

320 PUBLIC NOTICES

NOTICE OF DECISION for the Commercial Pack Station and Pack Stock Outfitter/Guide Per- mit Issuance Project Inyo National Forest Inyo, Mono, Madera, Tulare, and Fresno Counties, California, and Mineral County, Nevada

As the Responsible Official, Forest Supervisor Jeffrey E. Bailey signed a Record of Decision on 1/24/2007, approving the *Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance Project*. The selected alternative will continue commercial pack stock use (guided trips supported by horses, mules, or burros) on the Inyo National Forest. In order to implement the decision, the Inyo National Forest will authorize new special use permits for 12 existing pack stock operators and one outfitter/guide. New permits will be authorized and issued to applicants who meet all applicable administrative requirements.

The Final Environmental Impact Statement and Record of Decision are available for review at the Inyo National Forest Supervisor's Office, 351 Pacu Lane, Bishop, California, 93514. Copies can be obtained by contacting Erin Lutrick at the Supervisor's Office, by phone at 760-873-2400 or by email at elutrick@fs.fed.us. The FEIS can also be downloaded from the Inyo National Forest website at <http://www.fs.fed.us/r5/inyo/projects/>.

Decision Subject to Appeal

This decision is subject to administrative review (appeal) pursuant to 36 CFR Part 215. The appeal must be filed (regular mail, fax, e-mail, hand-delivery, express delivery, or messenger of service) with the Appeal Deciding Officer at: Appeal Deciding Officer, Bernard Weingardt, Regional Forester, USDA Forest Service, 1323 Club Drive, Vallejo, CA 94592.

Appeals may be submitted by FAX (707) 562-9229 or by hand-delivery to the Regional Office, at the address shown above, during normal business hours (Monday-Friday 8:00am to 4:00pm). Electronic appeals, in acceptable formats [plain text (.txt), rich text (.rtf) or Word (.doc)], may be submitted to: appeals-pacificsouthwest-regional-office@fs.fed.us

Subject: Inyo NF Commercial Pack Stock Project.

In cases where no identifiable name is attached to an electronic message, a verification of identity will be required. A scanned signature is one way to provide verification.

Appeals, including attachments, must be filed within 45 days from the publication date of the legal notice of this decision in the *Inyo Register* newspaper. Attachments received after the 45 day appeal period will not be considered. The publication date of the legal notice in the *Inyo Register* is the exclusive means for calculating the time period to file an appeal (36 CFR 215.15 (a)). Those wishing to appeal should not rely on dates or timeframe information provided by any other source.

Individuals and organizations who submitted comments during the comment period specified at 36 CFR 215.6 may appeal this decision. The notice of appeal must meet the appeal content requirements at 36 CFR 215.14.

Implementation

If no appeals are filed within the 45-day time period, implementation of the decision may occur on, but not before, 5 business days from the close of the appeal filing period. When appeals are filed, implementation may occur on, but not before, the 15th business day following the date of the last appeal disposition.

Published: 02/10/2007

(IR 2/10, #6923)



United States
Department of
Agriculture

Forest
Service

Inyo National Forest

351 Pacu Lane, Suite 200
Bishop, CA 93514
(760) 873-2400
(760) 873-2486 FAX
(760) 873-2538 TDD

File Code: 1950-3

Date: January 2007

**Subject: *Commercial Pack Station and Pack
Stock Outfitter/Guide Permit Issuance***

Dear Interested Citizen:

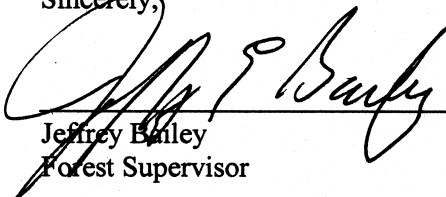
The Final Environmental Impact Statement (FEIS) and Record of Decision for the *Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance* project have been completed. The FEIS and Record of Decision are available in hard copy or compact disc (CD) format. Both documents can be also downloaded from the Inyo National Forest website at <http://www.fs.fed.us/r5/inyo/projects/>.

As described in the Record of Decision for the *Permit Issuance Project*, I have selected a modified Alternative 2 (the Selected Alternative) for implementation. The Selected Alternative will continue commercial pack stock use (guided trips supported by horses, mules, or burros) on much of the Inyo National Forest. In order to implement this decision, the Inyo National Forest will authorize new special use permits for 12 existing pack stock operators and one outfitter/guide.

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For more information regarding the *Permit Issuance* project, please contact Erin Lutrick, Project Leader, at 760-873-2400 or by email at elutrick@fs.fed.us.

Sincerely,



Jeffrey Bailey
Forest Supervisor





United States
Department of
Agriculture

Forest
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Inyo National Forest

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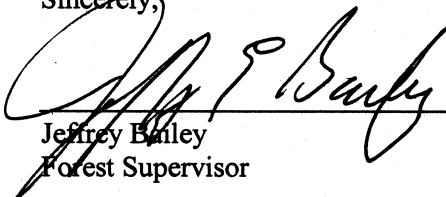
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Sincerely,



Jeffrey Bailey
Forest Supervisor



Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance

Record of Decision

Lead Agency: USDA Forest Service

Responsible Official: Jeffrey Bailey
Forest Supervisor
Inyo National Forest

Location: Inyo National Forest
Mono, Inyo, Madera, Fresno, and Tulare
Counties, California and Mineral County, Nevada

