothing to do with more regulations of campsites, etc.

Response: The last paragraph on page IV-117 reads,

Overall, the risk of adverse cumulative effects would be minor, except in the Upper Fish Creek, Silver Divide, Cascade Valley and Purple Bench Analysis Units in the Fish/Convict/ McGee GU. In these areas, it appears that recent commercial pack stock use has contributed to moderate intensity adverse cumulative effects from campsite use, commercial pack stock use of trails, and moderate to heavy grazing in meadows. These effects are also likely connected to historical cattle sheep and packstock grazing, non-commercial pack stock users, and hikers, the commercial pack stock also appear to have contributed. The more stringent management proposed under Alternative 2 in this area has the potential to reduce adverse cumulative effects to soil and water resources.

In the FEIS, a statement has been added to the end of the paragraph.

...although some would likely remain over the short term. In the long term, the commercial pack stock related impacts would likely be reduced due to a reduction in grazing in meadows with current moderate to severe hydrologic function alteration and functional at-risk streams.

This statement attempted to clarify the intent of the paragraph, that commercial pack stock effects occur currently, as a result current use combined with past uses, and that while some of these effects will continue in the short-term, in the long term there should be improvements. Throughout the physical environment section, Chapter 4, there is consistency in treatment of Fish Creek, as the area with the most widespread soil and hydrology impacts that can be at least partially attributable to recent commercial pack stock use.

This document does not differentiate between effects of different pack station operations, but combines all pack station when looking at current conditions and predicting effects under Alternatives. Therefore, it does look at cumulative effects of different operators.

Alternative 2 will limit grazing in the Fish Creek watershed, and will therefore affect commercial pack stock operations. The analysis of effects to operations can be found on pages IV – 74 to 77.

Public Concern #273: *IV-403. Hilton Analysis has lots of overnight commercial pack stock. Hundreds of animal nights per year.*

Response: The statement that “there is little no overnight commercial pack stock use” intended to show that there was little holding of stock overnight within the Hilton Lakes Basin. The forest was using stock grazing numbers, with a high reported of 42 stock nights, and no grazing in the other years. However, the forest does not have data about overnight holding of pack stock without grazing. This sentence is omitted in the FEIS, and only stock nights of grazing are discussed.

Public Concern #274: *IV-409—Under Alternative 3 you state there are no limits on traveling trips. I don't think this is correct?*

We disagree that Mono Creek Corridor will have grazing closed. And, we disagree with the analysis that there is excessive sediment of dirt going into surface water.

Response: The sentence on page IV-409 of the DEIS that stated, “Under Alternative 3, there are no limits on traveling trips” was clarified in the FEIS. It was changed to, “Under Alternative 3, there are no specific limits on the number of traveling trips that could occur. The number of traveling trips is only limited by the number of stock at each pack station and trailhead quotas.”

Throughout the Mono Creek Corridor, up to 323 stock nights could be used annually, as reported in Table 2.4, p. II-146. The area would not be closed to grazing, although some specific meadows, such as the meadow at the junction of Hopkins and Mono Creeks, would be closed to grazing or have limited use allowed. The grazing in the corridor itself would be reduced from a high around 520. There would also be over 500 stock nights allowed in canyons tributary to Mono Creek, including Second Recess and the Hopkins Creek Corridor.

Sediment was observed entering the water from campsites during a rainstorm in summer 2003, along Mono Creek. According to Best Management Practices, sediment or other substances should not enter water from campsites or other uses. Therefore, the sediment observed entering the water is excessive.

Wildlife

Public Concern #275: *Pack stock groups are drawing bears. Since you opened up the Davis Lake areas (above Thousand Island Lake) to pack stock groups the bears are now inhabitants. I have backpacked to Davis Lakes for over 30 years and never encountered a bear until two years. (response # 220)*

Response: The wilderness manager for the Rush Creek area has not received any bear problem complaints at Davis Lake. The commercial pack stock camp has been present since 1994. Davis Lake area is suitable bear habitat and therefore it is logical bears would use that area and may have in fact become more abundant, however we have no data to show that is the case. Improper food storage typically shifts bear movements in wilderness and non-wilderness alike where bears could be perceived as being drawn to an area. The Forest Service requires the use of proper food storage methods of all wilderness users in Rush Creek to prevent bears from being “drawn” into the area.

Public Concern #276: *The Forest Service should consult with U.S. Fish and Wildlife Service on any threatened or endangered species in the Wilderness areas. We have previously provided information on effects to listed and proposed for listing species. (response # 196)*

Response: The U. S. Fish and Wildlife Service has requested that we only consult on the final EIS preferred alternative. This consultation is completed.

Public Concern #277: *Aquatic Biodiversity Management Plan objectives set by the Department for areas in the Big Pine, Mt. Tom, Bishop, and Middle Fork of the San Joaquin watersheds are in conflict or may be in conflict with pack stock holding, dunnage, and camping areas proposed in some of the alternatives. Most pack stock destinations are at or near waters that are managed for recreational angling rather than fishless. In addition, restoration areas may require conservative management to protect sensitive species and their habitats, for example from trampling or lower water quality. Due to general descriptions of existing or proposed stock holding areas, camps, and dunnage locations in the DEIS, the Department suggests meeting with the USFS to determine potential conflicts or impacts with the Department’s proposed and existing restoration and resource areas. (response # 238)*

Response: The Forest Service met with the Department to discuss this issue on July 20, 2005.

Public Concern #278: *The alternatives (except for Alternative 5) do not provide for the future viability of wildlife in the wildernesses. They do not even protect the habitat of endangered*

species as required by the Endangered Species Act. In Alternatives 1, 2, 3, and 4, outcomes for wildlife viability cannot be predicted. Alternative 5 offers full protection for all meadows and thus eliminates potential adverse effects for ground nesting birds that frequent meadows such as the willow flycatcher. Under Alternatives 1-4, it is possible for stock to intrude into suitable unoccupied willow flycatcher meadow habitat and even into occupied habitat.

Meadow dependent species, especially amphibians are most obviously threatened by the continuation of pack stock grazing. None of the alternatives except for Alternative 5 materially increases the level of protection accorded endangered amphibians such as the Yosemite Toad and Mountain yellow-legged frog. (response # 392)

Response: The DEIS concluded that based on the analysis there would be no adverse effects of any alternative on any Federally listed threatened, endangered or proposed species or their habitat. The DEIS analysis also concluded as well that stock use of meadows under Alternatives 1 through 4 would not adversely affect the viability of riparian or meadow edge MIS bird guilds or the yellow warbler across the wilderness analysis area, or the willow flycatcher that nests in shrubs. The DEIS noted no willow flycatchers are known to utilize the wilderness meadows for nesting at this time. The critical area 5% maximum trampling standard for key habitats in meadows in Alternatives 2 through 4 is designed to protect Forest Service sensitive amphibian habitat for the Yosemite toad and mountain yellow-legged frog. The Yosemite toad and the mountain yellow-legged frog are federal candidates for listing but have not been listed as either threatened or endangered.

Public Concern #279: *Removing pack stock from the wilderness would guarantee nearly completely undisturbed habitat for the Yosemite toad. In contrast, the other alternatives consider only a single survival factor – protection of Yosemite toad breeding sites.*

The DEIS discusses at length the consequences of pack stock grazing areas overlapping with Yosemite toad breeding sites. There are other threats to the toad in connection with pack stock meadow grazing. Among these are loss of breeding and rearing sites due to impaired hydrologic function; silting of pools caused by erosion in meadows and along trails; trampling of vegetation and disturbance of insect prey habitat; and isolation of toad populations to a single meadow or meadow complex because of topography changes. Some of these pack stock grazing consequences are mentioned in the DEIS, but the alternatives do not provide mitigation measures.

Substantial pack stock signs have been observed at breeding sites that were not identified for pack stock grazing. This raises the question as to how much unrecorded overlap is occurring.

Alternative 1 clearly threatens Yosemite toad viability.

Provisions in Alternatives 2 and 3 (including the 5% disturbance limitation) is an improvement over the essentially unregulated conditions of Alternative 1, but it does not offer real protection for the toad.

Since in general the effects of pack stock meadow use are not really understood, no meadow should be considered suitable for pack stock grazing from a wildlife conservation standpoint. (response # 392)

Response: The 2004 Yosemite toad monitoring study as well as numerous interdisciplinary field trips across the AA/LM Wildernesses from 2001 through 2004 only documented 1 meadow

not identified as a grazing area (DEIS, Chapter 4 page 159) where substantive pack stock trampling impacts were noted at a Yosemite toad breeding pool.

The analysis compares the various alternatives and discloses the unknowns and the uncertainty related to the continuation of commercial pack stock grazing and use of meadows inhabited by Yosemite toads. It also notes that livestock grazing has been occurring in such meadows in the wilderness and as well as livestock allotments outside of wilderness and on a number of other Forests, and Yosemite toads continue to occupy those habitats (Chapter 4, page 157). Given the uncertain aspect of grazing effects on the toad and its habitat, the fact that toads have persisted for many years in grazed areas, as well as the implementation of a Regional study to assess the effects of grazing it is reasonable to allow the continuation of grazing with management measures. This is the logic behind the determination in the Biological Evaluation that individual toads may be affected however the viability of the species would be maintained.

Public Concern #280: *EPA is concerned with the potential impacts to associated aquatic-dependent wildlife such as the Yosemite toad. Potential impacts to Yosemite toad are of specific concern because the U.S. Fish and Wildlife Service has concluded that the Yosemite toad may warrant protection under the Endangered Species Act. More than 90% of Yosemite toad habitat occurs within Forest Service wilderness areas and National Park Service lands, especially around Yosemite National Park. Fifty-eight (58) meadow areas identified as suitable for commercial pack stock grazing under Alternative 2 would overlap Yosemite toad breeding areas and could result in trampling and chiseling of Yosemite toad breeding pool habitats (p. IV-167). We recommend the Forest Service exclude stock from standing water and saturated soils in wet meadows and associated streams and springs occupied by the Yosemite toad during their breeding and rearing season. The FEIS should include management measures and a commitment to minimize potential impacts to Yosemite toads and their critical habitat. (response # 427)*

Response: The recommendation is noted. The 5% critical area standard in Alternatives 2 through 4 that includes Yosemite toad breeding areas addresses this concern.

Public Concern #281: *III-100: The DEIS should disclose that there are a lot of people who steal and collect Goshawks. (response # 275)*

Response: The DEIS Chapter 4, page 179 acknowledges the falconry take of goshawk in the cumulative effects section.

Public Concern #282: *Wildlife Chapter IV-141. #3. Cattle and Horse graze significantly different. Don't presume to extrapolate from cattle for horses. They graze differently, they graze different plants and they travel totally different. There are many studies on grazing of horses and their interrelationship with grazing. I would suggest you could extrapolate from horse studies to commercial horse studies. The difference between horses and commercial horses is not that much different.*

There is quite a bit in the literature about wild horse and the relationships with wildlife. I would be glad to share my literature with the Forest Service. (response # 275)

Response: We believe the extrapolation of livestock grazing studies is appropriate to assess the impacts of commercial pack stock grazing impacts on wildlife habitat. The extrapolation is appropriate since the analysis focuses on the cropping of herbaceous and woody vegetation at various utilization levels as well as trampling and chiseling impacts irrespective of the type of

animal. The Forest Service would appreciate any information you could share concerning horse grazing studies specific to effects on wildlife habitat.

Public Concern #283: *Chapter IV-142. Again, they assume Baxter Pass will be closed. The Forest Service said in 2001 that Baxter Pass would be available on a case by case basis. Now, here is closed.*

This is a perfect example of how the Inyo National Forest publicly states one management objective and then implants another. (response # 275)

Response: Alternative 1 considered maintaining the trail as suitable for commercial stock on a case by case basis. Your comment will be fully considered in the development of the Final EIS adopted alternative.

Public Concern #284: *Page IV-177—In the analysis of Goshawks there is no discussion about people collecting the young birds. (response # 275)*

Response: The DEIS Chapter 4, page 179 acknowledges the falconry take of goshawk in the cumulative effects section.

Vegetation

Sensitive Plant/Weeds

Public Concern #285: *All (commercial) pack animal users should be required to utilize certified-weed-free feed if traveling in/through areas where utilization of natural vegetation might have negative impacts on the natural ecosystems. (response # 301)*

Response: See Chapter 3, Weeds. SNFPA (2004) directs that use of weed free hay and straw be encouraged and that a program for use will be phased in as certified weed free products become available. An MOU among California agencies is currently in place to develop a weed free forage program, but the very limited availability of certified weed free hay and straw does not support requiring it in particular areas of the state as yet.

Grazing Resources

Public Concern #286: *Grazing zones and their rotation create problems related to the management of stock. Stock are creatures of habit and have a memory of grazing areas. There would be difficulty in rotating these animals from familiar grazing areas. This is not to say that rotation away from specific areas may not be warranted due to specific conditions. However, we believe that grazing should be consistent with traditional patterns unless contra-indicated by specific meadow conditions. We believe that the grazing provisions of February 2005 MOU should be adopted.*

We believe that meadow management should be based upon long term monitoring with identified baselines and standards for measurement of meadow health. If it is determined that a meadow is in decline, the cause of that decline should be identified before a management decision is made to exclude commercial pack stock as a “solution.” It is not appropriate to penalize pack operators unless it is definitively determined that their activities are the cause of resource decline. (response # 325)

Response: Grazing Zones are based on areas where the packers indicated that pack stock have actually grazed, so they should reflect the traditional patterns (see Common Management Direction to Alternatives 2-4, Commercial Packstock Grazing in Chapter II). Within the grazing zones “key areas” have been identified. Key areas are areas of traditional grazing by packstock and or areas of importance for monitoring. This monitoring will provide the information needed for adaptive management and flexibility to move use in response to compliance with applicable standards and to help progress toward desired long-term trends. Rotational grazing is only proposed in the DEIS in a few limited places (see the discussion of Rush Creek, and Hilgard/Rosemary in Chapter II and Chapter III).

The February 2005 MOU only addresses opportunities to validate site-specific grazing start dates and contains no other grazing provisions (see 2005 MOU). Grazing implementation is as directed by the decision in the referenced Wilderness Plan Record of Decision (Inyo and Sierra National Forests, April 2001). This decision is to: establish grazing utilization standards; adopt range readiness standards; establish commercial packstock forage use through special use permits; limit stream bank trampling and chiseling to less than 20%; include conditions in permits requiring operators to be involved in monitoring and to cease using meadows when grazing standards are reached; and for a full closure of meadows to all packstock grazing for the following season when over utilization of vegetation has occurred (see the Wilderness Plan ROD, page pp 4-5 and 16, the Packstock Management Guide, Appendix G, and Appendix A, relevant Laws, Policies, and Regulations). This analysis collects and interprets the information needed to implement the identified Wilderness Plan management direction.

Historical impacts and related meadow problems are discussed in Chapter III (see Grazing Operations, Meadows, and Hydrologic Function sections in Chapter III, and especially the Grazing Resources sections of the Ansel Adams West and Mono Creek/Rock Creek geographic areas. Additional descriptions of historical impacts and current conditions is found in the 2001 Wilderness Plan (Inyo and Sierra National Forests, 2001) and the Sierra Nevada Forest Plan Amendment (USFS, Pacific Southwest Region, 2004) and is referenced rather than duplicated in this EIS).

Today’s management emphasis is on assessing current conditions and desired conditions and then identifying needed changes in those factors, including stock use, contributing to current conditions being inconsistent with desired conditions. Possible management practices, and or alternative actions, are then identified to accomplish the needed changes. In some cases packstock use was not singled out as the sole factor resulting in unstable or degraded conditions. However once a site is damaged or becomes unstable continued grazing related impacts of the degraded or unstable system could delay or prevent recovery (see the discussions of Meadows, Soils, and Hydrological Function in the Physical Environment sections of Chapter IV and the discussion of Assumptions About Effects in the Grazing Resources section of Chapter IV).

The Wilderness Plan Monitoring Framework calls for long-term monitoring of ecological state and transition at key benchmarks (Wilderness Plan pages 37-39, and Appendix G, Pack Stock Management Guide). There is Management Direction in the Wilderness Plan to prohibit or mitigate ground disturbing activities that adversely affect hydrologic processes,” “develop measures to protect bogs and fens,” “modify or suspend grazing based on existing conditions.” There is no management direction to attempt to isolate one cause as the only or the primary cause before implementing a possible management practice (see the Commercial Packstock

Grazing section of Chapter II, as well as the associated referenced pages in the Wilderness Plan, pages 23-26, and the Wilderness Plan Stock Management Appendix, Appendix G).

Public Concern #287: *Grazing issues can be mitigated among packers who are already concerned with enhancing backcountry resources. (response # form letter A)*

Response: Grazing issues can indeed be mitigated among packers who are already concerned with enhancing backcountry resources. The process for this to occur is site-specific implementation of applicable Management Direction as directed by Forest Service Line Officers and facilitated by Forest Service permit administrators through the Special Use Permit process (see the paragraph on Adaptive Management in the Commercial Packstock Grazing section of Chapter II).

Public Concern #288: *Given that hydrological function is “impaired in many areas” and “These conditions are of significant concern, and indicate that use is occurring each year before soils ...are dry enough...” (DEIS, III-48), current grazing start dates are inadequate. The Forest Service needs to adopt grazing start dates that prevent such impacts. (response #form letter G)*

Response: Changes in the grazing start date management direction are outside the scope of this analysis. Grazing start dates are implemented as directed by the Wilderness Plan Record of Decision based on implementing the existing direction in the 2001 Wilderness Plan, as described in Appendix G, Pack Stock Management Guide (Inyo and Sierra National Forests, 2001). Basing the grazing start-dates on elevation and interpretation of snow conditions, as described in the Pack Stock Management Guide, is the most efficient given current time and funding constraints. This process and schedule was developed in response to the packers need to have grazing start date information in late winter to early spring for the purposes of trip planning and booking. The Pack Stock Management Guide states “...timely posting of grazing start dates, well in advance of the grazing season, will allow commercial operators and visitors to make trip itineraries with some level of certainty on where and when forage will be available in the wilderness...” (Wilderness Plan, Appendix G, page 6). The start dates are posted, that is notification is provided in letter to the packers and made available to the public, according to a schedule in the Pack management Guide.

The challenge facing Forest Staff is to provide the grazing start date information “well in advance of the grazing season” in response to the needs of the packers and to also comply with management direction in the Wilderness Plan and the Sierra Nevada Forest Plan Amendment protect the riparian resources and special aquatic features. Part of the compromise that must be accepted is if the packers need an early date for their trip planning that date must also be conservative to prevent impacts and in some instances the date will fail to adequately protect the resource unless the packers also accept responsibility for monitoring and complying with range readiness criteria as the summer progresses.

Additional site-specific determinations may be made if time and funding allow for the necessary field inspections (see the Commercial Packstock Grazing section of Chapter II, the Wilderness Plan pages 23-26, the Pack Stock Management Guide, Appendix G, and the 2005 MOU). The Wilderness Plan Record of Decision states that the Forests will require commercial packers to monitor grazing conditions, including range readiness (ROD, pages 5 and 16) which is intended to help ensure timely and accurate information on range conditions.

Public Concern #289: *The proposed grazing management scheme will not work. How can you say that an area is “closed” to grazing if an immediately adjacent area is “open” to grazing? Stock animals do not read the rules, and will drift freely from the open areas into the closed areas. The Forest Service does not have sufficient staff to monitor or enforce such an obviously impractical scheme. The result would be significant trampling and grazing impacts in the supposedly closed areas. (response # form letter G)*

Response: Meadows with critical areas will be identified for the packers in the operating plan. The packer will work with the permit administrator and range personnel to determine an effective way to avoid the critical areas (see the Commercial Packstock Grazing section of Chapter II, the referenced Wilderness Plan pages 23-26, the referenced Wilderness Plan Stock Management Appendix, Appendix G). It will then be the responsibility of the individual packer to ensure that the wranglers conducting individual pack trips implement the planned management at specific sites.

As is described in the section on Common Management Direction to Alternatives 2-4 (see Commercial Packstock Grazing in Chapter II) the on-site wranglers will be expected to manage the stock to avoid stock entry into these critical areas. However zero tolerance is neither possible nor necessary in a natural setting, therefore a slight amount of inadvertent entry and impacts (the 5% levels) will be tolerated (see Commercial Packstock Grazing sections by Alternative in Chapter II). This should give the District Ranges, permit administrators and permittees the flexibility needed to respond to site-specific conditions and implement grazing management to protect critical areas. Methods for avoiding critical areas may include but are not limited to: temporary fencing; using a bell-mare; having animals under direct wrangler control while grazing; packing feed; or others that packers may request and District Rangers may approve.

Critical areas where negative impacts have been observed will also be given a high priority for development of site specific management plans and monitoring (See Alternative 6/Appendix).

If avoiding critical areas was considered highly unlikely because of the intermingled nature of the meadow/wetland mosaic, the meadow was not considered suitable for grazing (see the Commercial Packstock Grazing section of Chapter II, and the referenced Wilderness Plan Stock Management Guide, Appendix G, page G-11, Table 2-4 Grazing Recommendations by Alternative, and the Study Plan).

An important tool to help keep grazing use and related impacts within standards is to set a conservative stocking rate for the grazing zone and then to adjust that stocking rate up or down based on monitoring and analysis of compliance with applicable standards as well as on resource condition and trend. The initial estimates of available forage, given in stock nights, are intended as guidelines for permit administrators and packers. Stock nights are based on the area (acres) of a key area meadow where grazing can occur, considering suitability, range readiness and resource conditions as described in the.

The identification of key areas and the process for estimating the stock nights of available forage are based on standard range protocols as described in the Regional Rangeland Analysis and Planning Guide (see the Commercial Packstock Grazing section of Chapter II, as well as the associated referenced pages in the Wilderness Plan, pages 23-26, the referenced Regional Rangeland Analysis and Planning Guide, the Wilderness Plan Stock Management Appendix, Appendix G, and the Study Plan). Implementation of the Wilderness Plan Record of Decision (see the ROD, top of page 5 and bottom of page 16) to require the permittees to be

involved in the monitoring of grazing conditions is intended to help with compliance in a era of staffing shortages.

Public Concern #290: *At IV-140, the DEIS states, “The Science Review acknowledges that the available literature is replete with statements about the probable effects of grazing, many of them observational or anecdotal, but rarely is there controlled studies from which to accurately assess different levels of grazing. Most studies refer to heavy grazing without actual forage use quantification by cattle or sheep, and do not examine moderate grazing intensities that are proposed in this EIS.” Again, pack stock users have modified their methods to protect grazing areas, which are important to their livelihood, and again there is less stock grazing now than in years past. Additionally, horses and mules graze differently than cattle and sheep since they do not pull out the grasses by the roots and they favor the tops of the grasses. Further, the meadow monitoring methods used by the Forest Service are quasi-scientific and as such are subjective and can, and indeed are (as admitted to me by a Forest Service employee) slanted to fit the anti-pack stock bias of the person doing the monitoring.*

Volunteer groups, as well as Commercial groups, help monitor the fences in the meadows. If you would put more people in the field this topic would not be such a secret in your assessment of stock use and meadows. (response # 357)

Response: The statement quoted is from Diaz, (1999) as quoted in the Wildlife section of Chapter IV. This analysis uses the best available literature, including some as discussed, acknowledges that discussion by Diaz, and also uses and cites other more recent available scientific literature. Including this quote indicates that the interdisciplinary team used the best available literature, including, discussing, and considering any available critiques of the literature, as a part of this analysis. (see Literature Cited, Appendix C).

In addition to the research discussed by Diaz, research considered and cited includes the most recent research specific to packstock use in similar, and adjacent, ecological settings. An example of this is the 2004 Journal of Range Management article by D. N. Cole, J. W. Van Wagendonk, M. P. McClaran, P. E. Moore, and N. K. McDougald. *Response of mountain meadows to grazing by recreational stock* (see Literature Cited, Appendix C).

The interdisciplinary team is aware of and incorporated instances where packstock users have modified practices, (such as is discussed relative to Alger Lakes, Hilgard, and Rosemarie Meadows in the Grazing Resources sections of Chapter III). The EIS also discusses historical changes in grazing. This comment gives no specific additional examples of how or where pack stock users have modified their methods so it is not possible to respond to the comment other than to refer the reader to the existing discussions in Chapter III of the EIS. The historical trends in livestock use are discussed in the EIS and were considered by the interdisciplinary team during the analysis (see the Wilderness Scale, Grazing Operations, Historical Visitor Use discussions in Chapter III, and the referenced documents including Forest Plans, the 2001 Wilderness Plan, and the Sierra Nevada Forest Plan Amendment of 2004).

The use of grazing related research irrespective of the type of animal is appropriate; especially so since in this analysis the concern under discussion is often the ancillary impacts to grazing such as trampling of critical areas. While cattle and horses may employ different grazing techniques, one animal may lift the head to remove vegetation after biting while the other twists the head for example, the impacts of removal of vegetation and the associated ancillary impacts, such as trampling and fragmenting the sod by animals of similar weights, may still be considered and

discussed. If the author of this comment has any literature related to the differences in grazing methods between equestrian and bovine grazers in addition to that already cited in the Literature Cited Appendix it would be helpful to make that literature available.

The monitoring methods are based on interdisciplinary team implementation of the direction in the Wilderness Plan, the Pack Stock Management Guide, Appendix G, and methods described in the Regional Rangeland Analysis and Planning Guide (see the Study Plan).

The Wilderness Plan direction "...require(s) the permittees to be involved in the monitoring of grazing conditions" (Wilderness Plan FEIS ROD, page 5, 16) and is to "Conduct monitoring of these packstock management guides by wilderness managers" (Wilderness Plan, page 24

Public Concern #291: *All of the alternatives reduce grazing without adequate study. There are new standards imposed that essentially eliminate the use that the Wilderness Act was in part created to allow by saving public lands. By eliminating grazing the Service eliminates traveling trips. None of the alternatives explain this is the effect.*

Grazing should be permitted at historic levels. Packing cubes is not a good alternative. There are site specific measures to solve problems in those areas where grazing is not suitable.

Much of the grazing studies done for this EIS were done without sufficient amount of time or manpower assigned to correctly assess the environment. And, the conclusions reflect that inadequacy. A perfect example is the amount of grazing assigned to Quail Meadows. Or, the amount of grazing assigned to the Tamarack area near Dorothy and Kenneth Lake. The best example is of allowing about 20 animal unit nights at Hopkins Meadow Complex in Mono Creek.

The only grazing alternative that allows packing to continue is the Alternative 1. Alternatives 2-4 too often reduce grazing to numbers too low to allow use. Rather than assign animal nights, there should be a system at looking long term trends and utilization standards.

Unfortunately, using animal nights per meadow is not going to work. It is far better to allow for grazing numbers for a larger geographic region.

The Forest Service plans to close Graveyard Meadow....one of the best places in the Sierra to graze. Why? Certainly doesn't explain why.

In the Appendix B Tables regarding Bear Creek...most of the grazing are alongside of Meadows and grass alongside of the trail that aren't even included a part of the grazing. And, the whole side of the mountain to Orchid Lake.

The entire grazing allocation system is flawed because it just covers certain large patches of meadow. A good percentage of grazing is done outside of these areas. Unfortunately, the Forest Service GIS system is able to incorporate this data.

There are lots of grazing areas that aren't being included. This amount of available forage should be considered in assigning grazing AUM's. (response # 275)

Response: This analysis implements the direction in the Wilderness Plan to use the Grazing Response Index methods and forage utilization standards in conjunction with rangeland suitability criteria, range readiness, and recreation strategy objectives to identify the grazing levels and management needed to maintain or reach desired conditions (Wilderness Plan, 2001, page 4, Pack Stock Management Guide, Appendix G, all but especially see pages 3, 6, and 11).

Grazing is allowed throughout the project area. Grazing is reduced or prohibited locally on those specific sites where it is not appropriate due to degraded conditions, the intrinsic inability of the site to reach range readiness, or where the complexity of the arrangement of critical and non-critical areas precludes grazing without a high probability of damage to the critical areas (see the Commercial Packstock Grazing section of Chapter II, Table 2.4, the Wilderness Plan, pages 23-26, the Regional Rangeland Analysis and Planning Guide, the Wilderness Plan Stock Management Appendix, Appendix G, and the Study Plan). How different pack stations will respond and the effects on traveling trips and are discussed in the Operations sections of the consequences chapter (see Chapter IV, Socioeconomics and Operations, Effects to Operations).

Grazing by commercial pack stock is eliminated in Alternative 5. Grazing is not eliminated in Alternatives 1-4 and Alternative 2 – Modified, but is proposed for those sites where it is appropriate and at initial levels estimated to allow for protection and sustainability of other resources at varying levels for different alternatives. The proposed initial stock nights available across the project area vary by alternative based on the alternative-specific management emphasis as described in the alternative descriptions in Chapter II. For analysis purposes grazing use for Alternative 1 is assumed to be similar to the highest recently reported (between 2001 and 2003) which is 5,755 stock nights. The initial estimates for the other Alternatives are: 10,793 stock nights for Alternative 2; 15,023 stock nights for Alternative 3; and 8,778 stock nights for Alternative 4, (see Table 2.4 for site-specific estimates).

According to this analysis levels of use comparable to the recent levels of use will be accommodated at Quail Meadow. Alternatives 2, 3, and 4 propose an initial 48 stock nights available in the Quail Meadow Grazing Zone (Table 2.4). The actual reported use at Quail Meadow was 0 stock nights in 2001, 48 stock nights in 2002, and 31 stock nights in 2003.

The time and manpower devoted to this project may be considered insufficient by some, however this analysis is being accomplished with the time and manpower available and is significantly more than comparable evaluations in other wilderness areas (see the Commercial Packstock Grazing section of Chapter II, Table 2.4, the Wilderness Plan, pages 23-26, the Regional Rangeland Analysis and Planning Guide, the Wilderness Plan Stock Management Appendix, Appendix G, and the Study Plan).

It was necessary to do an extensive and rapid paced assessment to comply with the necessary deadlines and to allow for re-issuance of the Special Use Permits in a timely manner. The Purpose and Need includes: “Proposals for individual pack stock special use permits...through a subsequent NEPA analysis to be completed by 2006” (see Chapter I, Purpose and Need). Planned follow-up studies and adaptive management will be able to adjust the authorized activities based on the results of monitoring (see the Monitoring and Adaptive Management description in Chapter II, section 2.2).

Historical causes of meadow problems and the existing resource conditions, and the identified management needed to move toward desired conditions, including at Graveyard Meadow, Dorothy Lake area, and Hopkins Lake area are discussed in Chapter III (see Grazing Operations, Meadows, and Hydrologic Function sections in Chapter III, and the specific Graveyard discussion in the Mono Creek/Rock Creek, Grazing Resources, section of Chapter III).

The Grazing Zones have been identified to account for larger areas of potential grazing opportunities than were included in the key areas. Grazing Zones and Key Areas are based on areas where the packers indicated that pack stock have actually grazed, so they should reflect the

traditional grazing patterns (see the section on Common Management Direction to Alternatives 2-4, Commercial Packstock Grazing in Chapter II). Smaller “key areas” have been identified within these grazing zones for monitoring. This monitoring will help provide flexibility to move use in response to compliance with applicable standards (see the sections on Adaptive Management in Chapter II). The use of key areas to represent large areas or grazing zones is an established management practice (see Chapter II section 2.2 and the Regional Rangeland Analysis and Planning Guide).

Public Concern #292: *The grazing strategies in Alternatives 1-4 raise questions as to whether the limits to be imposed are stated in terms of measurable quantities and the conditions are described with sufficient precision. The capacity (in stock nights) of grazing zones is based on the calculation of suitable area, vegetative productivity, and reported use in the past three years. It is not clear to what extent ecological characteristics and processes in the meadows are taken into consideration at arriving at the capacity estimates.*

Compliance with the grazing rules requires only that a trend toward desired conditions be shown. The concept of desired condition is itself rather vague and varies depending on the recreation category assigned to the zone. Further, there is no standard method specified (at least not in the DEIS) for detecting trends. In addition, implementation of these strategies requires monitoring and control and herding of stock to keep within guidelines. There is no assurance that the required monitoring and herding will occur.

Grazing suitability of meadows is especially troublesome. If this is a meaningful concept, it ought to be defined in terms of objective criteria that are generally accepted. But suitability clearly is not objectively defined here, since the same meadow is classified as suitable in one alternative and is unsuitable in another. (response # 392)

Response: The quantities and conditions used are standard and in common use (see the Sierra Nevada Forest Plan Amendment, the Wilderness Plan, the Pack Stock Management Guide, and the Regional Rangeland Analysis and Planning Guide, as referenced in the EIS and included in the Literature Cited Appendix).

The areas where grazing is prohibited and the total proposed initial stock nights available across the project area do vary. The variation is based on the alternative-specific management emphasis as described in the Alternative descriptions in Chapter IV.

For example: Under Alternative 3 part of the alternative description is to:

“Allow grazing at the utilization, range readiness, inadvertent use/impact critical area 5% standard, and other standards as for Alternative 2 with initial identified stock nights available as for Alternative 2 for areas that are assessed as Fully Functional or Functional at Risk with an upward trend.

- No use will be authorized on key areas determined to be Functional at Risk with a downward trend.”

Under Alternative 4 the emphasis of the alternative becomes progressively more stringent. Suitability for grazing in Alternative 4 is defined as:

“Allow grazing at the utilization, range readiness, inadvertent use/impact critical area 5% standard, and other standards as for Alternative 2 with initial identified stock nights available as

for Alternative 2 for areas that are assessed as Fully Functional or Functional at Risk with an upward trend, with the following exceptions:

- A 30% maximum utilization factor will be set on key species in key areas determined to be Functional at Risk with no apparent trend.
- No use will be authorized on key areas determined to be Functional at Risk with a downward trend.
- No use will be authorized on key areas categorized as having severe alteration of hydrological function.”

It is true that successful management is generally defined as a trend toward desired condition. The social aspect of the desired condition relative to the experiential nature of the wilderness resource varies by recreation category and is the desired condition described in the Recreation Goals and Objectives (Wilderness Plan, Chapter 2, page 16). However the desired condition for the grazing resource is defined in the Recreation Stock Forage Goals and Objectives (Wilderness Plan, Chapter 2, page 58) and does not vary by Recreation Category.

The extensive and rapid data collection methods used in this analysis are based on interdisciplinary team implementation of the direction in the Wilderness Plan, the Pack Stock Management Guide, Appendix G, and standardized Regional methods described in the Regional Rangeland Analysis and Planning Guide (see the Wilderness Plan Pack Stock Management Guide direction on Suitability Determinations and the Study Plan).

The EIS also references the Wilderness Plan, Pack Stock Management Guide, and the Regional Rangeland Analysis and Planning Guide. These documents provide management direction regarding monitoring and details of the monitoring protocols (see Chapter II, 2.2 Common Direction to all Alternatives). The Wilderness Plan Monitoring Framework calls for Long-term monitoring of ecological state and transition at key benchmarks (Wilderness Plan pages 37-39).

The Wilderness Plan direction “...require(s) the permittees to be involved in the monitoring of grazing conditions” (Wilderness Plan FEIS ROD, page 5) and to “Conduct monitoring of these packstock management guides by wilderness managers” (Wilderness Plan, page 24). The Forest Service is also willing to consider any offers of assistance. The Forest Service will continue to place employees in response to annual budgets.

Additional areas were included as not suitable for grazing after the initial proposed action as a result of the ongoing analysis process. Suitability is based on factors determined locally by an interdisciplinary team and these factors may, and should, respond to the locally determined management emphasis factors, including ecological and process factors such as those that resulted in the progressively more stringent alternatives as described above (see also the Wilderness Plan, the Pack Stock Management Guide, the Regional Rangeland Analysis and Planning Guide, and the Study Plan).

The analysis responds to ecological characteristic and processes as it assesses the consequences of implementing progressively more stringent and prohibitive grazing on those sites where it is not appropriate due to degraded conditions, the inability of the site to reach range readiness, or where the complexity of the arrangement of critical and non-critical areas precludes grazing without a high probability of damage to the critical areas (see the Commercial Packstock Grazing section of Chapter II, Table 2.4, the Wilderness Plan, pages 23-26, the Regional Rangeland

Analysis and Planning Guide, the Wilderness Plan Stock Management Appendix, Appendix G, the Study Plan, and the Meadow Rating Criteria and Spreadsheet in the Project Record).

Public Concern #293: *Alternative 2 does not protect meadows that contain critical habitat. Designating them as critical does not prevent some degree of trampling and other disturbance. Further, no standard means is prescribed for measuring the extent of damage or limiting damage to 5%, nor is there clear evidence that the 5% figure, if adhered to, will be adequate to prevent further decline in meadow stream function or vegetative conditions. (response # 392)*

Response: Alternative 2 includes the same standards for impacts in critical areas as Alternatives 3, 4 and Alternative 2 – Modified (see Chapter 2 – Common Direction to all Alternatives, Common Management Direction to Alternatives 2-4, Commercial Pack Stock Grazing). Grazing is prohibited in Alternative 2, and in Alternatives 3 and 4 as well, where the complexity of the arrangement of critical and non-critical areas precludes grazing without a high probability of damage to the critical areas (see the Commercial Packstock Grazing section of Chapter II, Table 2.4, the Wilderness Plan, pages 23-26, the Regional Rangeland Analysis and Planning Guide, the Wilderness Plan Stock Management Appendix, Appendix G, the Study Plan, and the Meadow Rating Criteria and Spreadsheet in the Project Record).

Zero tolerance is neither possible nor necessary in a natural setting, therefore a slight amount of inadvertent entry and impacts (the 5% levels) will be tolerated (see Commercial Packstock Grazing sections by Alternative in Chapter II). Monitoring, including of 5% trampling impacts, will follow the standard protocols to be used to monitor the other standards, such as 30% or 40% vegetation utilization and 20% stream bank disturbance (see the Wilderness Pack Stock management guide and the Regional Rangeland Analysis and Planning Guide). For critical areas such as Fens or Yosemite Toad habitat the standards and monitoring protocols are being developed and will be implemented as they are developed (see Monitoring Plan).

Public Concern #294: *The DEIS clearly shows that Alternative 5 is superior to all other alternatives in terms of effects of alternatives on meadow hydrologic function and expected change in stream functional condition. (response # 392)*

Response: This analysis considers more than just the alternative that is superior in terms of effects on meadow hydrologic function and expected change in stream functional condition. The Needs Assessment defines the need for commercial pack stock activities (see the Needs Assessment). The Purpose and Need for Action section of the EIS describes the need to provide further standards and guidelines for commercial pack stock activities (Chapter 1, Purpose and Need). This analysis describes the appropriate mix of actions and the environmental consequences of implementation associated with meeting the identified need.

Public Concern #295: *Grazing privileges for commercial packstock should require time- and site- specific advance permits granted in a manner similar to that employed in granting overnight permits, in order to prevent possibly destructive overuse as well as “near range wars [between various commercial packstations]” as reported in the district court trial record. (response # 301)*

Response: Specific permit and operating plan issues will be addressed in a subsequent environmental process that issues the permits (see Executive Summary, Issues and Concerns Not Addressed in This Document). This analysis identifies the initial stock nights of available forage and the applicable grazing standards to be applied at specific locations. The location and amount

of available forage will fluctuate annually. Decisions regarding the allocation of that available forage will be made by the environmental process for permit issuance and will be adapted annually by the District Rangers in consultation with the Special Use Permit administrators and individual packers through the Annual Operating Plan process (see Section 2.2 Common Direction to all Alternatives, Common Management Direction to Alternatives 2-4, Commercial Pack Stock Grazing).

Public Concern #296: *Grazing start dates need to be determined on a site-specific basis, not elevational. (response # 428)*

Response: The decision to implement grazing start dates was made in the Wilderness Plan in 2001. Interdisciplinary team assessments have indicated that the trampling associated with a grazing activity is resulting in more impacts than the grazing itself. The process for predicting and posting the grazing start date is described in the Pack Stock Management Guide (Wilderness Plan, Appendix G, page 7). One of the primary reasons a process based on elevation guidelines was developed is that the packers described a need to know the grazing start date in late winter and early spring, before the snow even melts from the meadows. The trip dates need to be published in various bulletins and periodicals early enough for potential clients to arrange vacations and book trips in advance. Therefore packers must be able to plan and book trips well before the wilderness sites are accessible in the spring; even before the snow begins to melt in some years. Providing an estimated grazing start date based on an evaluation of snow conditions, anticipated runoff dates, and including considering the effects of elevation is a service the Forest provides to the packers to facilitate the trip planning process.

Site-specific range readiness assessments may be done where time and funding allow. Assessing individual sites and determining a grazing start date for individual sites is possible and would provide a date with a more accurate assessment of conditions. An important consideration is that a site-specific range readiness assessment requires multiple visits to an adequate number of sites to track changes in conditions as the spring weather progresses each year. The range readiness assessment cannot be done faster than the snow melt and runoff process occurs. While individual assessments can be done at a few very locations, overall, given the size and complexity of the project area, it is not possible to provide site-specific assessments to packers in time for them to plan, advertise, and book trips.