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Introduction

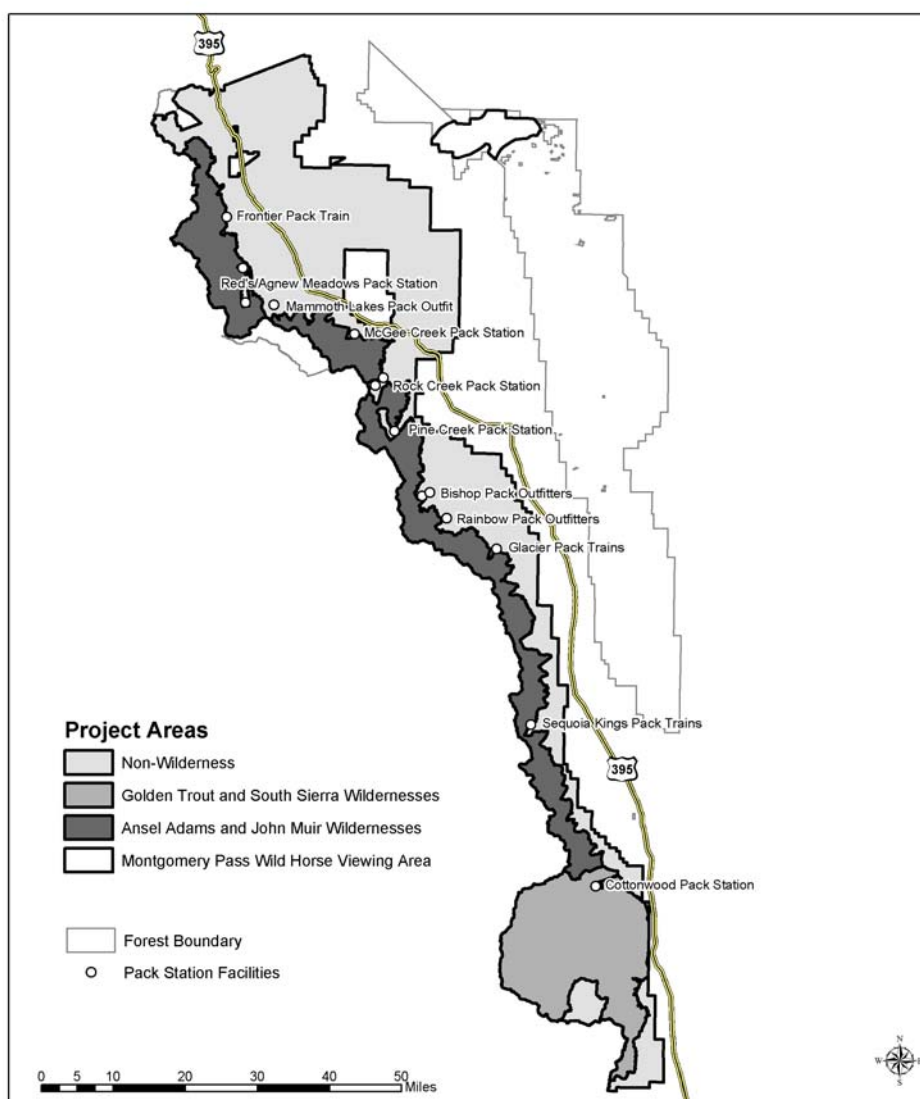
A Final Environmental Impact Statement (FEIS) disclosing the effects of a no-action alternative and two action alternatives has been completed for the Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance Project. This Record of Decision (ROD) documents the decision of Forest Supervisor, Jeffery E. Bailey, to select an alternative for implementation. The FEIS is available for public review at the Forest Supervisor's Office of the Inyo National Forest, 351 Pacu Lane, Bishop, California, 93514. A copy can be obtained by contacting Erin Lutrick at the Supervisor's Office, or by phone at 760-873-2545. The FEIS can also be downloaded from the Inyo National Forest website at <http://www.fs.fed.us/r5/inyo/projects/>.

The project area for this analysis includes approximately 1.4 million acres in the Inyo and Sierra National Forests within Inyo, Mono, Madera, Tulare and Fresno Counties in California and Mineral County in Nevada. The project area is divided into four analysis units: Non-wilderness areas, Montgomery Pass Wild Horse Viewing Area, Golden Trout/South Sierra Wildernesses, and the Ansel Adams/John Muir Wildernesses.

The non-wilderness analysis unit includes all of the Inyo National Forest outside of the designated wilderness lands, excluding the eastern portion of the Forest in the White and Inyo Mountains.

Commercial recreational stock packing in the project area began in the latter part of the 19th century, when ranchers began to hire out their horses, mules, and burros and guide people on hunting, fishing and camping trips in the Sierra.

At the peak of commercial packing in 1935, there were 22 pack stations in operation in the project area. Today, twelve resort pack stations and one pack stock outfitter/guide offers services to visitors ranging from short day rides to full service, multi-day pack trips in the back country.



The existing pack stations have been under permit to the Inyo National Forest for many decades, some since the 1920s. The pack stations are located in areas with heavy recreational use. They are situated at trailheads that lead to high mountain passes where pack stock support can be useful or necessary in order for some members of the public to access more remote parts of the Forest. The pack stations provide a unique recreational experience not available in all recreation-based communities, helping to draw visitors to the area and increase overall economic stability.

From 2001 through 2004, the pack stations served an average of 18,000 people annually. This includes wilderness and non-wilderness use¹. The number of people who seek out pack stock services in the project area will likely increase in the future as the population 1) becomes increasingly urban and less knowledgeable and skilled in the outdoor world; 2) experiences rapid population growth and ages rapidly; 3) becomes less physically fit than the past; and 4) is more likely to be physically challenged or limited (Appendix F, FEIS). In a survey of pack stock clients in the Golden Trout (GT) and South Sierra (SS) Wildernesses, more than one-third of the respondents indicated their group contained members who were unlikely to visit the wilderness without pack support because of age and/or physical fitness (Appendix F, FEIS). Shifts in demographics may lead to fewer full service trips into the back country, and more demand for shorter day ride trips.

Recent pack station operations in the Ansel Adams/John Muir (AA/JM) Wildernesses have been constrained by the conditions and restrictions of a 2001² court order issued by the Northern California U.S. District Court. The court order reduced use, restricted party size, and imposed trail limitations in the AA/JM Wildernesses until further site-specific analysis was completed as part of this Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance Project. Until completion of this analysis, no substantial changes could be made to the pack stations' permits. Further, due to the temporary permit status currently in effect, major site improvements were not feasible because without the guarantee of long term permit status the operators could not obtain bank loans.

Purpose and Need

In 2005, twelve resort pack station operators and two pack stock outfitter/guides submitted special use permit applications to the Inyo National Forest requesting continuation of current operations and services. One of the outfitter/guide applications (Long Valley Llamahaul) was denied for administrative reasons.

The underlying need for this project is to process the permit applications submitted by the 13 pack stock service providers and to identify the terms and conditions of the permits, including facilities, activities and uses. In meeting the aforementioned needs the action must also achieve the following purposes:

1. Provide stock packing services as part of a wide range of recreational activities on the Inyo National Forest, available in geographically dispersed locations, consistent with the 1988 Inyo National Forest Land and Resource Management Plan (LRMP) as amended; 2005 Ansel Adams / John Muir Needs Assessment; and 2006 Golden Trout South Sierra Needs Assessment.
2. Implement the 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses FEIS/ROD, which provides direction related to pack station use in the two wildernesses.

¹ The number of clients served does not include stock drives or overnight trips in the front country.

² The original Court order was issued in November 2001, but was modified slightly in 2002.

3. Provide for a business and operational climate that encourages long-term and predictable stability for commercial pack stock operations, contributing to the economic sustainability of surrounding communities (2001 Sierra Nevada Forest Plan Amendment; 1988 Inyo National Forest LRMP).
4. Respond to the Court Order issued in 2001 that required the Forest Service to evaluate the impacts of commercial pack stock operations on the AA/JM Wildernesses prior to issuing permits for these operations.
5. Maintain, or trend toward desired conditions for wildlife, vegetation, soil, water, heritage resources, social experience, and wilderness character (1988 Inyo National Forest LRMP and subsequent Forest Plan amendments).



Clients riding out of Truman camp on a wild horse viewing trip

Summary of the Decision

I have decided to implement **Alternative 2 as described in the FEIS with the following modifications:**

- A maximum of 10 case-by-case overnight trips will be allowed in the South Sierra Wilderness. Day use levels in the Golden Trout/South Sierra (GT/SS) Wildernesses will be limited to serving 250 clients. These modifications will ensure that the levels of allowable use are within the identified need as derived through the Needs Assessment process (Appendix F, FEIS). Pack stock use and its effects will be monitored as described in Appendix A of this ROD. Use levels in the GT/SS Wildernesses can be adjusted to the levels allowed by and analyzed for in Alternative 2 (section 2.3.3.5, item B of the FEIS) in response to demonstrated increases in need for pack stock services.

- All pack stock grazing in the project area will follow the utilization levels set by Inyo National Forest LRMP Amendment #6. Estimated initial use levels for all pastures in the project area are listed in Table B-1, Appendix B of this ROD. Application of LRMP Amendment #6 will provide greater resource protection and will accelerate a trend toward desired conditions in six pastures with resource concerns.

In order to implement the direction in the Selected Alternative, the Inyo National Forest will authorize new special use permits for 12 commercial pack stations and one outfitter/guide to provide pack stock supported services in the four analysis units of the project area:

Frontier Pack Train	Bishop Pack Outfitters
Red's Meadow and Agnew Meadow Pack Stations	Rainbow Pack Outfitters
Mammoth Lakes Pack Outfit	Glacier Pack Train
Rock Creek Pack Station	Mt. Whitney Pack Trains
McGee Creek Pack Station	Sequoia Kings Pack Trains
Pine Creek Pack Station	Cottonwood Pack Station
	Three Corner Round Pack Outfit

The Selected Alternative prescribes the management direction under which these pack stations will operate.

It is anticipated that the Forest Service will issue Resort Special Use Permits for a term of 20 years to the pack stations, and a 10 year outfitter / guide permit to Three Corner Round, provided the applicants meet all requirements according to Forest Service policy (FSH 2709.11, Chapter 10; FSM 2711.3, Part 4). In order to secure a permit, applicants must meet certain administrative requirements including:

- Financial Ability Determination (FAD)
- Insurance review
- Environmental Site Report
- Title VI review (Civil Rights)
- Fee Calculation
- Compliance Review

My decision is based on my review and careful consideration of the environmental analysis, public comments, and new information and analysis brought forward in the Permit Issuance FEIS and the 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses EIS and ROD. I believe the Selected Alternative (Alternative 2, with the above modifications) provides the ideal balance between resource protection and public use and enjoyment of National Forest System lands.

Although I make this decision based upon the best information currently available to me, I do recognize there is some uncertainty and risk that comes with this decision. I expect that by placing an emphasis on adaptively managing these commercial uses to achieve desired conditions, we can actively manage these uses and continue to improve conditions over time.

My decision includes a non-significant amendment to the 1988 Inyo National Forest Land and Resource Management Plan (LRMP) to increase the number of pack stations allowed to operate in the Golden Trout (GT) Wilderness. See the section titled *Non-Significant Forest Plan Amendment* for more information about this amendment.

Rationale for the Decision

How the Decision Meets the Purpose and Need

Based on the analysis of the alternatives presented in the Final Environmental Impact Statement (FEIS) for the Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance Project, I have determined that the Selected Alternative best meets the purpose and need for action.