Public Concern #297: *The proposed grazing management strategy is unrealistic, full of loopholes, and would result in degradation of the wilderness character. Under all alternatives the proposed grazing management scheme would lump suitable and unsuitable areas together into large grazing zones that were delineated based on requested areas for grazing by the commercial pack outfitters. (DEIS at II-3) The grazing zones would include mosaics of wet and dry areas, including unsuitable and even critical habitat areas.*

All alternatives assume that stock users will avoid stock entry into critical areas and areas identified as unsuitable. This expectation is completely unrealistic. First, stock animals will naturally drift between adjacent or nearby open and closed areas unless their movement is controlled. Second, stock users cannot be expected to control stock movement into closed areas unless it is required.

Forest Service representatives indicated during our 5-21-04 meeting that grazing in closed areas would be a citable offense. However, the proposed action contains no such provision. In fact, the proposed action would allow regular drift of stock animals from open areas into closed areas.

Even critical and unsuitable areas may be regularly grazed: There would also be an inadvertent level of use of up to 5% ground disturbance allowed in these critical and unsuitable areas. This, too, is arbitrary and completely unrealistic. First, the 5% standard for ground disturbance in critical areas is arbitrary, and would likely be inadequate in many areas. For example, stock animals should be prohibited entirely from entering occupied breeding habitat for Yosemite toads, which have been determined by the USFWS to be warranted for listing as threatened or endangered. Second, the Forest Service does not, and cannot be expected to have sufficient funds to monitor the many critical and unsuitable areas in these remote wildernesses.

Rather than drawing the grazing boundaries as requested by commercial permittees, and rather than lumping suitable and non-suitable areas together, the Forest Service should instead identify where grazing is suitable and would not cause significant effects, and limit grazing to those areas only. Site-specific range readiness criteria (i.e., grazing start dates) and stock-night limits should be developed, and stock users should be required (using temporary, portable electric fences, hobbles, or other management techniques) to keep their stock out of closed areas. But, this can only work if grazing in closed areas is a citable offense, and if the Forest Service enforces such a requirement.

The drift fences in these wildernesses exist primarily for the convenience of stock users. Most B if not all B of them should be removed.

Site-specific and/or area-specific grazing start dates must be established. The 2001 Wilderness Plan and ROD called for grazing start dates to be established. The grazing start dates that have been established are based on elevation. This was done for expediency, and the existing start dates are better than none. However, there are many other factors that necessitate that grazing start dates should be site-specific or area-specific as opposed to elevation-based (i.e., aspect, vegetation type, soil depth, soil type, slope, etc.). The Inyo and Sierra NFs should establish site-specific or area-specific refinements to their elevational grazing start dates (as is done in the adjacent Sequoia and Kings Canyon National Parks).

Specific monitoring procedures for grazing must be described and mandated as part of the adaptive management proposal. The so-called adaptive management strategy for grazing does not constitute adaptive management. It is essentially an unscientific loophole that would allow managers to approve administrative changes to the grazing plan based on unspecified monitoring. The monitoring program is not mandatory, and it is undefined and unfunded. There are no objective criteria to guide decisions for making changes to the grazing management scheme, and there is no provision for public involvement or NEPA analysis. Adaptive management is a scientific process, but it appears to be invoked here primarily to allow easy changes to the grazing scheme without public involvement or proper environmental analysis. (response # 196)

Response: Key areas and critical areas will be identified for the packers in the annual operating plans. The packers will work with the permit administrators and District Rangers to determine an effective way to avoid the critical areas (see the Commercial Packstock Grazing section of Chapter II, the referenced Wilderness Plan pages 23-26, the referenced Wilderness Plan Stock Management Appendix, Appendix G). It will then be the responsibility of the packer to ensure that the wranglers conducting individual pack trips implement the planned management at specific sites.

As is described in the section on Common Management Direction to Alternatives 2-4 (see Commercial Packstock Grazing in Chapter II) during each trip the on-site wranglers will be expected to manage the stock to avoid stock entry into these critical areas. Zero tolerance is neither possible nor necessary in a natural setting therefore a slight amount of inadvertent entry and impacts (the 5% levels) will be tolerated (see Commercial Packstock Grazing sections by Alternative in Chapter II). Critical areas where negative impacts have been observed will be given a high priority for development of site-specific management plans and monitoring in subsequent years.

If avoiding critical areas was considered highly unlikely because of the intermingled nature of the meadow/wetland mosaic, the meadow was not considered suitable for grazing (see the Commercial Packstock Grazing section of Chapter II, and the referenced Wilderness Plan Stock Management Guide, Appendix G, page G-11, Table 2-4 Grazing Recommendations by Alternative, and the Study Plan). As suggested, methods for avoiding critical areas may include but are not limited to: temporary fencing; using a bell-mare; having animals under direct wrangler control while grazing; packing feed; or others that packers may request and District Rangers may approve.

An important tool that was used to help keep grazing use and related impacts within standards is to set a conservative stocking rate for the grazing zone and then to adjust that stocking rate up or down based on monitoring and analysis of resource condition and trend. The initial estimates of available forage, given in stock nights, are intended as conservative guidelines for permit administrators and packers. Stock nights are based on the area (acres) of a key area meadow where grazing can occur, considering suitability, range readiness and resource conditions as described in the Pack Stock Management Guide (Wilderness Plan, Appendix G).

The identification of key areas and the process for estimating the stock nights of available forage are based on standard range protocols as described in the Regional Rangeland Analysis and Planning Guide (see the Commercial Packstock Grazing section of Chapter II, as well as the associated referenced pages in the Wilderness Plan, pages 23-26, the referenced Regional Rangeland Analysis and Planning Guide, the Wilderness Plan Stock Management Appendix, Appendix G, and the Study Plan). Implementation of the Wilderness Plan Record of Decision direction (see the ROD, top of page 5) to require the permittees to be involved in the monitoring of grazing conditions will help with the staffing shortages.

The existing drift fences are not retained to accomplish grazing resource objectives, as a drift fence tends to keep stock in a general geographic vicinity without protecting the localized site-specific critical areas. However, the fences have been identified as necessary for operational stock management including for the safety of both the clients and of hikers along the trails (see Operations sections).

Public Concern #298: *Under camping limitations only one night grazing per trip in Cascade Valley and Silver Divide analysis units is allowed. How do you handle a two-way overnight spot trip? The packer and stock remain with the party overnight when they are packed in and the packer goes in the day before the parties' out date to pick them up. That adds up to 2 nights of grazing. Does this put an end to 2-day spot pack trips. Most parties don't appreciate getting out at midnight not to mention the potential dangers of packing out in the dark. (response # 198)*

Response: The two-way overnight spot trip scenario described in the comment may be accomplished by packing feed when returning, with mostly empty pack panniers, to pick up the

party. The stock are fed rather than grazing that night and the panniers will then be empty and may be loaded for the trip back to the trailhead. It is important to recognize and take advantage of opportunities to only allow stock to graze when it is truly necessary.

Public Concern #299: *We strongly disagree with Grazing Zone concept of management. The alternatives do not tell the public that they are ending the practice of taking pack trips in the Sierra. The Forest Service is selecting a methodology that is easy for the government but denies the public access to the wilderness. Little effort is made to craft a grazing management strategy that allows people to travel up and down the Muir Trail. This is why the Wilderness Act was passed. People wanted somewhere that they could travel for a week to several weeks and not have to see cars and civilization. (response # 275)*

Response: Grazing Zones and Key Areas are based on areas where the packers indicated that pack stock have actually grazed, so they should reflect “traditional patterns” (see the section on Common Management Direction to Alternatives 2-4, Commercial Packstock Grazing in Chapter II). Smaller “key areas” have been identified within these grazing zones or areas of traditional grazing by packstock areas of importance for monitoring or resources have been identified, which helps provide adaptive management flexibility to move use in response to monitoring of compliance with applicable standards. Pack trip are not eliminated, but grazing is authorized in locations and at levels that is sustainable. It is important to recognize and take advantage of opportunities to only allow stock to graze when it is truly necessary, and in locations where it is sustainable.

The packers will work with the permit administrators and District Rangers to determine an effective way to allow stock to graze within the grazing zones and avoid the critical areas (see the Commercial Packstock Grazing section of Chapter II, the referenced Wilderness Plan pages 23-26, the referenced Wilderness Plan Stock Management Appendix, Appendix G). It will then be the responsibility of the packer to ensure that the wranglers conducting individual pack trips implement the planned management at specific sites. The packers are encouraged to work with the District Rangers and Permit Administrators to identify stock management techniques that will work for their individual operation. As has been suggested, methods for avoiding critical areas may include but are not limited to: temporary fencing; using a bell-mare; having animals under direct wrangler control while grazing; packing feed; or other methods that packers may request and District Rangers may approve.

Public Concern #300: *The Forest Service has to look at a method of allowing grazing in wet areas of meadows and grasslands. This is not production grazing; rather, it is grazing to support recreational use of the wilderness. Standards should be different. At times, the wilderness use will be heavier in some areas to allow people to travel through the Sierra. Congress anticipated this use and did not want to close off the wilderness to people and livestock.*

Now, when the Forest Service proposes so many restrictive standards....the agency is really closing the wilderness to grazing. This is wrong and the various alternatives don't truthfully point this decision out to the public. (response # 275)

Response: The direction to protect wetlands and special aquatic features is from the Sierra Nevada Forest Plan Amendment (USFS, 2004) and the Wilderness Plan (USFS, 2001), decisions. Pack trips are not eliminated (see Alternative descriptions in Chapter 2). Grazing use is authorized in locations and at levels that is sustainable (see Alternative descriptions in Chapter

2). Uses as commercial pack stock grazing may be authorized as necessary in the direct support of clients and to the extent that it is ensured that human influence does not impede the free play of natural forces or interfere with natural successions in the ecosystems (see FSM 2320). As has been suggested, methods for avoiding critical areas may include but are not limited to: temporary fencing; using a bell-mare; having animals under direct wrangler control while grazing; packing feed; or other methods that packers may request and District Rangers may approve.

The introduction to the Socioeconomic and Operations section of Chapter 4 states: “This section combines the operations and economics sections and discusses the effect of the five alternatives on the regional economy and the operations of the pack stations” (see Chapter 4, section 4.1.1.5). The Socioeconomic and Operations section of the analysis also states “The team concluded that the following operational indicators would effectively measure the differences between alternatives and their effects to commercial pack stock operations” and then goes on to discuss the identified indicators and conclusions (see Chapter 4, Effects to Operations). The conclusions include that for high-complexity operations the change will be from a high percentage of grazing to a substantial increase in packed feed and an increase in site-specific stock management which will also require additional employees (see Chapter 4, Effects to Operations).

Vegetation, Comments on Chapter 3

All comments are from response #275

Public Concern #301: *III-101 There is substantial overnight stock use in Hilton. Probably more than any area of the Inyo National Forest.*

Conclusions of Dorothy Lake fail to address the improvements since cattle and sheep left. The writer mentions the Dorothy Lake Meadow grass is dying in half the meadow. Why? In the entire document, if there was evidence of stock grazing....commercial pack stock would be used to explain the damage. Here, no stock grazing.

On the other hand, when there is no grazing by stock...the writer doesn't make a conjecture. The document should mention that there is incredibly vast amounts of good forage in the Tamarack area. And, that the vigor is excellent in spite of heavy past grazing.

Response: The overnight stock use figures used in the grazing resources sections of this analysis were as reported for 2001, 2002, and 2003.

The description of conditions at Dorothy Lake Meadow, as well as at other locations, is a summary of existing conditions as documented on-site by the interdisciplinary team. The historical impacts of stock grazing are acknowledged in the Meadows section of Chapter 3 as well as in the Grazing Resource section. Historical stock impacts, as discussed in these sections are at least as common at Dorothy Lake as elsewhere in the project area.

The Grazing Resource section of the Mono Creek Rock Creek Geographic Area documents a loss of perennial grass and sod in the meadow at the outlet of Dorothy Lake and also documents that elsewhere there is little change from high-seral vegetation except at localized stream crossings. The cause of the loss of perennial grasses is unknown. However, the interdisciplinary team located historical camps, trails, and diversion ditches that were likely from the earlier sheep and pack stock days at the Dorothy Lake outlet meadows (see Chapter III, RockCreek/Mono Creek Geographic Area, section 3.2.1.1, Commercial Pack Station Operations,

section 3.2.1.2 Wilderness, Tamarack). As is documented in the analysis once a site is degraded the effects linger and recovery can take decades (see Chapter III, section 3.1.2.2, Meadows).

Public Concern #302: *III-102. Continued lie and mistaken assumption about use at Lower Hopkins Lake. What is meant by current? 1 year, 5 year, 20 year and 50 year? The id team members lack the ability to determine the effects of use from last year or twenty years ago throughout most of the plan. Hopkins Lake is probably the best example.*

Current use since 2002 has been at Hopkins Creek at the 10,000 ft level. We have had less than a handful of spot and dunnage trips at Hopkins Lake.

Response: Current in this context means concurrent with the time period of this project. There was reported overnight use by commercial operators in Hopkins Basin and Hopkins Meadow during the reporting years used for reported levels of grazing in this analysis, 2001, 2002, and 2003 (Chapter III, Grazing Operations, section 3.1.1). The Commercial Pack Station Operations section of Chapter III (section 3.1.1.1, History and Background) cites data from 1999 to 2003.

Public Concern #303: *III-103. The Forest says there is no negative impacts at Kip Camp and no recent reported use. This was one of the most heavily used stock and hiker camps along the John Muir Trail. This document should use this as an example of how much better the Wilderness is than in the 1970's.*

Response: No stock use was reported by the commercial operators between 2001 and 2003 at Kip Camp. (see section 3.1.1.1, History and Background). There were no negative current stock related impacts noted at Kip Camp. The presence of standing dead lodgepole pine in saturated soils and debris deposits in the creek at Kip Camp do indicate there may have been a recent historical change in hydrologic conditions.

Public Concern #304: *In the DEIS, the Forest Service missed the opportunity to show that in spite of heavy livestock and human use, the wilderness area looks good. There are numerous campsites and areas that should be used to describe the affected environment. Compare and contrast what they were like in the late 70's when the first John Muir Wilderness Management Plan was implemented.*

Response: There is a discussion of historical impacts in Chapter III, Hydrology, Meadows (Chapter 3). The analysis states that recent surveys indicate that the vegetative composition of meadow is generally in satisfactory condition as defined by the Wilderness Plan, with some meadows and some locations within meadows still exhibiting an observable change away from desirable, late-seral vegetation (see Chapter 3, Vegetation, Vegetative Composition).

Today's management emphasis is on assessing current conditions and desired conditions and identifying needed changes in those factors, including stock use, contributing to current conditions being inconsistent with desired conditions (see Chapter 2 and the discussions of Meadows, Soils, and Hydrological Function in the Physical Environment sections of Chapter IV and the discussion of Assumptions About Effects in the Grazing Resources section of Chapter IV).

Public Concern #305: *III-143 The 2001 grazing use data from Rock Creek is not included in the document. The postcards must have been lost by the Forest.*

The proper data should be included in any final document.

Response: The overnight stock use figures used in the grazing resources sections of this analysis were as reported for 2001, 2002, and 2003 (see Chapter 3, Grazing operations).

Vegetation, Comments on Chapter 4

Public Concern #306: *IV-419 - The conclusions of Tamarack aren't very good and the whole analysis needs to be redone. Should be more grazing.*

IV-426 - should permit grazing in Alternative 3 at Tamarak.

Response: Uses such as commercial pack stock grazing may be authorized as necessary in the direct support of clients and to the extent that it is ensured that human influence does not impede the free play of natural forces or interfere with natural successions in the ecosystems (see FSM 2320). Tamarack is close enough to the pack station that it is not truly necessary to graze stock. Stock can easily return to the packstation, or if stock are held overnight for a day ride the next day the stock not needed for the day ride can easily return to the packstation for feed. It is important to recognize and take advantage of opportunities to allow stock to graze when it is truly necessary, and in locations where it is sustainable (see Table 2.4, Grazing Recommendations by Alternative, and the Needs Assessment).

Public Concern #307: *IV-427 - The writers miss much of the grazing options and grasslands in the entire Mono Creek area.*

Response: Grazing Zones and Key Areas are based on areas where the packers indicated that pack stock have actually grazed, so they should reflect traditional patterns and use levels (see the section on Common Management Direction to Alternatives 2-4, Commercial Packstock Grazing in Chapter II). The areas identified by the packers were used in conjunction with aerial photographs to plan interdisciplinary team assessments. Smaller "key areas" have been identified within these grazing zones or areas of traditional grazing by packstock areas of importance for monitoring or resources have been identified. The key areas and grazing zones helps provide adaptive management flexibility to move use throughout a grazing zone in response to monitoring of compliance with applicable standards. The majority of the Mono Creek area is identified as a grazing zone and is available to be grazed. We have accounted for the majority of the ecologically sustainable grazing options in Mono Creek that are necessary to support the needed operations (see Table 2.4, Grazing Recommendations by Alternative, and the Needs Assessment, and Maps).

Social and Economics

Economics

Public Concern #308: *The economic analysis should be redone to better reflect the economic contributions of commercial pack stations to the local economy (response #275).*

Response: NEPA sets out broad direction and objectives for the treatment of economic issues in an environmental analysis. For example, the CEQ NEPA Implementing Regulations at 40 CFR 1508.8 includes economic and social effects as the effects that should be considered in an environmental analysis. There is no specific direction; however, that mandates what needs to be considered in an economic NEPA analysis. The scale and focus of the economic analysis is tailored to meet the needs of the project and is decided upon by the Responsible Official. For

this project, the appropriate economic analysis is one which includes an examination of the effects of the alternatives on both the regional economy and the operations of the pack stations.

The economics analysis in the EIS utilizes an accepted economic model, the Impact Analysis for Planning (IMPLAN) model. The IMPLAN model that was used in the analysis includes the expected spending of visitors who utilize commercial pack station services. This includes spending on services and goods in the communities around commercial pack stations. The output of the model is labor income and number of jobs that are created by both the spending of visitors directly for the pack stock services and the incidental spending that occurs during the visit. In the Final EIS, the analysis will be clarified to better explain the model and how it provides an evaluation of the economic activity generated by commercial pack stations.

Public Concern #309: *The DEIS does a poor job of fully disclosing the effects of additional regulations on the packing industry. (response #275)*

Response: The Draft DEIS discloses that there are a number of uncertainties associated with the alternatives and their impact to the pack stations operations. The operations effects analysis discusses the expected effects of the alternatives on the future operations of commercial pack stations. There are a number of uncertainties, however, including some factors that the Forest Service has no control over. To some extent, the services offered by pack stations will be dependent upon on the economy, the public's demand for various services, and the ability of pack stations to attract customers. As to the number of pack stations operating in the future, it is expected that the current number of pack stations will continue to operate into the future. Outside of the NEPA process, there will be a Financial Availability Determination (FAD) made for each pack station. In addition, a separate planning effort will issue the permits for the pack stations. The FAD and the SUP EIS will determine how many pack stations will operate

Public Concern #310: *The Forest Service should ensure the viability of pack stations (response #253).*

Response: The purpose of the economic effects analysis in the EIS is to disclose the expected effects that the various alternatives on the regional economy as well as the operations of the pack stations. Components of the alternatives that may adversely affect the viability of these operations are identified and disclosed in the environmental document. The Forest Service cannot ensure the viability of commercial pack stations. There are a number of factors that may impact the viability of pack stations, many of which the Forest Service has no control over.

Public Concern #311: *The Forest Service should not subsidize the operation of commercial pack stations but should allow the market to decide whether these operations survive. (response # 301)*

Response: The market has historically played a role in the viability of commercial pack stations and will continue to influence the viability of these operations for years to come. Some businesses have continued to operate while others have closed or combined with other operations. The market has clearly indicated that there is a demand for these commercial services to operate in the wilderness. It is the job of the Forest Service to determine the appropriate level of commercial service in the wilderness while still protecting the wilderness values of these areas.

Public Concern #312: *The Forest Service should acknowledge that most pack stations are in poor financial shape and will be in worst shape in the future. (response # 275)*

Response: The current financial condition of commercial pack stations are not fully known and, to some extent, outside the scope of this EIS. The EIS does discuss the expected effects of the alternatives on the future operations of commercial pack stations. A more complete financial accounting of these operations will be done when the permits are issued next year.