Purpose 1. Provide stock packing services as part of a wide range of recreational activities on the Inyo National Forest, available in geographically dispersed locations.

The Selected Alternative will provide for high quality, dependable stock packing services by:

Authorizing selected pack stations to increase herd size. Authorization to increase herd size at 5 pack stations will allow the pack stations to adjust to changing visitor demands, while providing high quality and dependable stock packing services. Increased herd size provides more varied stock needed for different clients, such as larger horses for heavier clients or gentler horses for children or timid riders. It also allows for improved stock welfare, allowing rest days for often worked animals, which will provide healthy stock for safer conditions for clients, the stock, and pack station employees.

Allowing pack stations to meet increased demand for day rides and shorter trips. Changing demographics and user preferences have led to a greater demand for day rides and shorter trips, which often occur in the front country outside of designated wilderness areas. This decision allows for a moderate increase in front country use through the authorization of larger herd sizes at 5 of the 12 pack stations. As described above, allowing a limited increase in herd size will give these pack stations pack stations the flexibility they need to adjust to changes in client demands without. The increase in herd size will not come at the expense of resource conditions. Adverse effects to environmental resources were not identified during a careful and thorough evaluation of the impacts of increased herd size (Chapter 3, FEIS). Day use will be managed through total herd size rather than use allocations.

Retaining all currently permitted pack stations. Authorization of all 12 existing pack stations and one outfitter/guide will provide pack stock services for visitors in the geographic locations where there is demand for pack stock services. The existing pack stations and outfitter/guide are well-distributed across the Forest to provide an ideal range of visitor experiences and options. No additional permits were determined to be needed since the current locations represent a reasonable and adequate distribution for the Forest. I considered reducing the number of permitted pack stations and outfitter guides (see page 2-36 of the FEIS). However, because each pack station location offers unique access to the Forest and serves a demonstrated need for commercial services, I believe it is important to retain all currently permitted pack stations.

Authorizing use levels consistent with the 2005 Ansel Adams / John Muir Needs Assessment and the 2006 Golden Trout / South Sierra Needs Assessment.

- **Ansel Adams and John Muir Wildernesses.** Consistency with the Needs Assessment for the Ansel Adams and John Muir Wildernesses was extensively analyzed in the 2005 AA/JM EIS and ROD. That Needs Assessment established the need for commercial packing services in the wildernesses and identified a range of use that meets this need. Future needs and anticipated trends were also considered in the Needs Assessment. The Selected Alternative for the AA/JM management direction allows a level of service that is within the range of need identified in the Needs Assessment. Use levels were limited and are at the low range of the identified need in order to preserve wilderness character.
- **Golden Trout/South Sierra Wildernesses.** The Needs Assessment for the Golden Trout/South Sierra (GT/SS) Wildernesses establishes the need for commercial stock packing services and

identifies a use range for this need (FEIS, Appendix F). The Needs Assessment indicates that the types of services currently provided by pack stock outfitters generally met the purposes of the Wilderness Act.

However, when demographic trends and current unmet needs were assessed, it was found that the use levels proposed by Alternative 2 exceeded the needed use range identified through the Needs Assessment process. For this reason, I have decided to modify Alternative 2 for implementation. The Selected Alternative reduces use levels in the Golden Trout and South Sierra Wildernesses to be consistent with the need identified in the Needs Assessment. The use levels allowed by this decision meet the requirements of the Wilderness Act, and were designed to preserve wilderness character and to only authorize the extent necessary to meet the purposes of the Wilderness Act.



*Bullfrog Meadow
in the Golden
Trout Wilderness*

Purpose 2. Implement the 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses FEIS/ROD.

The cumulative impacts of commercial pack stock operations in the AA/JM Wildernesses were analyzed in the 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses EIS (2005 AA/JM FEIS/EIS).

The 2005 AA/JM ROD identified and analyzed appropriate use levels, but did not assign those use levels to specific pack stations. My decision for the Permit Issuance project incorporates and implements the management direction for the Ansel Adams and John Muir Wildernesses as described in the 2005 AA/JM ROD. It assigns each pack station: 1) limits for stock in the wilderness at one time; 2) destination quotas; 3) day ride destinations; and 4) all expense trip quotas.

My decision also establishes management direction for the three other analysis units in the project area: non-wilderness areas, Montgomery Pass Wild Horse Viewing Area, and Golden Trout / South Sierra Wildernesses.

Purpose 3. Encourage long-term and predictable stability for commercial pack stock operations, and contribute to the economic sustainability of surrounding communities.

My decision will encourage long-term stability for the pack stock operations by:

Allowing pack stations to meet increased demand for day rides and shorter trips by increasing herd sizes for 5 of the 12 pack stations. With changing demographics likely leading to fewer long, all expense trips into the back country, and more demand for shorter day ride trips, it is my decision to afford pack stations flexibility to adjust to changes in client demands. This alternative allows the pack stations the ability to provide services to meet public need and demand.

Pack stations contribute to the economic stability of communities in the project area. The pack stations provide a unique recreational experience not available in all recreation-based communities, which helps to draw visitors to the area and contribute to this area's economic stability.

Allowing for issuance of permits with a specific term and specific conditions. It is anticipated that following this decision, the Forest Service will determine the length and type of permit to be issued. This decision does not automatically issue permits to the pack stations and outfitter guide. According to Forest Service policy, all applicants must meet certain requirements such as Compliance and Insurance Reviews in order to secure a permit. These are administrative tasks and not part of the NEPA process.

It is anticipated that the 12 pack stations will receive Resort Special Use Permits for a term of up to 20 years, and Three Corner Round will receive an outfitter guide permit for a term of 10 years, provided the applicants meet all administrative review requirements according to Forest Service policy. Longer term permits will provide a known, stable operating regulatory environment, enabling pack stations to make improvements and secure bank loans.