Public Concern #313: *The Forest Service should not use gross revenue as a method for assessing economic viability. Rather, net revenue figures, along with the profits generated by each operation should be included in the EIS. (response # 275)*

Response: The economic analysis in the EIS clearly states the limitations associated with gross revenue figures from commercial pack stations and warns against making any conclusions based on these figures. It is not appropriate to include profit figures in the EIS. There is a permit process that will take place next year that will assess the viability of each pack station before a permit is issued.

Public Concern #314: *The Forest Service should better estimate the costs increases of commercial pack stock trips as a result of new regulations.*

Response: The DEIS provides the agency's best estimation of how the alternatives will affect the future cost of commercial pack trips. No attempt was made to quantify the change in price for various pack trips.

Public Concern #315: *The Forest Service should ensure that commercial packing trips remain affordable to the public. (response #75)*

Response: The economics and operations analysis discloses that additional regulations may affect the commercial pack stations and their ability to provide services to the public. As the analysis discusses, one possibility is that the prices of trips may continue to rise. At some point, a large percentage of the population may be priced out of these trips.

There is a disagreement as to the overall effect that new regulations will have on commercial pack stations. The EIS provides the agency's best analysis as to how the various layers of regulations will interact and affect future operations of these businesses. There is a high level of uncertainty, however, and the analysis readily discloses this. Many factors, some of which are outside the control of the Forest Service, affect the profitability and viability of these operations.

Public Concern #316: *Additional regulations on pack stations will severely limit their ability to provide service to the public and will adversely affect local economies. (response # 275)*

Response: See response to Public Concern # 315

Social

Public Concern #317: *The Forest Service should provide a better analysis of the proposed regulations on different ethnic groups and races (response # 275)*

Response: The DEIS discusses the effects that may occur to low-income users of commercial pack stock services. As is disclosed in the document, any regulations that increase the price of these trips will likely have greater effects to low-income users of the service.

There is limited data that provides a baseline as to the historical use of commercial services by low-income and minority groups. If, however, overall visitation to the Inyo National Forest is any indication of the racial/ethnic composition of commercial pack stock clients, it is likely that the overwhelming majority of users are white. According to the 2003 Inyo National Visitor Use

Monitoring Results study, 91% of Inyo National Forest visitors are white, while 4.2% identified a Spanish, Hispanic, or Latino ethnicity. Respondents identifying themselves as Black or African American made up .2% of those surveyed. Given the low percentages of non-white visitors to the forest, it is unlikely that any of the alternatives will result in any disparate effects to racial or ethnic groups.

Public Concern #318: *Social disagreements and equity issues are not resource concerns and not the reason for this EIS (response # 275).*

Response: In addition to the physical environment, an EIS should analyze and disclose the effects of a federal action on the social environment. A portion of the social environment analysis can include public attitudes and opinions of the proposed action. The disclosure of public opinion is one of many factors that a decision maker weighs when making a decision. The analysis simply points out to the decision maker that the issue of commercial pack stock in the wilderness is fairly polarizing for the public with very vocal opponents of this wilderness use balanced with vocal proponents of continued commercial pack stock operations in the wilderness.

Health and Human Safety

Public Concern #319: *The NEPA document has not adequately analyzed the impact of commercial pack operators on the human health and safety. (response # 166)*

Response: The EIS does consider certain aspects of human health and safety, for example, water quality. The comment does not specify what other human health and safety factors should be analyzed. The relevant factors related to human health and safety are analyzed in the EIS.

Comments Received on the Trail and Commercial Pack Stock Management EIS

Comment Number	Respondent
1	James Drummond
2	Adrian Stingaciu
3	Calvin Smith
4	Nancy Muleady-Mecham
5	Doug Feay, Engineering Geologist, California Regional Water Quality
6	Richard Schneider
7	Richard Hammill
8	Kathryn Henderson, Mayor City of Bishop
9	Patricia Sanderson Port, Regional Environmental Officer, US Department of the Interior Office
10	Juila Hart
11	Jeremy Jenkins
12	Kathy Tomyris
13	Dan Butler
14	Mark Disbrow
15	Dave Hart, California Cooperative Snow Surveys, Department of Water Resources
16	Terry Roberts, Director, State of California, Governor's Office of Planning and Research, State
17	Michael Mulligan, The Thatcher School
18	Ruberta and Norman Taylor
19	Paul Frankenberger
20	Tom Martin, Co-Director, River Runners for Wilderness
21	Greg Kane
22	Chris Cook
23	Carole Butler
24	Steven Cook
25	Arthur Bass, Water Quality Coordinator, Willamette Riverkeeper
26	Paul Lamos
27	Judy Thompson
28	LB Williams
29	Scott Sullivan
30	David Dunn
31	David Hubbard
32	Don Schreiber
33	Deborah Benham
34	Timothy Lenehan
35	Dennis and Jeanne Oakeshott
36	Marcus Libkind
37	Ray and Debra VanDeWeerd
38	Dennis Winchester, Cottonwood Pack Station
39	Kathy Davigs
40	David Wilkins
41	Arthur Lawrence
42	Alan Brown
43	Rose Murray
44	Bruce Muirhead

Comment Number	Respondent
45	Kevin Proescholdt
46	Fred Mensing
47	Deborah Cook
48	Teri Giovanine
49	Camille King
50	Peggy Phaklides
51	Robert Dohrmann
52	Joan and Robert Benedetti
53	Richard Vassar
54	Zach Stewart
55	Kathy Allen
56	William Larsen
57	C. Rose Miles
58	Paul Haskins
59	R. Shaffer
60	Emory Menefee
61	Roger Godin
62	Monika Thon
63	Frances Brumley
64	Dana Daley
65	Raymond Bensen
66	Dell Redding
67	Katie Ross
68	R. Bouse
69	Dick Blizzard
70	Rick Karban
71	Roger Knox
72	Joann Aldrich
73	Mandy Picozzi
74	Keith Liker
75	Rebecca Fish Ewan
76	Larry Teplin
77	Ace Barash
78	John and Julie Helms
79	Judy Helfand
80	Steve Schwind
81	Ed Sweet
82	Roberta Lagomarsini
83	Robyn Truitt Drivon, Assistant City Counsel, San Joaquin County Counsel's Office
84	Eaton Family
85	Raiford Henry
86	Barbara and Dave Sholle
87	Lucille Kristofits
88	Mike Elam
89	Ron Knechtli
90	Earl McKee
91	Ray and Pattie De Lea

Comment Number	Respondent
92	Maria De Bernardi
93	William Schaefer
94	Steve Tabor, President, Desert Survivors
95	David Visher
96	Robert Lukesh
97	Edward Patrovsky
98	Rick Jali
99	Francis Toldi
100	Evan Johnson
101	Jolynn Jones
102	Mike Painter, Coordinator, Californians for Western Wilderness
103	Louise Jackson
104	Murdock Allen
105	Sarah Chisholm
106	Bob Dale
107	Thomas Garrett
108	Sarah Sheehan
109	Kelsey Engel-Collins
110	Birch Berman
111	Tony Armlin
112	A-Lea and David Lovis
113	Jackie Lewis
114	Betty Andrews
115	Catherine Ognibene
116	R.C. Smith
117	Bob Franzoia
118	Unknown
119	Anthony Batchelor
120	Ray Waud
121	Gerald Meral
122	Penny and Bill Dougherty
123	Unknown
124	Lisel Blash/Martha Noble
125	Kelly Dawn
126	Alan Mendoza
127	Graham Douglas
128	Deborah Richardson
129	Lucille Rella
130	Alfred Dobrow
131	Jan Geller
132	Andy Russell
133	Robert Baumgarten
134	H Stevens
135	Rheana Rafferty
136	Arlene Cavan
137	Unknown
138	Jodi Hollkamp

Comment Number	Respondent
139	Dick Ewart
140	James Feichtl
141	Dorothy Miller
142	Alan Pendley
143	David Kurtzman and Bunny Martin
144	Gary and Sherrill Brown
145	Carol Pederson
146	John Redwine
147	R.A. Nieman
148	Michelle Jackson
149	Sandra Lee Watson
150	Jack Vance
151	David Brown, Executive Director, America Outdoors
152	Pam Berry
153	David Berke
154	Catherine Winter and Doug Meyers
155	Jim Miles
156	Kathy Kerley
157	Jerry McFadden
158	David Anthes
159	Thelma Allen
160	Kaye Bruns
161	Nancy Senior
162	Robin and David Foorman
163	Celeste Felciano
164	Peter Eichorn
165	Kathe Hustace
166	Harry Reeves
167	Michael Cowan
168	Diane Bennett
169	Gerald Cole
170	Mike Artemieff
171	Richard Judd
172	Jacob Robbins
173	Thomas Clohessy
174	Richard Cimino
175	Tom Eliason, Tehipite Chapter, Sierra Club
176	Caryn Holmes
177	Gary Patton
178	Edy Horwood
179	Mark Langner
180	Ernie Hanou
181	Jill Adler-Moore
182	Curtis Ridling
183	Ed Campos
184	Brandy Rost Kriger
185	Scott Silver, Executive Director, Wild Wilderness

Comment Number	Respondent
186	Lorraine Masten
187	M. Loughman
188	William Wright
189	C. Judson King
190	Bill Balfrey
191	Mr and Mrs William Baer
192	Craig Holmes
193	Steve Anderson
194	Jane Sinclair
195	Norman Anderson
196	Peter Browning, President et al., High Sierra Hikers
197	Pat and Eric Gordon
198	Lou and Marye Roeser
199	Jim Bilyeu, Fourth District Supervisor, Inyo County
200	Ilana Levin
201	Ira Lowry
202	Troy Black
203	Irene Kritz
204	Sandy Manning
205	Monica Storms
206	Robert Frickel
207	Marcus and Lynn Taylor
208	Coral Henderson
209	Ron Gosswiller
210	Fred Baer
211	Robert Sikora
212	Greg Smith
213	Resident
214	Kristen McManus
215	Janet and Greg Perry
216	Sally Miller
217	MJ Vore
218	Vickie Taton, Environmental Programs Coordinator, Mammoth Mountain Ski Area
219	Daniel Marble
220	Philp Zander
221	G. Gregg
222	Jennifer/Frank Norris
223	Roberta Carlson
224	Elizabeth Wenk
225	William Jones
226	Carol Broberg
227	Alan and Christine Weber
228	Mickey Short
229	Gabrielle Carroll
230	Joe Fontaine
231	Eric Ongerth
232	Michael Steven Cole

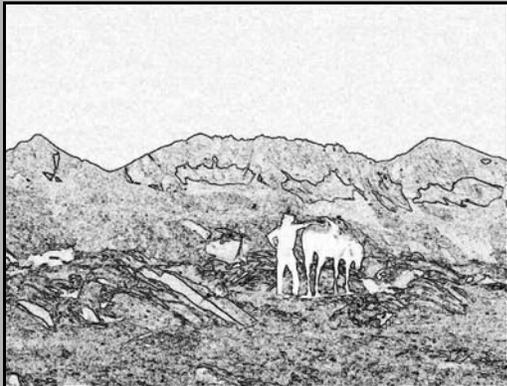
Comment Number	Respondent
233	Robert Meador
234	Page Williams
235	Bill Dunlap
236	Zach Schnider
237	Jeanne Walter
238	Denyse Racine, Supervisor, State of California, Department of Fish and Game
239	Richard Hake
240	Nick Mandich
241	Ellen Holden
242	Marianne and Megan Rea
243	Ted Sommer
244	Martin Bauman
245	Stephen Cole
246	Stacey Pogorzelski
247	Paul Shekelle
248	Diane Wolfgram
249	Jonathan Braun
250	Clifford Hake
251	Mary Benson, Executive Director, LA Trails Project
252	Daniel Kozarsky
253	Janie Huntsberger
254	Charles McCollough
255	Stephanie Kearns
256	Laura and Rob Pilewski
257	Katie Clevenger
258	Dave May
259	Frank Donoghue
260	Maggi Georgi
261	Richard Shekelle
262	Murray Hall
263	Lassie and Frances Hammock
264	Chris Todd
265	Resident
266	Linden Nelson
267	Stephen Kabala
268	L. Mosley
269	Martha Woodward
270	Jana Jensen
271	Robert Griffith
272	Alice Fichander
273	Katherine Horst, Public Liaison
274	David Dohnel, President
275	Craig London, Vice President
276	Ann Lange, Chairwoman
277	Peter Pumphrey
278	Charles Horst
279	Gregory and Ruby Allen

Comment Number	Respondent
280	Henry Avery
281	Aaron and Bruce Hathway
282	Frits Hanon
283	Frank and Trevor Luenser
284	Henry Arnebold
285	Steve Raly
286	Scott Rogers
287	Scott Stevenson
288	Grant Rogers
289	Bill Burt
290	Patricia Avery
291	Phyllis Skaggs
292	Arlene Grider, President
293	Joe Heaton
294	Larry and Sharon Clark
295	Ellen Wood Grnalva
296	Christiana Hoffman
297	Irvin Lindsey
298	Lorenzo Stowell
299	Patricia and Joseph Currie
300	Thomas Hopkins
301	R.T. Schlatter
302	Kathie Kinzie
303	Tracy Swartz
304	Marc and Ragni Pasturel
305	Matthew Clark
306	Malcolm Clark
307	Guy Hanou
308	Susan Campo
309	Irwin Goldberg
310	Richard Cardella
311	Danica Berner, Co-owner
312	Terry Herder
313	William Van Winkle
314	Norman Livermore
315	David Hamilton
316	Vivien Mather
317	Terry O'Reilly
318	James Garrett
319	George Egbert
320	Mark Robinson
321	Stephanie Kearns
322	Resident
323	Terry Kenney
324	Ed Leos and Theresa Russell
325	David Dohnel
326	Dick Noles

Comment Number	Respondent
327	Reid Hopkins
328	Kathy Hanson
329	Samuel Glasser
330	Laurie Brecheen Ballard
331	Brian Anderson
332	Robin Severy
333	John Kaiser
334	Anne Johnson
335	Dave Moordigian
336	Tom Cash
337	Carolyn Sokol
338	Joanne Barnes
339	Debra Mason
340	Jana Ashley
341	Deborah Filipelli
342	James Wilson
343	Scott Kruse
344	Ruth Gerson
345	Celina Montorfano, Director, American Hiking Society
346	Tom Suk,
347	Gary Guenther, Wilderness Watch
348	Marcy Watton, Antelope Valley Trails
349	Emilie and Jared Van Sloten
350	Mark Jonas
351	Jim and Diane Barrie
352	Addie Jacobson
353	Mary Lou Hadley
354	Ted Williams, Supervisor, Inyo County Board of Supervisors
355	Jennifer Roeser, McGee Pack Station
356	Eric Linstadt
357	John Keyes, California State Horsemen's Association
358	Susan Burak
359	Alia Selke
360	Elizabeth Brensinger
361	Maya Leonard-Cahn
362	Paul McFarland, Executive Director, Friends of the Inyo
363	Theodore Young
364	Carol Jo Hargreaves, President, Mid Valley Unit, Backcountry Horsemen of California
365	Karl Forsgaard
366	Edward Khmara
367	Thor Wilbanks
368	Ara Miniasian
369	LaVerne Ireland
370	Eva Eagle
371	William Gardiner
372	I.L. Girshman
373	Chad Jamarrt

Comment Number	Respondent
374	Bruce Campbell
375	Bernie Heckenlively
376	Patricia Fisher
377	Robert Jellison
378	William Homeyer
379	Rick Beatty
380	Mary/Antoinette Dwinga
381	Eric Bjorkstedt
382	Peter Fish
383	Bill Maze, Assemblyman 34th District, State of California Legislature
384	Dave Cox, Senator First Senate District, State of California Legislature
385	Michael Villines, Assemblyman 29th District, State of California Legislature
386	Signe Swenson
387	Richard and Troy Wiebe
388	Sandra Higginbotham
389	David Harp
390	Gena Pennington
391	Jeanette Alosi and Michael Gillis
392	Nellie Patterson
393	David Gibson
394	Bill Worf
395	John Spence
396	Frank Junga
397	Mike Camps
398	Vince Davis
399	John Moore
400	Mitch and Jan DeRidder
401	Kevin Garden, The Garden Law Firm
402	Love Family
403	Tammy Lundquist
404	Charlie Samos
405	Bruce Raaum
406	Stephen Bellieu
407	Adelina Maria Felciano
408	Tysa Goodrich
409	George Bergantz
410	Lauren and Michael Edlund
411	Lynn Norton
412	David Edlund
413	Ralph Kraetsch
414	Jeannine Koshear
415	Elaine Cook
416	Dave Cogdill, Assemblyman, 25th District, State of California Legislature
417	Barbara Donnelly
418	Janis Jolly
419	Hal Moldenhauer
420	Vicky Boudier

Comment Number	Respondent
421	Julianne Ryan and Robin Dare Oliver
422	Gregory Zentner
423	Deloras Smith
424	Phyllis Stroud
425	Russel Wilson, Acting Superintendent, Sequoia and Kings Canyon National Parks
426	Michael Tollefson, Superintendent, Yosemite National Park
427	Nova Blazej, Acting Manager, Environmental Review Office, Environmental Protection Agency
428	Floyd Bethany, National Forest Recreation Association
429	Lonnie M. Wass



Appendix D Needs Assessment

Appendix D Needs Assessment

Needs Assessment for Commercial Pack Stock Services in the Ansel Adams, John Muir and Dinkey Lakes Wildernesses

Summary

This Needs Assessment evaluates and analyzes the need for commercial pack stock services in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. It supplements the Needs Assessment contained in Appendix D of the 2001 *Wilderness Management Direction for Ansel Adams, John Muir, and Dinkey Lakes Wildernesses Final EIS*. The preparation of this Needs Assessment is guided by both interpretation of the legal requirements of the Wilderness Act and direction in Forest Manual 2320.

Commercial pack stock use has a long history in these wilderness areas; however, recent trends point to a decrease in both the number of pack stations and the number of clients serviced. To assess the need and appropriateness of commercial pack stock services in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses, a survey was conducted in July and August 2005. The survey targeted 2004 overnight commercial pack stock clients. Based on the analysis of this survey, the services currently provided by these operations are proper and consistent with the intent of the Wilderness Act. The Needs Assessment concludes that there is a need for at least the current level of commercial pack stock use in these wildernesses. The Needs Assessment further concludes that the public need for these services is actually higher than what is provided today. Commercial pack operations in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses are already heavily regulated by the Forest Service as the need for public access to the wilderness areas is limited by the need to preserve the wilderness character of the areas. Some of these regulations have, to some extent, limited the commercial packer's ability to meet the public's full need for these services. Also, based on demographic trends, there will be increased need in the future for commercial pack stock services in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses.

Document Structure

The Needs Assessment is divided into two sections. The first section provides the legal basis and direction for preparing a Needs Assessment. Next, a brief history of pack stations in these wilderness areas is provided along with a review of the services that they provide. Current commercial pack stock trends are examined including the types of services offered and groups serviced by these operations. To finish this section, there is a discussion of commercial pack stock use in the wilderness within the context of other uses, along with the regulations and mechanisms that have been placed on pack stock operations to protect the wilderness character of these wildernesses. The second section contains an analysis of the need for commercial pack stock services in these wilderness areas. Current levels of use will be discussed and evaluated by

two tests: first, whether the activities associated with the commercial pack stock use are proper in the Wilderness and second, whether there is a need for the service.

Also discussed will be the extent necessary; that is, whether the level of service is the extent necessary to realize the purposes of the Wilderness Act. A survey of past commercial pack stock clients conducted during the summer of 2005 will provide much of the basis for this analysis of current level of use. The next subsection of the second section will focus on whether the public's need for commercial pack stock services is being fully met today. Lastly, demographic trends and their implications for the future need of commercial pack services will be discussed.

Section 1 – Background and History/Trends for Commercial Packing

I. Legal Requirements for a Needs Assessment

As this Needs Assessment is being applied to wilderness areas, requirements of the Wilderness Act, signed into law in 1964, need to be considered. The Wilderness Act states that “commercial services may be performed to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the Act.” The “recreational or other wilderness purposes of the Act” is clarified earlier in the Act in Section 4(b) which specifies that “except as otherwise provided in this Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use.”

The primary Forest Service Manual direction for the preparation of a Needs Assessment can be found in Manual 2320 which states that “[a]s identified in forest land and resource management plans, provide for commercial outfitting and guiding services that address the concerns of the public health and safety and foster small business.” The 1988 Inyo National Forest Land and Resource Management Plan identifies the general need for commercial services in the wilderness. Further, the 2001 Wilderness Plan identified the need in Appendix D, Needs Assessment, for commercial pack stock services in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. The level of service needed is not identified in the 2001 Needs Assessment; however, the document did conclude that there was a need for pack stock services in these wilderness areas. It is the intent of this Needs Assessment to further analyze and identify the extent to which commercial pack stock services are needed in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses.