The Selected Alternative authorizes the specific terms, conditions, and appropriate use levels for commercial pack stock use in the project area. Conditions of the permits will be established based on direction in Chapter 2, section 2.3.3 of the FEIS, as modified by this decision. I believe the site-specific management direction provided by the Selected Alternative creates a predictable environment for the pack station operators. This in turn creates an operational climate that encourages long term planning and stability. The Selected Alternative provides sufficient use to allow the packers to remain in business and significantly lower use levels would likely lead to some of the packers going out of business.

I recognize that some commenters are concerned about the environmental consequences associated with 20 year special use permits. However, special use permit administration, specifically annual operating plans which become a part of the permit, allows adjustments in management direction in response to changing conditions and resource impacts over the term of the permit. My decision incorporates an adaptive management strategy to respond to changing conditions, results of monitoring, or new information (Appendix A, ROD). 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).

Purpose 4. Respond to the Court Order issued in 2001 by the Northern California U.S. District Court that required the Forest Service to evaluate the impacts of commercial pack stock operations on the AA/JM Wildernesses prior to issuing permits for these operations.

In 2001, the Northern California U.S. District Court issued a Court Order that required the Forest Service to evaluate the cumulative impacts of commercial pack stock operations in the AA/JM Wildernesses by December 2005. The Court also ordered that the site-specific impacts of each special use permit issued to the commercial pack stations be analyzed in a subsequent NEPA analysis to be completed by December 2006.

Completion of the FEIS for the Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance project in December 2006 responds to the court's order to analyze the impacts of issuing permits to commercial pack stations. Actions for all pack stations in the project area were analyzed in the FEIS. We

used this approach in order to accurately portray the cumulative effects of use by all pack stations based on the Inyo National Forest.

This decision stems from the analysis disclosed in the Permit Issuance Project FEIS. It incorporates and implements direction from the 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses EIS/ROD (2005 AA/JM EIS/ROD) that analyzed cumulative effects of pack stock operations in the two wildernesses. The 2005 AA/JM FEIS/ROD identified and analyzed use levels, but did not assign those use levels to specific pack stations. My decision assigns each pack station in the project area: 1) quotas for stock in the wilderness at one time; 2) destination quotas; 3) day ride destinations; and 4) all expense trip quotas.

My decision to implement a modified Alternative 2 is based on the analysis disclosed in the Permit Issuance FEIS, which tiers to analysis of the cumulative impacts of commercial pack stock operations in the Ansel Adams and John Muir Wildernesses completed in December 2005. During the analysis of use in the AA/JM Wildernesses, a team of resource specialists visited hundreds of specific locations and analyzed the effects of pack stock use at a site-specific level. I used that site-specific analysis to inform my decision in 2005 to limit pack stock and group size, and designate trails and campsites for commercial stock use in the AA/JM Wildernesses.

That analysis, along with site-specific visits to the rest of the project area, informs this decision to authorize specific pack station operations on the Inyo National Forest and portions of the Sierra National Forest in the Ansel Adams/John Muir Wilderness. Together with my decision to implement the actions described in the 2005 AA/JM ROD, the Selected Alternative will provide site specific direction for commercial pack stock use on the Inyo National Forest.

The court-ordered injunctive relief sought to address resource issues in the AA/JM Wilderness with an across-the-board reduction of use. The analyses completed for the 2006 Permit Issuance FEIS and the 2005 AA/JM FEIS, however, do not indicate that resource conditions can be improved simply by reducing use. Our interdisciplinary approach, with site specific analysis of locations, impacts, and use - impact relationships led us to a carefully crafted solution to resolve resource concerns where and when they are identified.

Purpose 5. Maintain or trend toward desired conditions for wildlife, vegetation, soil, water, heritage resources, social experience, and wilderness character.

The Selected Alternative represents a balance between the need to provide pack stock services and the need to maintain or improve conditions for a variety of resources, including wilderness character. The Selected Alternative achieves that balance by implementing different control mechanisms (e.g., trip quotas, service days, or destination quotas³) to limit use based on resource concerns and management objectives.

- In the more heavily visited **AA/JM Wildernesses**, use is controlled through the use of destination management, which dictates the number of spot/dunnage trips allowed by each pack station to each authorized destination, as well as the number of traveling trips allowed by each pack station. There are also limits on the number of stock in the wilderness at one time, per outfit, to prevent temporal spikes in commercial pack stock use.

³ Trip quotas limit use by number of trips to a large geographic area, such as one wilderness area. A service day is defined as a day or any part of a day on National Forest System lands for which an outfitter or guide provides goods, services, including transportation, to a client. A destination quota is a limit on the number of trips to small geographic area, such as a lake or a drainage.

- In the less visited **GT/SS Wildernesses**, use is controlled by number of trips instead of destination management. My decision will allow 125 trips through the GT/SS Wildernesses, with 70 of those trips to destinations within the Wildernesses and 55 with an ultimate destination in Sequoia Kings Canyon National Parks (SEKI). Although this decision will allow more use than reported in the recent past, I am confident that the increase will not contribute to negative effects to wilderness character or other resource conditions because of the low levels of recreational use and few impacts related to commercial pack stock use.
- Use in the **Montgomery Pass Wild Horse Viewing Area** is limited by service days (the same number of service days established by the 1992 Montgomery Pass Wild Horse Plan), and overnight use can only occur at the two established base camps.
- In most of the **non-wilderness areas** of the project area, use is limited by herd sizes and is restricted to approved trails in high density recreation areas (HDRAs). Extensive field review by resource specialists found few resource concerns in non-wilderness areas other than stock holding and grazing in pastures. To provide greater resource protection and accelerate achievement of desired vegetation conditions in pastures, I have decided to modify Alternative 2 by implementing the pasture utilization levels set by Inyo LRMP Amendment #6 (table B-1, Appendix B).

The effects of this modification have been fully analyzed in the EIS. For most pastures, the effects will be the same as described for Alternative 3 in the EIS. For three of the pastures, implementation of Amendment #6 utilization levels will move the pastures closer to desired vegetation conditions than Alternative 2, but not as quickly as Alternative 3.

Mammoth Lakes Basin and Rainbow Falls near Red's Meadow are the two areas within the non-wilderness analysis unit where service days will be used to control day ride use instead of herd size. I determined that a specific cap on use was needed in these areas because they are heavily used by commercial pack stock as well as hikers and other visitors.

While my decision allows for continued commercial pack stock use on the Inyo National Forest, it does not do so at the expense of long-term resource conditions. Management requirements (i.e., mitigation measures) have been built into the design of the Selected Alternative to avoid or mitigate environmental impacts. Management requirements specific to the Selected Alternative are included in the description of proposed actions in section 2.3.3 of Chapter 2. These management requirements are part of the project design and are considered standard practice.

Examples of standard management requirements include removing manure at least once per year at each pack station; adding or removing improvements such as signs, tent platforms, or outhouses; and moving or constructing fences in pastures. These requirements will be implemented to prevent water quality degradation caused by manure entering water, protect springs and streams in pastures from trampling or manure input, or improve pack station operations or condition.

How the Decision Responds to the Issues

Analysis of public comments received in response to the proposed action distributed in August 2005 resulted in the identification of six significant issues. (More information about the public involvement process for this project is provided in the *Public Involvement* section below.) I have considered how the Selected Alternative responds to each of the significant issues.

Issue 1. Commercial pack stock use in Sequoia/Kings Canyon National Parks

My decision allows a maximum of 55 trips to the boundary of Sequoia/Kings Canyon National Parks (SEKI) through the Golden Trout Wilderness. The trip quota is consistent with recent use levels reported

by the pack station operators. SEKI managers expressed concern that allowing 55 trips into the Park from the Forest may adversely affect meadow resources in the National Park. Responding to this concern was difficult because I cannot regulate pack stock use within the National Park itself. I can only regulate the activities of permittees on National Forest System (NFS) lands, and few concerns have been identified on NFS land that could be mitigated by reducing the number of authorized trips to the SEKI boundary. Park managers will determine (through the Park's permit issuance process) the terms and conditions of commercial pack stock activities entering the Park.

Issue 2. Day ride use in the Mammoth Lakes Basin

I have decided to allow a limited increase in the number of day rides offered in the Mammoth Lakes Basin. Concerns about day ride use in the Mammoth Lakes Basin were primarily focused on perceived conflicts between commercial pack stock users and other users (day hikers, backpacker, and mountain bikers, among others). In order to evaluate the extent of conflict and congestion concerns in the Lakes Basin, the interdisciplinary team examined records of pack station-related complaints, and spoke with staff responsible for the management of the Lakes Basin. That analysis indicated that most visitors to the Mammoth Lakes Basin do not perceive a problem with current pack stock use levels and that increasing use by 10 percent (to 7,700 service days) is not expected to exacerbate the situation.

Allowing some limited growth in day rides in the Lakes Basin will enable us to meet the needs of the public without compromising resources or the experiential setting. Shifts in demographics are expected to lead to less demand for full service trips into the back country and more demand for shorter day ride trips. Because of the growth in summer recreation activities and lodging capacity in the Mammoth Lakes area, I expect there to be more demand for day rides in the area than other parts of the Forest. Allowing limited growth in day rides in the Lakes Basin will give the local pack station the flexibility to adjust to shifts in client demand as well as opportunities to expand their businesses.

I recognize there is some uncertainty regarding the impacts of day ride use in the Mammoth Lakes Basin. The adaptive management toolbox (Appendix A) provides a comprehensive set of tools that I plan to use as necessary to adjust commercial pack stock use in response to changing conditions and other situations. If resource conditions deteriorate unexpectedly due to pack stock use, or if conflicts become apparent between commercial pack stock trips and other forest visitors, the toolbox gives me the flexibility to adjust day ride use levels in the Mammoth Lakes Basin.

Issue 3. Commercial pack stock operations as proposed, including facilities, pasture grazing and camps in riparian conservation areas (RCAs), may adversely affect water quality and RCA condition and trend.

Water quality sampling conducted at two of the pack stations within riparian conservation areas (RCAs) indicates that current practices offer effective water quality protection (FEIS, Ch.3, Table 3.33). Samples were also taken from three pastures. Although fecal coliform levels exceeded standards within the pastures, adjacent downstream samples met water quality standards.

Despite the evidence that current practices offer effective water quality protection, I have decided to adopt additional controls in order to further reduce the potential for manure to enter water sources. My decision will implement mitigations such as regular manure removal and proper disposal, the relocation of corrals further from water sources, and construction of berms to prevent runoff from entering streams (FEIS, Chapter 2 section 2.3.3). The management requirements incorporated into the Selected Alternative will effectively protect water quality and RCA condition.

My decision will implement Inyo LRMP Amendment #6 grazing standards for all pastures grazed by commercial pack stock (Table B-1, Appendix B). These standards will provide greater riparian protection in six pastures compared to Alternative 2, and better protect stream function, meadow ecological condition, and fen habitat.

My decision will allow five of the pack stations located within RCAs to increase the size of their herds. Mitigation measures will be implemented to ensure the larger herds do not result in an increase in manure entry into surface water. Manure entry into water is actually expected to decrease under the Selected Alternative (FEIS, section 3.3.2, Hydrology and Soils).