There is a basic tension between the Wilderness Act objective of preserving the wilderness character of an area and the devotion of the area to public purposes such as recreation. This is particularly true with respect to commercial pack stock use in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. As the Needs Assessment will show, there is a definite and clear need for commercial pack stock services in the wilderness areas and these services are appropriate and proper for realizing the recreation and other wilderness purposes of the area. This use, however, has to be limited by the need to protect wilderness character. The purpose of this Needs Assessment is not to resolve this tension between recreation and wilderness character. Rather, it is to acknowledge that this tension exists and that the resolution of the tension is a challenge fraught with difficulty. For these wilderness areas, the decision as to the appropriate

level of commercial packing services will be made in the Record of Decision for the Trail and Commercial Pack Stock Management Final EIS.

II. History of Packing in the Sierra Nevada

Chapter 3 of the *Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses Final EIS* provides an extensive review of the history of commercial packing in these wilderness areas. The history of guiding with pack and saddle stock in the Sierra Nevada, including these wilderness areas, indicates that commercial guides and services—as well as the first rangers and military patrolling the forest reserves—began in the late 1800s. In 1871, Tom Agnew, who built a cabin in what is now called Agnew Meadows, guided visitors with pack stock in the San Joaquin drainage for the Yosemite Park Rangers. Allie Robinson in 1872 packed commercially from Onion Valley. E.H. Edwards Mercantile in Lone Pine advertised “Outfitting store for camping expeditions to Mt. Whitney and Cottonwood Lakes” in 1874. The Pine City Feed and Livery Stable (later known as the Lake Mary Pack Station) transported people and supplies in 1878 across the Sierra to and from Mammoth City and Fresno Flats. Helen McKnight Doyle, in her book *A Child Went Forth*, describes pack trips into the Mammoth and June Lakes area for fishing vacations. The Pioneer Stables, located in Bishop Creek, advertised in the *Inyo Register* in 1887. (Eastern Sierra Packers Association, 2000)

The founding of the Sierra Club by John Muir in 1892 focused widespread public interest on visiting the Sierra Nevada and preserving Yosemite Valley, the giant sequoia groves, and other natural landmarks. In order to develop a constituency for the Sierra Club’s preservation efforts William Colby started a tradition of conducting trips into the Sierra Nevada in 1901. For the next 50 years the large Sierra Club High Trips kept packers busy and led the way for thousands of wilderness adventurers. They were elaborate affairs, lasting 2 to 4 and sometimes up to 8 weeks involving an average of 150 people, around 50 packers and long pack trains of up to 250 mules carrying 100 pound stoves and full-time cook crews (Farquhar, 1965; Dilsaver and Tweed, 1990; Jackson, 2004). These types of outings helped to promote the wilderness concept and contributed to building the necessary support for passage of the 1964 Wilderness Act (Eastern Sierra Packers Association, 2000).

The unrestricted use of forest reserves by packing operations ended in 1906 with the creation of the Forest Service. (The Inyo and Sierra National Forests were created in 1907.) Regulations were instituted to control the degradation of public lands. They included the number of animals used in each forest, the allowed period of time for grazing, a requirement for grazing permits, a grazing fee, and the approval for structures such as out-buildings, tent sites, drift fences, and corrals. Other concerns such as fire suppression, camp sanitation, trail maintenance, and adherence to Fish and Game laws were addressed. By 1920, both the Park Service and Forest Service required a concessionaire’s permit for packing operations (Jackson, 2004).

Packing became a profitable business in the 1920s, with 36 large pack outfits operating in the southern Sierra Nevada and, of those, 15 (42%) were on the east side (Jackson, 2004). Many of the currently operating pack stations can trace their history back to the 1920s and 1930s (Eastern Sierra Packers Association, 2000). The earliest pack station on the Inyo National Forest that is still functioning is Rock Creek Pack Station, established in about 1919 or 1922 (Marye Roeser, former co-owner of Mammoth Lakes Pack Outfit, Personal communication, 2004 and 2005).

Most of the early recreation use in the back country, almost all of which was supported by pack trains, was fishing and hunting. After the hoof and mouth epidemic in 1924 reduced visitor use for several years, pack outfits increased in the southern Sierra Nevada to 71 in 1935 with 22 (31%) in the eastern Sierra Nevada (Livermore, 1935).

The Great Depression and World War II brought problems to commercial packers in the Sierra Nevada. Gasoline rationing restricted travel to pack stations and lack of personnel due to the military draft brought near disaster to the pack outfitters. Even the profitable Sierra Club High Trips were suspended until the end of the war (Jackson, 2004). The Inyo National Forest, which administered all Forest Service land in the eastern Sierra Nevada, listed nine pack operations in 1942. This was 14 less from the war's beginning in 1941.

The number of pack stations again increased to about 60 on both sides of the crest between Sonora and Walker Passes in 1947 after World War II. As a result of an improved economy, longer vacations, better access to the mountains by automobiles, and light weight materials, recreational packing boomed (Livermore, 1947). Two-thirds of those outfits and stock were based on the east side. The growing numbers of operations created intense competition and customers demanded better service. With this increased competition came an increase in more stringent business practices such as liability insurance, performance bonds, financial reports, schedules of personnel and stock, and logs to track the numbers of animals grazed, number of customers, service days, destinations, and day trip rentals. Along with bookkeeping was added pack station maintenance and increasing costs of doing business such as feed, salaries, stock, equipment, supplies, maintenance, and insurance. Pack outfits either lost money or barely met expenses (Jackson, 2004).

Beginning before the war and continuing into the 1950s, packing operations began to feel other changes that made the business less profitable (Jackson, 2004). Government contracts became scarcer and the automobile and airplanes began to replace mules as a means of transportation. Much of the back country was closed to hunting when Kings Canyon National Park was established in 1940 (Livermore, 1947). Boats were restricted to non-motorized ones and permits were required to pack them in. Loose herding of stock was prohibited on non-hazardous trails by 1950. Overused camps and meadows for grazing were placed off-limits and even permitted meadows could no longer support the demands of pack trains. In 1946 the number of animals permitted on any single trip into the national parks was limited to 75.

Commercial pack stations hit their peak in the ten years or so following World War II. Since the 1950s, the number of pack stations has decreased considerably. Likewise, the number of stock and clients serviced has also decreased.

Not accounting for fluctuations, the decline in the intensity of pack operations in the southern Sierra Nevada (from Yosemite National Park south) can be partly measured by the estimated number of stock owned, which decreased from 2764 head in 1935 to 1420 in 1986—a 51% decrease. There was also a consolidation of pack stations between 1935 and 1964 although the total number of pack stations in 1964 implies a secondary peak of 66 in a downward trend, of which only 17 (25%) were on the east side, the lowest percentage since 1920 (Jackson, 2004; Livermore 1935; Sierra Club 1952; High Sierra Packers Association, 2000).

This downward trend continued into the 1990s. The number of pack outfits decreased to less than 50 in 1990. Major pack stations from the Kern Plateau to Silver Lake numbered 71 at a historical maximum and only 13 by 2004, an 82% reduction. In order to maintain a viable

business a few of the more prosperous pack stations in the northern study area, Frontier, Red's Meadow, and Rock Creek Pack Stations have been supplementing their income by offering saddle day trips to tourist-organized horse drives in the Long Valley and Mono Basin areas. This is in addition to the earlier variety of trips offered outside the fully outfitted traveling trips such as spot trips, trail rides, base camps, and dunnage packs and caches.

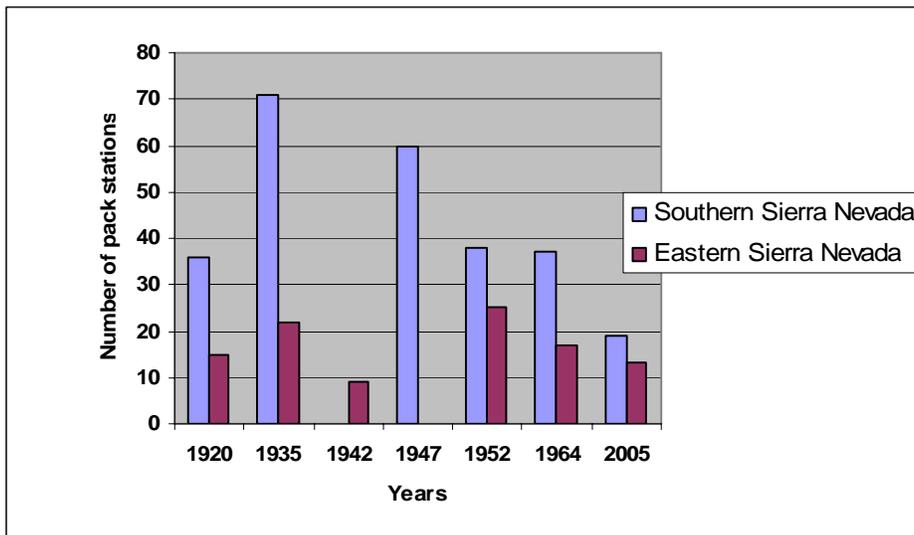
III. Current Packing Trends and Activities

Commercial packing operations in the Sierra Nevada peaked in the years following World War II. Since the 1950s, there had been a trend towards fewer pack stations, commercial stock in the wilderness areas, and clients utilizing the services. There are a number of reasons behind this downward trend including the development of roads closer to wilderness boundaries and the proliferation of personal automobiles. The discussion below focuses on the downward trend of the number of pack station, commercial pack stock, and clients serviced.

Pack Stations Numbers

After peaking in the years before and after World War II, the number of commercial pack stations servicing the Sierra Nevada has declined considerably. Figure 1 shows the decrease over the last fifty years. Numbers were generated from several sources and, in some cases, are for somewhat different geographic areas. The overall trend, however, is clear: there are far fewer pack stations servicing the Sierra Nevada today compared to fifty years ago. *The Tourist Packing Business of the High Sierra Region*, a study by Norman B. (Ike) Livermore, Jr. conducted in 1935, reported 71 pack stations serving the High Sierra area from Kernville to Yosemite, with over 2700 head of stock. (Livermore, 1935) Today, the number of pack stations serving the same Sierra region is less than 30. Several operations were consolidated and some were eliminated as roads penetrated farther up the east and west slopes of the Sierra Nevada, thereby reducing the need to originate trips from the valley floor. In the 1920s and 1930s trips would take anywhere from 10 to 30 days. In today's world, few visitors are willing to commit the same amount of time on a wilderness vacation.

Figure 1. Comparison of the number of commercial pack stations servicing the southern and eastern Sierra 1920-2005

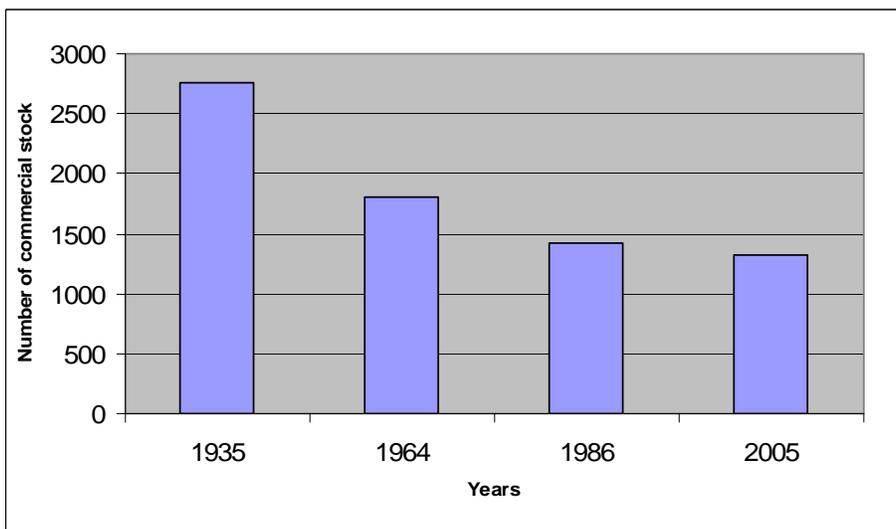


Note: The eastern Sierra includes pack stations from Silver Lake to the Kern Plateau. The southern Sierra Nevada includes pack stations south of Yosemite. (sources: Jackson, 2004; Livermore, 1935; Sierra Club, 1952; Inyo National Forest, n.d.)

Commercial Stock Numbers

Paralleling the decrease in the number of commercial pack stations has been a decrease in the number of commercial pack stock in the Sierra Nevada. Using historical sources, it is not fully known how the numbers of pack stock have fluctuated in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. These historical sources, however, can be used to compare commercial stock use in a wider area. Figure 2 shows the drop in the number of commercial pack and riding stock used in their operations in the Sierra Nevada region over the last 70 years.

Figure 2. Commercial pack stock in the Sierra Nevada 1935-2000.



Sources: Jackson, 2004; Livermore, 1935; Sierra Club, 1952; Inyo National Forest n.d.

The reduction in stock numbers from 1935 to 2004 is 1446; or a total reduction of 52%. The reduction in stock numbers from the 1964 Wilderness Act to 2004 is 489; or a total reduction of 27% for roughly the same general area.

Pack Stock Client Trends

According to use data presented in the John Muir Wilderness Plan (1979), from 1972 to 1976, the total use in the wilderness averaged 84,873 people. At the time, commercial pack clients made up 5% of the use in the wilderness and so during the 1970s there were an average of 4,244 pack stock clients in the John Muir Wilderness. For the years 2001-2004, the average number of pack station clients for both the Ansel Adams and John Muir Wildernesses was 4,783. The John Muir Wilderness portion in 2001-2004 averaged only 3,319 clients. This represents an average of 925 fewer clients or a 22 percent reduction between the 1970s and 2000. This contention is further supported by the 1979 John Muir Wilderness Plan (page 6): “Nineteen commercial packers serve the John Muir Wilderness. Most of these operate out of facilities located near the trailhead they use. Commercial pack stock use has not increased appreciably over the past two decades.” And, the 1979 Minarets Wilderness Plan (page 5) states, “Commercial pack and saddle stock use has remained static or has even declined slightly during the past decade.”

IV. Limiting commercial and non-commercial uses in the wilderness to protect wilderness character

The need for commercial stock service in these wildernesses has been established in a number of management documents including the 1988 Inyo National Forest Land and Resource Management Plan and the 2001 Ansel Adams, John Muir, and Dinkey Lakes Wildernesses Final Environmental Impact Statement. The limiting factor defining the extent necessary for areas served are the wilderness standards set to preserve the wilderness character. For more than 30 years, the Forest Service has determined that higher levels of pack stock use could unacceptably impact the wilderness character of wilderness areas and as a result has imposed use and activity limitations and restrictions on them. For example, the 1979 Minaret Wilderness Management Plan (USDA Forest Service, 1979) states, “Pack station stock numbers will not be allowed to increase, unless special studies show an increase to be compatible with the wilderness resource.”

Over the years, controls on commercial pack stock have become more stringent and site-specific. Prior to 2001, commercial pack stock operations did not operate under quotas. Appendix L of the 2001 Wilderness Plan (Quota Rationale) was used for setting first-time commercial quotas, and did include an analysis of appropriate commercial (and non-commercial) quotas based upon the identified resource concerns and limiting factors. Further, the 2001 Wilderness Plan Record of Decision stated that “Alternative 1 Modified establishes quotas at levels of use that we believe are compatible with maintenance of wilderness character. Quotas were examined by comparing recent actual commercial and non-commercial daily use levels by entry point with their impact on the physical, and to a lesser extent, social/experiential resources (such as potential for crowding due to topography and use patterns). Quotas were evaluated and sometimes adjusted for non-commercial and established at appropriate levels for commercial operators consistently across the wilderness. In areas where it was determined that by reducing the daily overnight use levels there would be a positive effect or correct an identifiable resource concern, appropriate adjustments were made to quotas” (Appendix L, 2001 Wilderness Plan).

Additional standards set in the 2001 Wilderness Plan that directly and indirectly define the limits for allowing areas to be used by commercial pack stock and their clients include trail and user-created trail standards, campsite and campfire restrictions, grazing standards, best management practices for water quality, and standards to avoid impacts to critical wildlife areas. These standards define and limit the areas accessible and available to commercial pack stock use and service. For example, the 2001 Wilderness Plan directs that “All commercial pack stock must stay on designated trails, except where authorized in advance by the Forest Service for alternative routes or to access campsites and grazing areas.” This defines and limits the extent of areas and locations that commercial pack stock services are permitted. Clients of commercial packers are generally limited to only areas with approved trails. The 2001 Wilderness Plan also directs that no new trails will be constructed. This further defines that trail expansion or opening of new areas will not happen. Areas open to commercial pack stock clients are further limited by the availability of suitable grazing areas, campsites, campfires, and approved use-trails.

The 2005 wilderness planning efforts continue this trend by adding new restrictions including designated campsites, destination quotas, grazing and trail suitability, and stock limits. These new regulations will further define where, when, and how commercial pack stock can travel in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. Collectively, these limitations restrict commercial pack stock services to about 9% of these wildernesses.

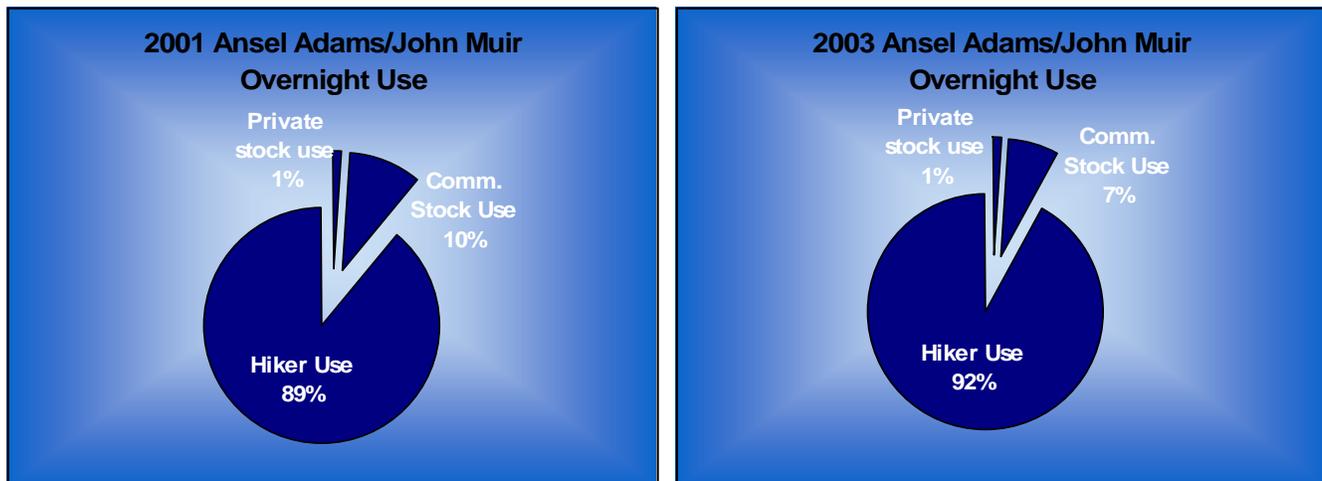
Allocation of capacity between wilderness user groups

Along with wilderness capacities and putting in management standards, another issue to resolve is how to allocate use of the wilderness between the various user groups, including commercial pack stock, backpackers, and outfitters/guides. This balancing between different visitor groups is a fundamental issue in the wilderness without an easy answer. In the 1970s, when the Forest Service first required wilderness permits, established trailhead quotas to manage use, restricted party size, restricted camping and campfires, and took other actions judged necessary to protect the wilderness character, it was the managers’ objective to “freeze” the level of commercial pack stock activities. This level of use for commercial pack stock services resulted in a relatively finite number (measured in stock numbers and service days) that effectively prevented them from growing or meeting the needs of visitors. With the necessary wilderness protection controls and restrictions in place, managers determined it was adequate to use only a permit and daily trailhead quota for the vast majority of the users (mostly backpackers) and maintain a constant level of commercial pack stock regulated by service days and pack stock numbers.

There has been an annual capacity allocation of roughly 6-8% to visitors needing commercial pack stock services, 5% to visitors needing other commercial services, and more than 87% to non-commercial visitors. Allocating only 6-8% of the use capacity of these wildernesses to people needing commercial pack stock services is probably not enough in light of future trends (see discussion below of demographic trends).

Commercial pack stock use in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses currently make up a relatively small percentage of use (see Figure 3).

Figure 3. Comparison of overnight use in the Ansel Adams and John Muir Wildernesses 2000-2003



Note: The percentage of overall commercial use changes annually as a result of total overall use changes as well or as much as commercial use changes. This shows the fluctuation between 2001 and 2003. Changes in these years resulted from the court ordered reduction in commercial pack stock services.

Since more than one user group is competing for the available capacity during popular times of the year to visit these wilderness areas, limits and allocations must be set for all user groups. For commercial packers, the most sensitive factor that managers have consistently concluded must be limited and regulated is the use of the pack stock. It is this reason that pack stock services and numbers have been held static at benchmark levels and the service area restricted to only 9% of the total area where it is judged sustainable and compatible with preserving the wilderness character.

V. Commercial Packing Services and Trips

In 2004, commercial packers serviced approximately 4,000 overnight clients in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. Similar to past years, commercial packers provided a number of different trips and services for both the public and private sector. The following is an overview of the trips and services provided by commercial pack stock operations.

Types of Groups Serviced

This section describes the types of groups that commonly utilize commercial pack stock to access and experience the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. Section 2 will introduce and discuss the topic of need categories.

Family and Multi-generation Groups: Many individuals and families have traditionally engaged in summer wilderness “pack trips” in these wildernesses areas. Grandparents (and great-grandparents) who have spent many summers in the Sierra want to share and experience the wilderness with their children, grandchildren, and great-grandchildren—all together. More and more “Baby Boomers” who were backpackers in the 1970s now need the services of packers in order to access these areas with their families and children. For these family groups, the Sierra experience is very important to them for their wilderness recreation and enjoyment, and to

pass along to their children and families their wilderness values. Because many of these families have young children or members unable to walk or carry their own equipment, the packer services are needed for their transportation to wilderness. For others, the riding and pack trip itself is the experience desired; many people who want to experience a stock supported trip do not have access to animals or knowledge to use them. No attempt to quantify these types of trips will be made here; however, visits to pack stations during the summer of 2005 revealed a number of multi-generational trips. Many of these groups included fairly young children who were entering the wilderness—with the help of commercial pack stock—with their parents and their grandparents. Anecdotal conversations with these types of groups revealed a common theme—older wilderness users were eager to experience the wilderness with a younger generation.

Organized Groups: Groups sponsored by Boy and Girl Scouts, churches, YMCAs, schools, universities, companies, conservation groups, clubs, organizations, camps, inner-city youth programs, and others commonly require packer services to provide their camps and logistics for their wilderness trips. Many of these groups have been taking pack-supported trips for decades, some even pre-dating the Wilderness Act. Without packer services, many of these groups would not be able to serve their group needs, as often not everyone is capable and fit enough to walk and carry their own gear.

Special Function Groups: These trips are generally organized for a specific purpose related to wilderness use; they often focus on an educational aspect of wilderness such as photography, art, writing, spiritual enrichment, research, medicine, nature study, etc. Agency sponsored trips are also supported by pack and riding stock, and include trail crews, search and rescues, fish stocking, survey crews, mapping specialists, military personnel, and Congressional representatives among others. Special function groups often have materials and equipment too bulky and heavy to carry with backpacks and include members who are not capable of walking or carrying their own equipment. Visits to pack stations during the summer of 2005 provided an opportunity to talk to these types of groups. Again, there is no attempt here to quantify the number of groups that fall under the “special function” grouping. Pack station visits conducted during the summer of 2005 did reveal, however, that a number of groups utilize commercial pack stock to transport their gear. A number of fishing related parties were encountered as well as a landscape painter who was utilizing commercial packers to transport easels and painting equipment. Native American groups also utilize commercial pack stock support to help with their annual traditional walks. Bishop Pack Outfitters, for example, has for a number of years provided pack stock support for some Native American walks free of charge. In addition, during the Draft EIS public comment period, a comment was received from the State of California Snow Survey group reiterating the importance of commercial pack stock support for their activities.

General Outings: There are hundreds of visitors each year who travel individually or gather with a small group of friends, family, or work associates and take a commercial pack-supported trip to simply enjoy and experience the wilderness. They may engage in several types of activities while in the wilderness such as day hikes from a base camp, fishing, photography, etc. Many of these visitors desire to experience wilderness riding and using pack stock, but do not have access to private stock or the knowledge to properly use and handle pack stock in a wilderness setting. Again, anecdotal conversations with commercial pack stations clients during the summer of 2005 revealed a number of groups that consisted of friends and family who

desired to experience the wilderness but did not have the knowledge or physical ability to backpack into the area over night.

Types of Commercial Pack Stock Supported Services

There are a number of services currently provided by commercial pack operators. The following provides an overview of these types of services.

Spot Trips: Visitors ride and their gear is packed to a pre-selected area. The stock and packer do not generally stay in wilderness but return for the visitors on a predetermined date to take them out. Some spot trips are one-way spot trips in which the client rides in the first day to help with elevation acclimation and then hikes out at the end of their trip.

Dunnage Trips: Visitors' backpacks, food and camp equipment are packed into a specific location, and they hike to meet it. Spot and dunnage trips comprise approximately 80% or more of the overnight services provided by packers.

All Expense/Traveling Trips: These are customized trips that will meet the visitors' specific needs for dates, locations, and members of the party. The pack and riding stock, packer and a cook are also provided on these trips. There are several variations of the all expense trip including hiking with pack stock, continuous hire of stock and packer, and trail rides. **Hiking with Pack Stock** offer visitors the option to have all of their equipment, food and supplies provided, or they can supply their own. Generally the visitors will hike, and have their camp and equipment packed. There may be some visitors who choose or have to ride because of physical limitations. **Continuous Hire of Stock and Packer** are for those who wish to have the packer and stock remain with them throughout the duration of their trip. The camp-gear and provisions are provided by the visitors. **Trail Rides** travel to pre-advertised locations within the wilderness and provide the "classic" Sierra pack trip wilderness experience. They can either be fully outfitted by the pack station, or there can be a combination of equipment supplied by the visitors. The outfitter supplies the packing and riding stock, a packer and a cook, and the staff will stay with the party for the entire trip. These are pre-advertised, with set dates and locations.

Day Rides: Commercially guided riding trips are available for those visitors who want to enjoy the wilderness scenery, take photos, go fishing, or visit a special area for just a few hours. Rides vary in length from one hour to all day.

Section 2 –Need for Commercial Packing Services in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses

This section analyzes the current level of commercial pack stock use in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. The analysis will consist of two tests: first, whether the activities supported by commercial pack stock are consistent with the intent of the Wilderness Act and second, whether there is a need for the wilderness user to utilize commercial pack stock to experience the wilderness. A survey was conducted during the summer of 2005 to quantify the appropriateness and level of need for commercial pack stock services. The survey is described in more detail below.

The strategy for determining the need for commercial pack stock will be to look at current use levels and determine whether the current level of service reflects the actual need for commercial pack stock service in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. This need will be examined by analyzing the current level of commercial pack *clients*. The need for commercial stock services can be best analyzed using this approach. Another strategy may be to address whether the current number of permitted pack *stations* are necessary for realizing the intent of the Wilderness Act. This strategy is inferior and largely irrelevant to determining the need for commercial pack stock service in the wilderness as it does not address the level of actual public use in terms of client numbers. The current number and location of pack stations in the project area has evolved to its current state over a number of years. Pack stations are generally located in areas that are in drainages in close proximity to recreation areas. Most of these operators have been operating in their current locations for a number of years and have a high level of knowledge of the area. Most importantly, the number of operators does not matter to the overall need to protect the wilderness—the number of trips and level of use is what is important to analyze. Eliminating operators will have no effects on the impacts of commercial packing unless the use level is also lowered. Reducing the number of operators, however, may have serious implications for the public's ability to use the service as some areas may become underserved unless new operators are willing to truck their stock to distant trailheads. The question of the level of need is best addressed, then, by examining the public use of the services.

The 2005 Commercial Pack Client Survey results will be used to determine whether the activities associated with commercial pack stock are appropriate and consistent with the intent of the Wilderness Act. The survey results will also be used to analyze the level of need for commercial pack stock services. Part IX will look at demographic trends that may influence the future need for commercial pack stock service in these wildernesses.

The next section will describe the two tests. The results of the survey are discussed below in the Public Purposes of the Wilderness Act and Need for Commercial Packing Services sections.

Part VI Description of Two Test Evaluation of Current Levels of Commercial Pack Stock Use

Test One: Public Purposes of the Wilderness Act

The first test for the current level of commercial pack services is whether the service supports activities consistent with the public purposes of the Wilderness Act. The Wilderness Act allows for commercial services in the wilderness that support “activities which are proper for realizing the recreational or other wilderness purposes of the Act.” The language “recreational or other wilderness purposes of the Act” is clarified earlier in the Act in Section 4(b) which specifies that “wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use.”

The following is an overview of the ways in which commercial packers contribute to the public purposes of the recreational, scenic, scientific, educational, conservation, and historical uses of the Wilderness Act.

Recreational: The types of trips and services that are recreational in nature are for relaxation, fishing, hiking, horseback riding, photography, enjoyment of the wilderness areas, and to basically get away from the urban environment. The historic and classic “Sierra Pack Trip” fits into this type of use. Many family or group members are not physically capable of walking and/or carrying their gear because of their age, physical conditions or other limitations. Some groups lack the specialized knowledge or experience to travel and camp safely or properly in wilderness. For many individuals and groups, packers offer the needed services and support to allow wilderness visitors to use and enjoy these areas for proper recreation purposes. Annually, packers serve approximately 4,000 overnight visitors and approximately 3,500 day riders. This may represent less than 8% of the total visitors to these wildernesses, but without packer services, many of these visitors would not have any opportunity or ability to recreate in these areas.

Scenic: These wildernesses are some of the most scenic areas in the world. Overnight and day use visitors to these wildernesses frequently mention that viewing the scenery is one of the primary purposes for their visit. All of the individuals, groups, organizations, and agencies that commonly use and rely upon pack stock services for their recreational benefits also realize scenic benefits from their wilderness visits. Pack station operators make it possible for many people who otherwise could not hike to see and appreciate the scenery of these areas.

Scientific: Extensive research and study has been conducted in these three wilderness areas. Generally, equipment and supplies needed to support the research is bulky and heavy, and is needed in very remote locations. Commercial pack stock services are generally the most suitable and appropriate form of transport in these wildernesses. The alternative modes of transport, such as helicopters, are less appropriate. Some examples of research efforts supported by commercial pack stock are: Earthquake Research by University of Nevada – Reno, U.S. Geological Survey (USGS), University of Utah, U.C. Berkeley, the University of Hawaii, and China; Volcanic Research by USGS; Mineral Deposits by USGS and Bureau of Mines; Water Resources by California Department of Water Resources for snow and water surveys; Yellow-legged Frog Research by UC Santa Barbara, California Department of Fish and Game; Bighorn Sheep Research by California Department of Fish and Game; Spotted Owl Surveys by Forest Service and Pacific Southwest Research Station; and Fish Stocking Research by California Department

of Fish and Game. The Eastern Sierra region, including the Sierra Nevada range, is one of the most heavily used areas for research and study because of the vast wildernesses, parks, and other public lands that make it ideal for studying the undeveloped and natural world. Packers play a significant role in facilitating the transport for many of these research projects. And, without their services the impact on the wilderness solitude would certainly be more significant as researchers and agencies would be forced to rely more frequently on mechanical transport.

Educational: These wildernesses are natural learning centers. Universities, organizations, agencies, and individuals use these areas for educating students, members, and personnel. Pack stations often are needed to transport base camps, personnel, and equipment to wilderness locations. Pack stations have provided support to organizations, agencies, and companies developing documentaries about wilderness. Natural History, Geology and Astronomy courses are frequently offered through universities and conservation organizations in cooperation with and supported by Eastern Sierra Packers. Some groups with programs assisted by the packers include: U.C. Riverside, U.C. San Diego, Saddleback Community College, Santa Rosa Community College, and U.C. Davis. Other youth programs that have a long history with using packers for trips include: Youth Enrichment (LA PD), YMCA (20 or more locations), Churches (20 or more locations), Bear Valley Native American program, and Girl Scouts and Boy Scouts. Groups promoting personal growth such as Pacific Crest Outward Bound are also supported by packers. Packers also sponsor and support horse packing and horsemanship courses, professional packing schools, and minimum impact stock courses for persons using stock in the wilderness.

Conservation: Historically, commercial packers have contributed to the conservation component of the public purposes of the Wilderness Act by facilitating public access into the wilderness areas of the Sierra Nevada and by providing support for conservation related



President Roosevelt and John Muir Horseback, 1903
(Source: Yosemite Museum National Park Service)

activities in these wilderness areas.

The early days of the Sierra Club outings in the Sierra Nevada, for example, were primarily supported by commercial pack stock. Today, commercial packers continue to build constituency for the wilderness concept by providing access to these wildernesses for individual and groups who might otherwise not have the ability to experience and enjoy the areas.

In terms of conservation projects, Forest Service, California Department of Fish and Game, California Water Resources Department, and other agencies use the packing services of

these pack stations for supporting resource and conservation work in wilderness. Removal of litter and facilities, trail maintenance, watershed restoration, airplane wreckage removal, maintenance of fish barriers, and similar support are provided by commercial pack stock. Studies and inventories by agency specialists sometimes use packers. Packers are also called upon to provide the support for “partnership and policy trips” including federal agencies,

congressional representatives and staff, judges, county and state leaders to discuss and review conservation efforts and work. In fact, Sierra packers have served dignitaries such as Secretary of State Robert McNamara, Governor Ronald Reagan, Supreme Court Justice William O. Douglas, Theodore Roosevelt IV, and the California Fish and Game Commission.

Historical: A “Sierra Pack Trip” is considered by some to be the ultimate experience reflective of our rich western and wilderness heritage. While commercial pack stock services have a practical and necessary function of transporting people who need help to access and use these areas, to others, their services are part of the wilderness experience itself and provide the only practical opportunity for many visitors to experience the wilderness pack stock tradition of these wildernesses. Without their packing services, many people who desire this recreational and historical experience would not be afforded it, as few people have the necessary pack stock, skills, knowledge, or experience to use pack stock in a wilderness setting by themselves. Not only is the history of these wildernesses deeply rooted in the use by commercial pack stations, many of the prominent landmarks are also either named by or after packers. Packers pass along their historical knowledge to their clients and enrich their experiences and understandings of these areas and about wilderness itself.

Test 2: Need for Commercial Packing Services

This section discusses the second test for current levels of commercial pack stock; whether there is a need for the use. Six categories of need have been identified. This test and these categories provide the basis for addressing the Wilderness Act standard that, “Commercial services may be performed within the wilderness areas designated by this Act to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the areas.”

Categories of Need

1. Persons with physical limitations that make them unable to walk and/or carry their own equipment.

- Disabled persons
- Persons physically and medically limited (back/knee injury)
- Persons with diseases and health conditions that limit strenuous exertion (heart, hypertension, etc)
- Elderly and very young persons with limited mobility or endurance
- Persons lacking adequate physical conditioning to achieve desired experience or activity

2. Persons with equipment too bulky or heavy to carry.

- Photography equipment
- Water floatation devices such as rafts or canoes
- Supplies and equipment for extended stays or travel
- Search and Rescue equipment
- Equipment and materials necessary for approved uses and activities such as dam maintenance, mining, watershed and fish projects, etc.
- Equipment and materials necessary for Universities, contractors, and cooperators with approved studies
- Equipment and materials necessary for groups with extended trips into the backcountry

3. Hunters needing pack stock to haul game.

- Deer hunting in wilderness zones under State law

4. Persons desiring a wilderness “pack trip” or “day ride” experience.

- Persons desiring a pack trip but who lack knowledge or skills to handle or use stock in wilderness setting
- Persons desiring a pack trip but who lack wilderness knowledge to safely and properly travel and camp in a wilderness setting, and require professional assistance to guide and advise them
- Persons desiring a pack trip but who do not own stock, or otherwise have access to suitable pack stock
- Persons desiring a pack trip who own private stock suitable for wilderness use but who practically cannot use their own stock
- Persons who are seeking the traditional “Sierra Pack Trip”

5. Persons able to walk but affiliated with persons falling into need categories 1-4, and therefore included as member of commercial group.**6. Native American traditional walks or gatherings requiring pack stock to transport camps and persons not able to walk.****Categories where commercial pack stock support is not necessary include:**

- Persons able to walk and hike and carry their own equipment and their wilderness experience is not dependent upon using pack stock or riding horses.
- Persons wanting horseback rides – but their experience is not wilderness dependent. For these individuals and groups, the horseback ride itself is the desired activity and a wilderness setting is not needed for this experience.
- Persons owning private stock suitable for wilderness travel who also possess the skills and knowledge to properly use them in wilderness.
- People utilizing commercial pack stock to transport equipment that is not legal in wilderness (e.g., chain saws, bikes).

Decisions related to categories determined “not needed or necessary” were based upon either: (1) lack of demonstrated need, (2) activities not dependent upon a wilderness setting, or (3) needs that clearly conflict with wilderness protection standards.

Rationale for Categories of Need

Many categories of need are fairly straightforward and evident, such as persons who require pack stock to transport them and their equipment and supplies because they are physically not capable of hiking and/or carrying camping equipment. As described in the trends section below, this is a large and growing segment of the American population. While this category may be the most obvious and compelling group of persons needing commercial pack stock, they are not the only group needing services for their wilderness access or recreation experience. As previously mentioned, many other individuals, families, groups, agencies, universities, organizations, contractors and tribes also require pack stock assistance to transport people with special needs, to carry bulky and heavy equipment and supplies, and to realize their desired wilderness

experience. Without commercial pack stock support, many of these appropriate wilderness activities would not be possible for those individuals and groups listed.

Persons who may be able to walk and carry their own equipment, but elect to experience wilderness with riding and pack stock—the historical “Sierra Pack Trip”—are also in need of commercial pack stock services in these wilderness areas. Most private citizens wanting this kind of wilderness experience do not have the animals, specialized skills to handle pack stock, or equipment to achieve their desired wilderness experience, and therefore need the services of commercial packers. The history and practices of every wilderness area is different, and Congress clearly recognized that besides wilderness recreation, another important purpose of wilderness was the study and experience of its history. For most of the Sierra Nevada wilderness areas, using pack stock is a historical practice and part of the wilderness experience for many past and present Americans. The use of pack stock, and the packing profession, is deeply rooted in the history of these wildernesses. The “Sierra Pack Trip” is an appropriate and historical form of primitive recreation for these wildernesses; and, the only way that individuals can have this experience is with commercial services, unless they have their own stock.

Some potential consequences to the wilderness environment and administration of these areas in the event the agency determined that “The Sierra Pack Trip” category of need was not appropriate or needed, is significant. People would still have the need and right to use “private” pack stock to realize a desired “pack trip” or “day ride.” They could buy, rent, or borrow animals for their access and use. While some private stockowners (such as Backcountry Horsemen) have the knowledge, skill, and ability (as well as commitment) to practice proper stock ethics in a wilderness setting, most urban and even some rural visitors needing commercial pack stock support for their “pack trip” or “ride” experience do not. (The stock impacts and damages to the wilderness character from many more visitors using private stock rather than using commercial packer’s service would most likely be significant and unacceptable.)

The Wilderness Act does not specifically define or limit who can or cannot use wilderness areas. It states that wilderness areas “shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness...” The Act also specifies that wilderness, “has outstanding opportunities for solitude or a primitive and unconfined type of recreation” and “shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use.” Forest Service wilderness policy (FSM 2320) states, “Consistent with management as wilderness, permit outfitter/guide operations where they are necessary to help segments of the public use and enjoy wilderness areas for recreational or other wilderness purposes.” In light of the Wilderness Act and Forest Service guidance, all need categories identified and stated above (except those identified as not needed) are determined in this analysis to be appropriate categories to receive commercial pack stock services in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. These service and activity needs are consistent with the outfitting and guiding services provided to the public in these areas before and after the 1964 Wilderness Act, and are consistent and compatible with the intended mode of primitive travel (foot and horseback) appropriate and envisioned under the Act.

Part VII. 2005 Commercial Pack Client Survey

During the summer of 2005, a survey of commercial pack clients was conducted. The intent of the survey was to determine whether commercial pack stock clients were engaged in activities proper for the wilderness and to quantify the level of need for commercial pack stock service.