The Selected Alternative includes monitoring of fecal coliform and turbidity levels during snowmelt, after thunderstorms, and during dry, low flow periods at pack stations within 100 feet of water (Appendix A, ROD, Table A-2). Monitoring data will help alleviate uncertainties regarding the potential for manure entry into water. Changes to operations or facilities can be made if water quality monitoring indicates that either fecal coliform or turbidity in surface water exceeds standards.

Issue 4. Service days in the GT/SS Wildernesses may be a more effective and exact method to regulate commercial pack stock use levels compared to the number of trips as relied upon in the proposed action.

My decision implements different mechanisms (e.g., trip quotas, service days, or destination quotas) to limit pack stock use in different parts of the Forest based on resource concerns and management objectives. I have chosen to limit overnight use in the Golden Trout (GT) and South Sierra (SS) Wildernesses by enforcing overnight trip quotas rather than the service day allocations currently in use. The maximum number of annual trips allowed under my decision (115 overnight trips in the GT and 10 in the SS, including through trips with a destination in SEKI) will meet the need identified in the Needs Assessment for the GT/SS Wildernesses (FEIS Appendix F). Each trip will include no more than 15 people and 25 stock, although we expect levels to remain close to current averages (five clients and nine pack stock; FEIS p. 3-16).

Using overnight trip quotas will allow me to regulate the number of trips each operator can take to three general areas within the two wildernesses. The 1982 GT Wilderness Management Plan does not include any mechanisms to direct commercial stock use towards or away from a particular destination. As a result, the Cottonwood Pass Trail to the boundary of the Sequoia / Kings Canyon National Parks experiences heavy pack stock use compared to less popular destinations within the wilderness areas. Limiting the number of trips on this trail corridor will prevent a decrease in opportunities for solitude along the Cottonwood Pass Trail. (FEIS Chapter 2, section 2.3.3.5)..

Use of an adaptive management toolbox (Appendix A) gives me the flexibility to adjust use levels in response to changing conditions or demand. Trip quotas for the GT/SS Wildernesses can be adjusted if resource conditions deteriorate unexpectedly and corrective mitigations cannot be prescribed; if user conflicts become apparent; or if the need for pack stock services increases.

Issue 5. Interpreting the Golden Trout Wilderness Plan (as the proposed action does) to allow case-by-case approvals for additional operators may limit the revenue opportunities of existing operators.

The Selected Alternative will amend the management direction contained in the 1982 Golden Trout (GT) Wilderness Management Plan by allowing any permitted pack station to request use of a limited number of case-by-case trips in the GT Wilderness. (See the *Non-Significant Forest Plan Amendment* section for more information.)

Direction in the GT Wilderness Plan limited use in the GT Wilderness to just two operators: Mount Whitney Pack Trains and Cottonwood Pack Station. The concern was raised that allowing all pack stock outfitters to apply for case-by-case trip approvals may limit revenue opportunities for the two existing operators.

By allowing case-by-case approvals, outfitters that regularly operate in the Ansel Adams (AA) and John Muir (JM) Wildernesses will have the opportunity to extend their operating season by conducting trips in the GT/SS Wildernesses when other areas are under snow. The snow pack in these two wilderness areas typically melts before the snow pack in the AA and JM Wildernesses.

Case-by-case approvals will allow limited use by other outfitters. A maximum of 5 case-by-case trips through the GT Wilderness into Sequoia / Kings Canyon National Parks (SEKI) and 10 trips with destinations in the GT Wilderness will be allowed. Because use levels for Mount Whitney Pack Trains and Cottonwood Pack Station in the GT Wilderness will not be reduced in order to allow case-by-case trips for other operators, and both operators will be able to apply for the case-by-case trips, I do not expect this change to adversely affect their revenue opportunities.

Issue 6. The proposed action may not adequately address off-trail travel by commercial stock. Off-trail travel may create new trails and impact off-trail resources, including heritage resources, hydrology/soils, and sensitive plants.

During an extensive review of the areas around pack stations and heavily used trails, the interdisciplinary team identified a few areas where off-trail travel has the potential to result in the creation of new trails or undesired impacts to other resources (FEIS, sections 3.2.3, 3.3.2, 3.4.2.2, and 3.4.2.3). The team did not discover new trails created by pack stock operators, even though existing direction does not prohibit off-trail travel outside of wilderness areas. The potential impacts of off-trail commercial pack stock are thoroughly analyzed in Chapter 3 of the FEIS (sections 3.2.3, 3.3.2, 3.4.2.2, and 3.4.2.3).

Based on that analysis, I have determined that off-trail travel by commercial pack stock in most areas is not a major source of resource damage or degradation in the project area. In order to ensure that problems do not develop, the Selected Alternative prohibits off-trail travel by commercial pack stock in high density recreation areas where most non-wilderness use occurs, and where resource conditions necessitate remaining on trails. See Map Tiles 1- 12 in Appendix J of the FEIS for the list of areas where off-trail travel is prohibited. The 2005 ROD prohibited off-trail travel in the AA/JM Wildernesses.

Public Involvement

Scoping on the proposed action for the Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance project began August 9, 2005. Approximately 100 comments on the proposed action were received from individuals, organizations, and government agencies.

Comments were used to identify issues concerning the proposed action. Six significant issues were identified related to: 1) commercial pack stock use in Sequoia/Kings Canyon National Parks, 2) day ride use levels in the Mammoth Lakes Basin, 3) impacts of pack stock operations on water quality and riparian area condition, 4) use of service days rather than trip quotas to regulate pack stock use in the Golden Trout/South Sierra (GT/SS) Wildernesses, 5) impacts of case-by-case trip approvals in the GT Wilderness on the revenue opportunities of existing operators, and 6) impacts of off-trail travel by pack stock. The six issue statements are listed and discussed above in How the Decision Responds to the Issues.