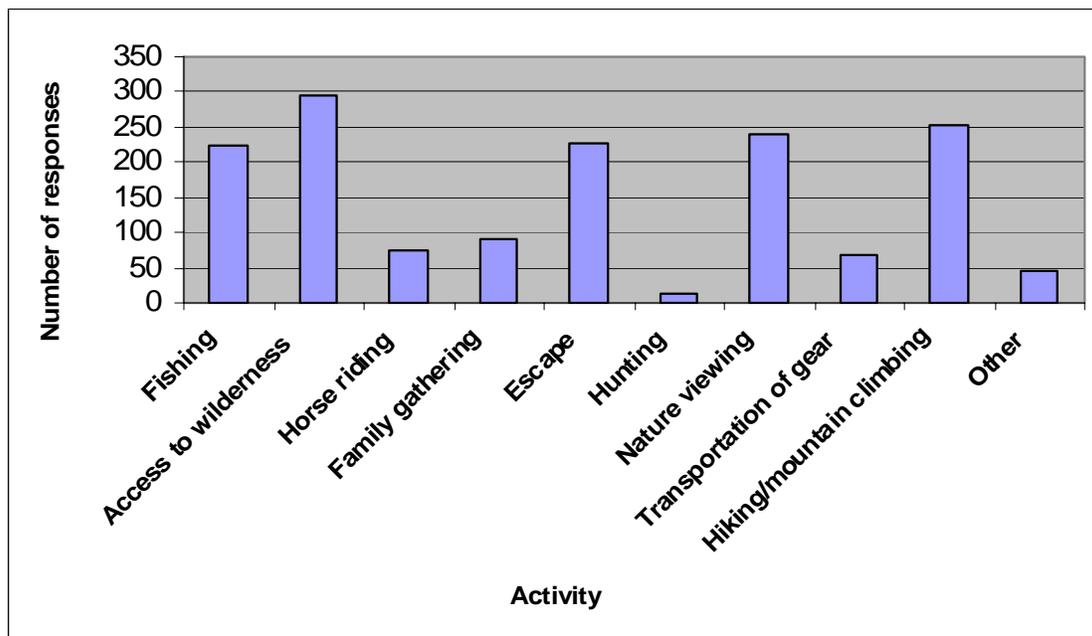
The survey instrument was developed and field tested at several pack stations in July 2005 (see Attachment 1 for a copy of the survey instrument). In early August 2005, the survey was mailed to 537 pack stock clients from 2004. The names and addresses of the clients were gathered from the Inyo and Sierra National Forests' Wilderness Permit Databases. The clients contacted were the individuals who identified themselves as the group leader and provided their names and addresses when receiving their wilderness permit. In 2004, 4,015 overnight clients were serviced by commercial pack stock. The average group size was three individuals, so approximately 1,338 commercial packing groups used the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. A total of 346 surveys were filled out and returned to the forests. In all, data was available from 346 out of the 1,338 commercial groups that utilized commercial pack stock in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses (approximately 40% of the groups). This sample size provides a more than 95% confidence level; that is, we can be more than 95% sure that the results from the 346 respondents accurately reflects the results that would have been obtained by hearing from all 1,338 groups that utilized commercial pack stock services in 2004.

Results of the Survey

Survey Results for Test One: Public Purposes of the Wilderness Act

Test one analyzes whether commercial pack stock services are supporting activities that are proper in the wilderness and fulfill the public purposes of the Wilderness Act. The 2005 Commercial Pack Client Survey was used to identify the activities that people engage in when using commercial pack services to access the wilderness. Of the 346 survey responses, the overwhelming majority included activities that are consistent with fulfilling the public purposes of the Wilderness Act (Figure 4 shows the responses from the survey). The most popular activities identified as being a purpose of the wilderness trip were fishing, hiking/mountaineering, and nature viewing.

Figure 4. Survey results: activities on pack supported trips



Another question asked in the survey: “Could you have met the purposes of your trip by taking a horse trip outside the boundaries of wilderness areas?” reveal the extent to which these activities (for the survey respondents) are wilderness-based. Out of the 339 surveys that responded to this question, 276 or 81% reported that they could not have met the purpose of their trip on a trip outside wilderness.

The survey shows that members of the public are using the services of commercial pack stock operators to enjoy activities that are proper in the Wilderness. Further, survey respondents report that the purpose(s) of their wilderness trip can not be met by taking a trip outside wilderness. The next issue to examine is to analyze how many commercial stock clients fit into one of the categories of need which will be introduced in the next section.

Survey Results for Test 2: Need for Commercial Packing Services

The section will focus on the need for commercial services by looking at whether commercial pack stock clients surveyed in 2005 fall into one or more of six categories of need for these services. Results from the 2005 Commercial Pack Client Survey were used to quantify the need categories described above. A question from the survey (“Why did you choose to use pack and/or riding stock for your wilderness trip?”) was used to determine the need category (if any) the group fit into. This survey focused on groups, not individuals. It is both impractical and impossible to determine whether each individual of a group utilizing commercial pack stock matches an identified need category. The survey was mailed to group leaders and answers from the above question determined whether the group needed commercial pack stock to accomplish the purpose of their wilderness trip. The results from the survey are shown below in Figure 5.

Figure 5. Survey results: level of need

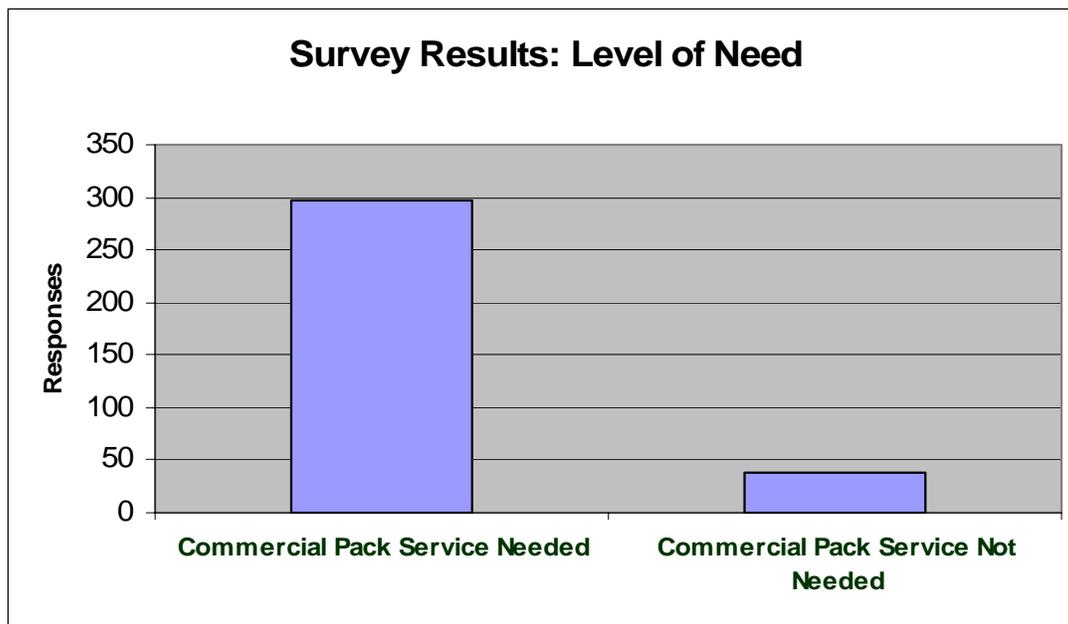
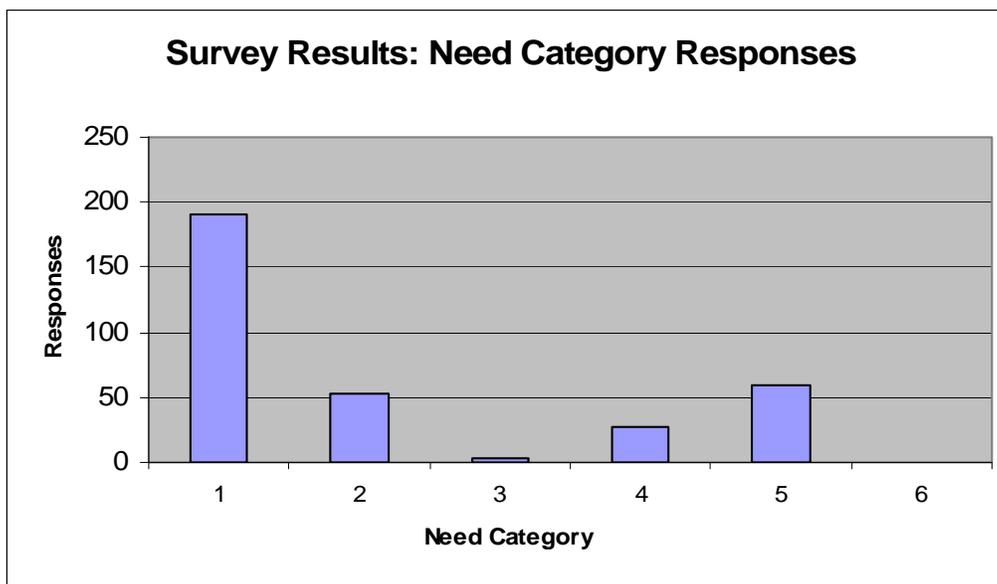


Figure 5 shows that the overwhelming majority of survey respondents needed commercial pack services to accomplish the purposes of their wilderness trip. A total of 336 surveys provided sufficient information to determine whether commercial pack stock service was needed. It was determined that 298 or 88% of the groups needed commercial services. Figure 6 shows the breakdown of groups into the five need categories.

Although the majority of responses indicated a need for commercial services, some survey responses were clearly from groups and/or individuals that did not need the service to access the wilderness. Responses in the “not needed” category were from individuals who indicated that they were physically capable of carrying their own pack, but used commercial pack service for convenience or to save time. One response, for example, said that commercial pack services were used because the wilderness user “was lazy and could afford it.” This is an example of a client who was not placed in one of the six Need Categories. These types of responses, however, were the minority; most of the responses indicated a definite need for commercial pack support for their trip.

Figure 6. Survey results by need categories



*Category 1 includes persons with physical limitations

Category 2 includes persons with equipment too bulky or heavy to carry

Category 3 includes persons hunting deer

Category 4 includes persons desiring a wilderness pack trip experience

Category 5 includes individuals able to pack their own gear but traveling with someone in Categories 1-4

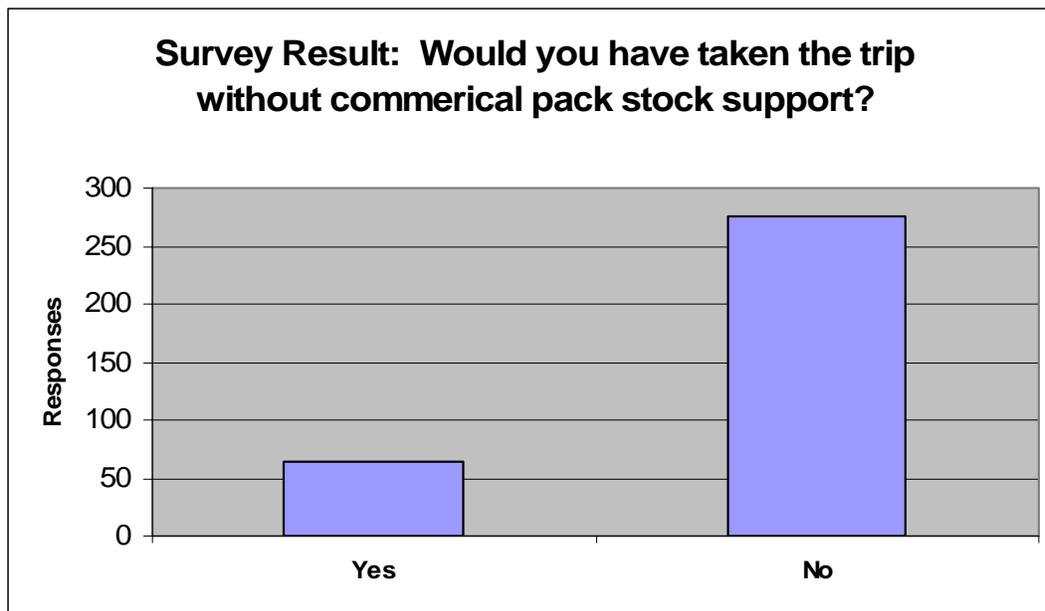
Category 6 includes Native American traditional walks or gatherings

**The numbers in Figure 6 total more than 298 as some groups fell into more than one category.

Category 1, the Need Category related to physical need, was the most common reason cited for securing the services of a commercial packer. Many of these respondents reported that they were elderly or had some physical limitation that made it all but impossible for them to carry a backpack and access the wilderness on an overnight trip. A number of these people also indicated that while they were backpackers at one time, commercial pack stock now provided an essential service for them. Without stock, many of these people would not be able to access the wilderness. Another common response came from group leaders who indicated that they were bringing their entire family, including children, along on the wilderness trip. Many of these respondents said that commercial pack stock support were crucial if children were to be included in the wilderness trip.

The results from another question from the survey (“Without commercial services, would you have taken the trip?”) reinforce the need for commercial services for some of these groups. Figure 7 shows the results of this question.

Figure 7. Survey Result: Would you have taken the trip without commercial pack stock support?



Interpreting the responses to this question were a bit difficult as some individuals answered for themselves while others answered for the groups as a whole. For example, some respondents stated that they would still have taken the trip without commercial pack stock; however, other members of the group would not have been able to. Nevertheless, the results of this question reinforce the overall result of the survey: the overwhelming majority of groups that currently utilize commercial pack stock support need this service for their wilderness trips.

Wilderness Day Rides

Wilderness day rides were not included in the 2005 Commercial Pack Client Survey. Instead, pack stations were visited during the summer of 2005 and anecdotal information was gathered on this activity. During the course of this analysis, several aspects of wilderness day rides became clear. First, the vast majority of wilderness day rides only enter a small portion of the wilderness. The Rainbow Falls Day Ride in the Mammoth Lakes area, for example, only enters wilderness for a few hundred feet and is mostly in Devil's Postpile National Monument. It is, however, considered a wilderness day ride. This ride is quite popular and accounts for more than 30% of all wilderness day rides on the Inyo National Forest. Examining use data shows that this is fairly typical of wilderness day rides: most of these rides do not penetrate particularly deep into wilderness. Most, if not all, of the day rides enter wilderness for only a mile or two or less. The reasons for this are many, but perhaps most significantly, individuals looking for a day ride will not be able to or are not interested in being on a horse for more than a couple hours. Typically, day riders are the least experienced of commercial pack clients and they typically are not interested in more than a two-hour ride. Most of the so-called wilderness day rides are in the front country with a relatively small percentage of the ride entering the wilderness. For many front country trails, the wilderness boundaries are miles from the trailhead and day rides only enter the wilderness for a relatively short distance.

Another aspect of wilderness day rides is the clientele and their need for the service. Anecdotal observations at pack stations reveal that a sizable percentage of day ride groups are made up of

families with younger children. Day rides provide these groups with a new experience and are important in exposing younger generations to the forested environment. The mode of transport (i.e., horses) appears to be an important consideration for day rides. Likewise, there is a need for a scenic destination for the trip. The proximity of the pack station to wilderness boundaries makes it nearly impossible for the rides to avoid wilderness altogether. Although not tracked in a formal survey, it appears as though many of the day riders would fit into Need Category #4 (persons wishing to have a wilderness-based horse back ride).

Currently, there are approximately 4,000 day rides that enter the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. As stated earlier, the majority of these rides only briefly enter the wilderness. Given the limited entry of these rides into wilderness, there are few, if any, environmental effects associated with these rides. In fact, day rides constitute one of the least impacting methods of experiencing wilderness for wilderness visitors.

The demographic trends described below (particularly trends indicating an aging, more urban population) point towards an increased need for day rides in the future. Therefore, there is a need to continue to provide a range of day rides that will accommodate an expected increase in the need for this service.

Survey Conclusions

The results of the 2005 Commercial Pack Client Survey indicate that the vast majority of clients are utilizing commercial stock for activities that are proper and consistent with the intent of the Wilderness Act. The overwhelming majority of the groups that utilize commercial stock are in one of the identified need categories and would not have been able to take the trip without the service. Commercial pack stock provides an essential service to the individuals and groups that utilize it; it is likely that most of these individuals and groups would have limited or no access to the wilderness without commercial pack stock services.

VIII. Current Constraints on Meeting the Full Public Need for Commercial Pack Stock Services

It is important to note that one of the purposes of this Needs Assessment is to provide a sense of what the overall public's need for this service is. A number of other considerations should be factored in when arriving at this overall level of need. It is not reasonable to conclude that by pure chance the Forest Service has arrived at a level of service that is nearly equal to the public's need for commercial services in the Ansel Adams/John Muir Wildernesses. Given the results of the survey and conversations with commercial packers, it is more likely that the public's full need for these services is not being met. The survey showed that the overwhelming majority of current use is proper for wilderness and is needed by the public to access the wilderness areas. In 2004, 4,015 clients were supported by commercial pack stock services in the wilderness. As the survey revealed, nearly 90% of the groups brought into the wilderness fit into one of the identified categories of need. Given the high percentage of current users of commercial pack stock that fit into a need category, it would be logical to assume that there is a certain level of public need for this service that is not being met and indeed based on conversations with pack station operators, it is likely that the full public need for these services is not being met.

Current restrictions on commercial packing in the wilderness have contributed to an inability to meet the full public's need for these services. Commercial pack operators have identified various restrictions that limit the ability of the business to meet the public's need for commercial service, including group size, quotas, limitations on the number of stock per party, and grazing restrictions. Group size particularly was a restriction that commercial packers say limit their ability to meet the public's need. While in the past packers would service larger organized groups such as church groups and Boy Scout groups, the party size limitation has all but eliminated this type of use. Grazing restrictions have also limited the ability of packers' to provide multiple day full-expense trips. According to one packer, these are the trips that are most popular with the public and represent a significant unmet need. Commercial packers indicate that every year restrictions on their operations require that they turn away clients that they cannot serve, but who nonetheless would fit within one of the need categories identified above.

The logistics of operating in a short season also limits the packer's ability to meet the full need of the public for these services. According to Eastern Sierra Packer's Association President, Dave Donnell, "Everyone wants to take a pack trip during the holidays, weekends, and month of August. We turn away people because we don't have the logistical capacity to handle them and the Forest Service limits how many people we can accommodate with quotas, service days, and other regulations."

Furthermore, there is likely a sizable group of individuals who need commercial packing services and fit into a need category but are unable to afford the service. As discussed in the Final EIS, Economics section, the costs of these trips have escalated over the last several years.

Commercial packers indicate that restrictions, particularly restrictions imposed by the Court, have caused an increase in the price of various services. Commercial packers say that the public has started to balk at the prices of these trips and each year people do not book their trip because they are unwilling or unable to pay the price for the service. It is impossible to determine the number of people that are unable to afford the service each year and "needed" the service to access the wilderness. Given that nearly 90% of current use fits into one of the Need Categories, it is logical to assume a sizable percentage of individuals are unwilling or unable to pay for the escalating price of these services. Still another unaccounted group is those that never make contact with the commercial packers because upon receiving a brochure or some other notification of the price of commercial packing services, they realize that they are unable or unwilling to pay the asking price and they do not pursue the trip any further. It is impossible to determine how many people are in this group, but again it is logical to assume it is a sizable percentage.

Another factor to consider when determining the need for commercial packing services is the relatively short season in which these operations have to operate in. The "need" for packing services will vary from year-to-year, depending on seasonal conditions. In a season such as 2005 that had a lingering snow pack well into July, commercial packers will be limited on the number of people that can be serviced. In other years, the season may start early and end late. The best way to account for these seasonal fluctuations in business is to identify a level of need as a range, rather than settle upon a specific number.

IX. Trends Affecting Need for Commercial Pack Stock Services

This section discusses trends and patterns potentially affecting the need for commercial pack stock services now and in the future.

1. According to *Demographic Change & Recreational Activity Trends* (2005) by Gary T. Green, University of Georgia, and Ken Cordell, US Forest Service, Athens, GA, and Becky Stephens, University of Tennessee:

- Population is rapid growing and some groups will literally explode in numbers.
- Incomes, educational levels, and average life expectancy will all increase by 2020.

2. Association of Partners for Public Lands (APPL) compiled in 2004 from websites, reports, and surveys of members and agency partners reported the following trends and patterns information:

- Consumers are seeking out uniquely different experiences when they travel, yet expect certain standards of destinations, tour companies, lodging establishments and transportation. 65% of travelers are city-dwellers living in urban areas with populations of 500,000 or more. Among those visiting a National Park while traveling in the last five years, 75% stayed overnight or within 10 miles of the parks on their most recent trip. (National Geographic Traveler and Travel Industry Association)
- 50% of American adults have taken an adventure vacation in the past 5 years. (E. Sheffield, California State University, Chico)
- Aging baby boomers seek easier ways of recreating but have more money to spend, resulting in desire for greater conveniences like full hook-up campgrounds. (APPL 2004 agency survey)
- Public lands will see more 55+ visitors and more “escapees” from cities, who will want more services. Many of these visitors will be willing to pay for a quality experience. (APPL 2004 agency survey)
- The population of California is projected to have the largest net increase in U.S. population. By 2020 it is projected to increase by 31% compared to 2000, with a 58% increase in Hispanic population, 55% increase in Asian/Pacific Islanders, a 29% increase in Native Americans, a 20% increase in African Americans, and a 4% increase in persons of European decent. By 2030, Hispanics will comprise 43% of the state’s population. (E. Sheffield, California State University, Chico)
- The median age in 2000 was 35; by 2020 it is projected to be 38. (E. Sheffield, California State University, Chico)
- Baby Boomers are now moving into their retirement years, leading to increased leisure time and greater demands on parks. They are the mobile generation of the next 20 years. (Trends in Demographics and information Technology Affecting Visitor Center Use, NPS, 2003)
- The over-50 population is expected to grow by 18.3 million people over the next ten years. (Independent Sector)
- People continue to live longer. By the year 2025, 60 million Americans will be 65 or older. (Aging Americans: Stranded Without Options)
- Increased urbanization of America, and decreasing rural populations. (APPL 2004 agency survey)

- In 1994-95, more than half of the older population (52.5%) reported having one or more disabilities. One-third had at least one severe disability. Most older persons have at least one chronic condition and many have multiple conditions. The most frequently occurring conditions per 100 elderly in 1995 were: arthritis, hypertension, heart disease, hearing impairments, orthopedic impairments, cataracts, sinusitis, and diabetes. (AARP)

Trend Implications Related to “Need For” Wilderness Commercial Pack Stock Services

Given the trends provided above, the following will likely affect the need for commercial pack stock services in these wildernesses: a population that is increasingly urban, less connected or educated about the outdoor world; significantly growing (especially California) and aging; people less physically fit than the past; and, more often temporarily, if not permanently, physically challenged and limited. The American population’s need for outfitter and guide services will be even more important in the next 10-20 years to enable visitors in need to access and experience their public lands. The Forest Service cannot provide these services to the public to meet this need.

X. Quantifying the Need for Commercial Pack Stock Services in the Ansel Adams and John Muir Wildernesses

It is very difficult—if not impossible—to provide an exact number that captures the total need for commercial packing in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. This section instead will provide a range that is needed to meet the future need for these services. This range will include a number of components: the current level of need, the need that is not currently being met because of various restrictions that limit the commercial packers’ ability to provide service, and future demographic trends. Based on these three components, current levels of service are not sufficient to meet the public’s current and future need for commercial packing in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses.

Overnight Clients

Current Level of Need

As the 2005 Commercial Pack Client survey showed, approximately 90% of the current level of commercial use is needed to meet the public’s need for these services. Given the 2004 level of 4,015 commercial clients, it is estimated that **3,613** of these clients truly “needed” the service in the context of this Needs Assessment.

Unmet Need

As described in Part VIII, there are a number of factors that act to limit the commercial packer’s ability to meet the full public need for these services. Some of these factors include restrictions and limitations placed on the commercial packers (e.g., group size, quotas, stock number limitations etc.), while other factors include seasonal limitations on business including weather and snow conditions. Additionally, court-ordered restrictions and other factors have caused the prices of these services to rise considerably over the last five years. Based on conversations with commercial packers, it is estimated that there is a need 25-50% above the current level that is not

being met. Discussions with commercial packers are the only way to really get a sense of how much public need is not being currently met. These discussions are compared with the Forests' knowledge of commercial operations and were subject to professional judgment to provide the most accurate assessment of unmet need.

It is estimated that unmet need represents an additional **1,004-2,008** clients that need commercial packing services.

Demographic Trends

Perhaps the most difficult portion of this need quantification involves quantifying the future need for commercial services given the obvious demographic trends. Given demographic trends, there will be an increased need for these commercial services in the future. Exactly how much of an increased need will result from these demographic trends, however, is difficult to determine. Again using professional judgment, it is estimated that demographic trends will result in a 75-100% increase in need over the current level of service that is provided. This gain translates into a range of need from **1,265 to 2,008**.

Overall Need

Given the three components described above, the level of need for commercial services ranges from **7,329 clients to 9,234 clients**. Again, this range is an estimate using professional judgment of some factors that may essentially be impossible to quantify (e.g., unmet need and demographic trends). The need for these services will increase in the future; exactly how much the need will increase is difficult to say; thus the Needs Assessment provides a range of need.

Day Rides

In 2004, there were approximately 4,000 day rides in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. Again, the term "wilderness day ride" is a bit of a misnomer as the vast majority of these rides only skirt wilderness and do not penetrate very far in the wilderness. Given demographic trends, it is expected that there will be an increase in need for these types of rides. Demographic trends are difficult to quantify, but again it is estimated that these trends will result in a level of need 35-50% above current levels. This results in a range of day ride need of **5,400 to 7,500 clients**.

XI. Extent Necessary for Commercial Services in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses

The results from the 2005 Commercial Pack Client survey indicate that the vast majority of commercial pack stock users are using the service to support activities that are proper for wilderness. Further, the level of need currently provided is likely less than what the public needs to access the wilderness area. Given demographic trends, it is likely that the need for these services will continue to grow in the future. The Needs Assessment has identified a range of need of **7,329 to 9,234 overnight clients**. The day ride need for these wildernesses is estimated to be to **5,400 to 7,500 clients**.

It is the intent of this Needs Assessment to identify the level of commercial services that will meet the public's need for these services. As discussed above, this level is best expressed as a

range. To meet the requirements of the Wilderness Act, the level of need provided must also ensure that wilderness character is maintained in these wilderness areas. The challenge, then, is to settle upon the level that meets the identified range of public need and also protects the wilderness character of the area.

The *Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses Final EIS* provides an analysis and disclosure of the expected environmental effects of six alternatives. These six alternatives provide various levels of commercial packing service along with different mechanisms for controlling that use. The Record of Decision that accompanies the Final EIS will provide the rationale for selecting one of these alternatives. This rationale will include an evaluation of the effect of the selected alternative on the wilderness character of these wildernesses. The ROD will also include a finding of compliance with the Wilderness Act for the selected alternative.

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Attachment 1: 2005 Commercial Pack Client Survey

Currently, the Inyo and Sierra National Forests are analyzing the effects of commercial pack station operations in the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. A portion of this analysis involves the gathering of information related to the public use of commercial pack stock in the wilderness. Thank you for your assistance.

It would be most helpful if the survey is returned on or before **August 15, 2005**.

1. What wilderness area did you visit on your trip? John Muir Ansel Adams
 Dinkey Lakes Not Sure
 Was this your first visit to a wilderness area? YES NO

2. Please describe the group that went on your pack-supported trip:
 individual
 family
 friends
 organized group
 other (please describe) _____

3. What type of trip did you take?
 day ride
 full service (traveling trip, all expense)
 spot (you ride in with packer and gear to site)
 dunnage (you walk to site, packer takes gear)

4. What was the destination of your trip? _____

5. What was the purpose of your trip (check as many as is applicable)?
 fishing hunting
 access to wilderness setting nature viewing
 horse riding transportation of gear
 family gathering hiking/mountain climbing
 escape from every day routine, relaxation
 other (please identify) _____

6. Why did you choose to use pack and/or riding stock for your wilderness trip?

7. Without commercial services, would you have taken the trip? YES NO
 Please explain

8. Could you have met the purposes of your trip by taking a horse trip outside the boundaries of wilderness areas? YES NO Please Explain

Inyo and Sierra National Forests
Ansel Adams and
John Muir Wilderness

**Trail and
Commercial Pack Stock
Management**

**FEIS Alternative 2
- Modified -**

December 2005



Legend

Destination Management

- Geographic Unit
- Destination Zone
- Stock Camp
- Spot/Dunnage
- Pack Station Location

Designated Campsites

Trails

- Not Restricted
- Not Suitable for Commercial Stock
- Not Suitable Until Repaired
- Approved User Trail

System Trails

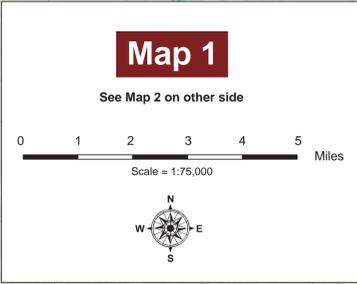
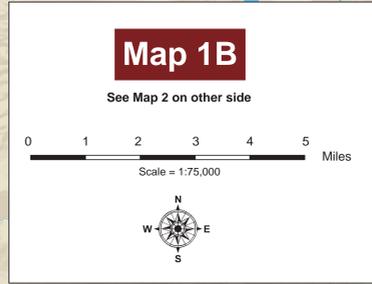
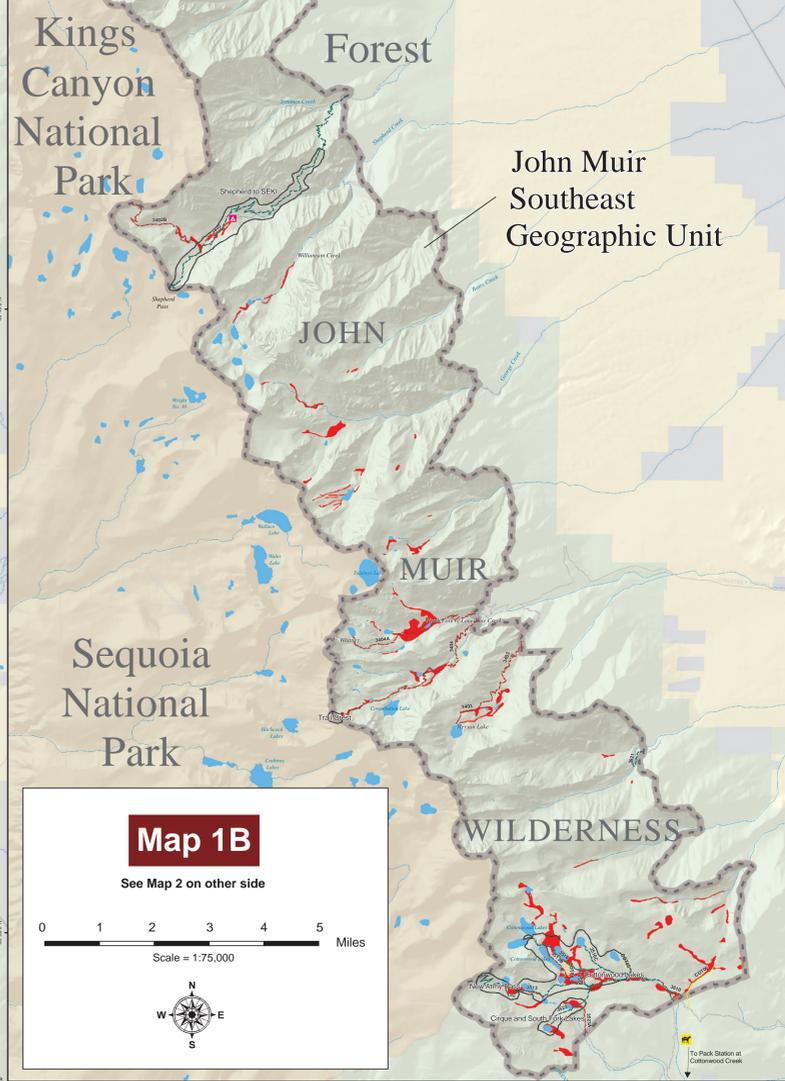
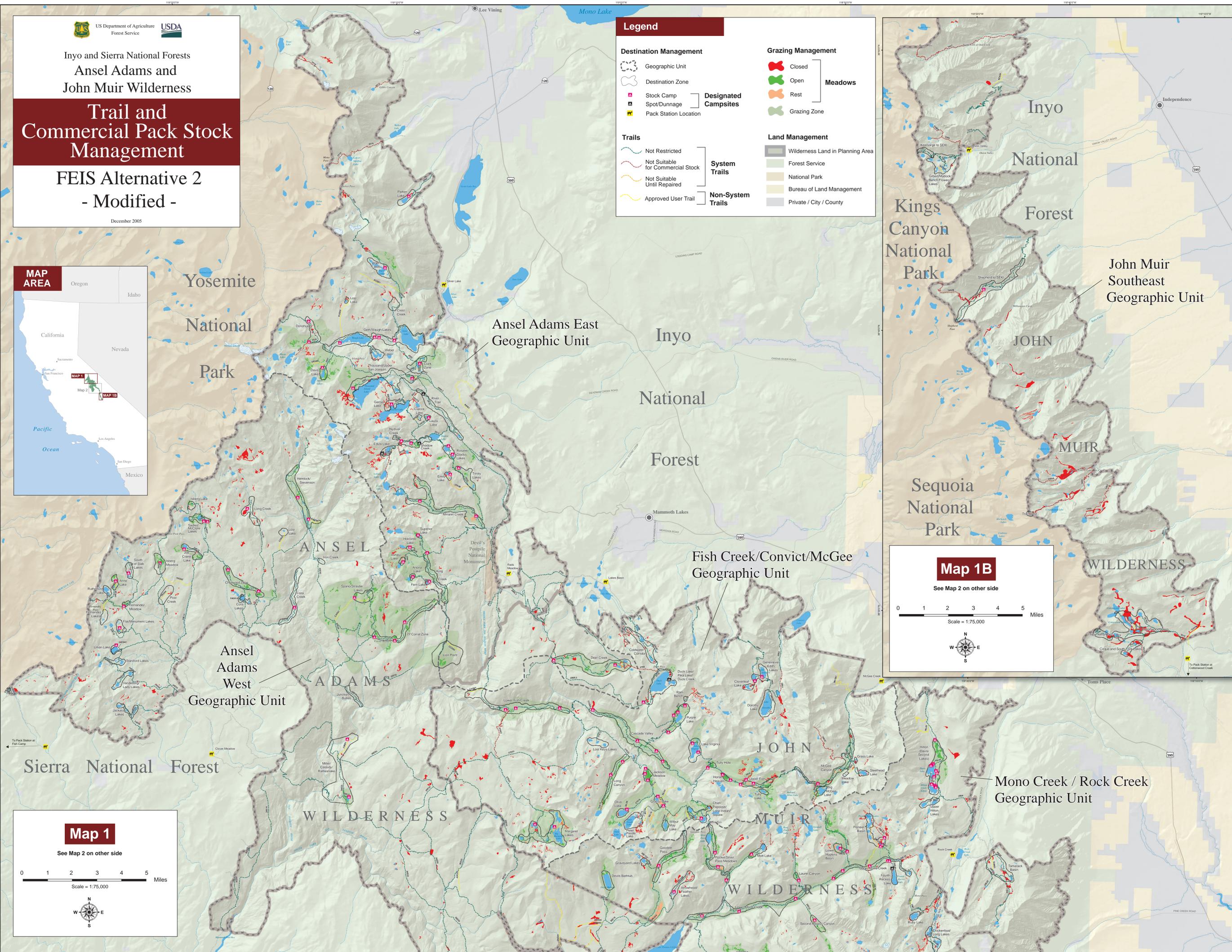
Non-System Trails

Grazing Management

- Closed
- Open
- Rest
- Grazing Zone

Land Management

- Wilderness Land in Planning Area
- Forest Service
- National Park
- Bureau of Land Management
- Private / City / County



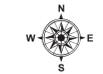
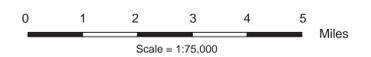
Trail and
Commercial Pack Stock
Management

FEIS Alternative 2
- Modified -

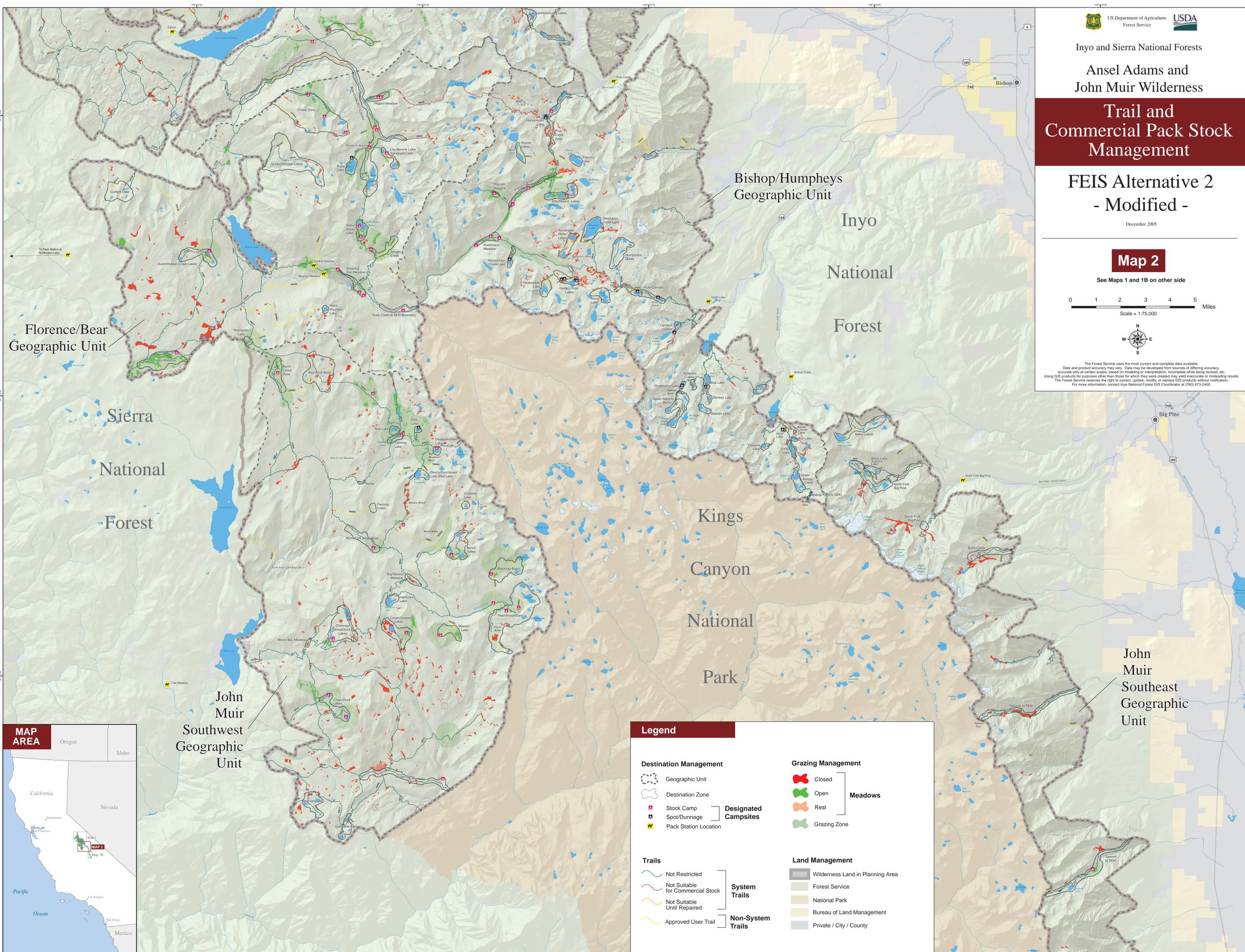
December 2005

Map 2

See Maps 1 and 1B on other side



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Legend

<p>Destination Management</p> <ul style="list-style-type: none"> Geographic Unit Destination Zone Stock Camp Spot/Dunnage Pack Station Location 	<p>Designated Campsites</p> <ul style="list-style-type: none"> Stock Camp Spot/Dunnage Pack Station Location 	<p>Grazing Management</p> <ul style="list-style-type: none"> Closed Open Rest Grazing Zone
<p>Trails</p> <ul style="list-style-type: none"> Not Restricted Not Suitable for Commercial Stock Not Suitable Until Repaired Approved User Trail 	<p>System Trails</p> <ul style="list-style-type: none"> Not Suitable for Commercial Stock Not Suitable Until Repaired 	<p>Non-System Trails</p> <ul style="list-style-type: none"> Approved User Trail
<p>Land Management</p> <ul style="list-style-type: none"> Wilderness Land in Planning Area Forest Service National Park Bureau of Land Management Private / City / County 		