The significant issues were used to develop alternatives to the proposed action. Three alternatives were considered and analyzed in detail in the EIS (Chapter 2, section 2.3). These alternatives are summarized in the following section. In addition, another six alternatives were analyzed briefly in the EIS but eliminated from further detailed study (FEIS Chapter 2, section 2.5).

Public review of the Draft EIS (DEIS) began March 24, 2006, when the Notice of Availability was published in the *Federal Register*. Over 200 comments were received on the DEIS, 120 of which were identical form letters. Forest Service responses to comments can be found in Appendix E of the FEIS.

Many comments focused on general approval or disapproval of pack stock in wilderness or front country areas, while others expressed reservations about the issuance of 20-year permits, impacts of pack stock use on other users and resources, and the adequacy of monitoring and enforcement. Other comments identified deficiencies in the process and analysis, including the range of alternatives, public review opportunities, and issue determination.

Comments on the DEIS led us to make factual corrections, enhance a number of elements of the analysis, and develop additional alternatives for consideration. For example, between Draft and Final EIS, we developed mitigations to address public concerns about resources, included in section 2.3.3 of the FEIS. We also collected additional data and better explained management actions throughout the document to improve the information used for alternative refinement. The Forest also used public input to develop the monitoring strategy and adaptive management “toolbox” described in Appendix A. The toolbox provides a comprehensive set of tools that I can use as necessary to adjust commercial pack stock use in response to changing conditions and other situations.

Description of Alternatives Considered in Detail

Three alternatives were considered and analyzed in detail in the EIS. These alternatives are summarized in the following section and compared in Table 1. Complete descriptions of the three alternatives can be found in Chapter 2 of the EIS.

Alternative 1 – No Action

The No Action Alternative does not allow for any commercial pack stock use on the Inyo National Forest. None of the existing or proposed uses would be authorized under special use permit and all facilities maintained solely for commercial pack station operations would be removed from National Forest System lands. There would be rehabilitation of existing sites, including revegetation and soil decompaction.

Alternative 2

Under Alternative 2, twelve existing commercial pack stations and one outfitter/guide would be allowed to conduct overnight trips, day rides, cattle drives, and other activities and uses in the project area, with terms and conditions that maintain or improve conditions. This alternative would implement different control mechanisms (e.g., herd size, trip quotas, service days, or destination quotas) for specific areas to regulate use based on resource concerns and management objectives. Alternative 2 would increase herd size for five pack stations and allow for increases in use. I have decided to implement Alternative 2 with the modifications described above in the *Summary of the Decision* section.

Alternative 3

Alternative 3 was created in response to public comments received during scoping. Like Alternative 2, Alternative 3 would issue special use permits to the 12 existing commercial pack stations and one existing outfitter/guide. Alternative 3 is different from Alternative 2 in that it would maintain current herd sizes for all pack stations, authorize lower allowable use to the border of Sequoia-Kings Canyon National Park, measure use in the Golden Trout Wilderness using ‘service days’ instead of trip quotas, and establish

more restrictive standards for pasture grazing. Other differences between the alternatives are listed in section 2.3.4.1 of Chapter 2 of the FEIS.

Table 1. Comparison of the alternatives considered in detail in the EIS. Elements of the Selected Alternative follow those listed for Alternative 2 except Forest Plan Amendment #6 will be used for all grazing management, a maximum of 10 overnight trips rather than 25 trips will be allowed in the SS Wilderness, and day use levels in the Golden Trout/South Sierra (GT/SS) Wildernesses will be limited to serving 250 clients.

Element	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3
Facilities	All pack station facilities removed	Current facilities authorized. Some minor changes to current authorizations are displayed in Section 2.3.3.6 by individual pack station.	With the exception of the Sawmill Corral not being rebuilt, no change from Alternative 2.
Herd Size	n/a	For five pack stations, larger herd sizes are authorized (compared to current authorizations). One pack station resort and one outfitter/guide would be assigned herd sizes where they have not had herd sizes previously allocated.	Current herd size only is authorized for all pack stations except for Glacier Pack Train.
Non-Wilderness Use Levels	n/a	Non-wilderness use is limited by herd size authorizations for each pack station. In the Mammoth Lakes Basin, 10% growth (700 service days) over current authorization (7,000 service days) is authorized. For Red's Meadow, 1,500 service days are authorized for day rides on the Rainbow Falls Trail.	Non-wilderness use is limited by herd size authorizations for each pack station. Use in the Mammoth Lakes Basin is capped at the current authorized level (7,000 service days). For Red's Meadow, no change from Alternative 2.
Stock Drives	n/a	For authorized operators, four stock drives per year are approved on authorized routes.	For authorized operators, two stock drives per year are approved on authorized routes.
Travel Management	n/a	In HDRAs only, commercial pack stock limited to authorized routes. Outside of HDRAs, cross-country travel is permitted except in areas identified as having resource impacts or user conflicts related to commercial stock.	Commercial pack stock is limited to authorized routes except in the following areas where cross-country travel is permitted: MPWHVA, Monache Meadows area, and the GT/SS Wildernesses.

Element	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3
Grazing Standards	n/a	<p>Range readiness: Inyo NF LRMP standards would be implemented for all pack stock grazing.</p> <p>Stream bank alteration: 20% standard for grazing in pastures and incidental to pack trips in the GT/SS Wildernesses, except in wild trout waters where the standard is 10%.</p> <p>Grazing utilization:^a Non-wilderness: Based on vegetation and soil conditions; 40% use for high condition, 30% for moderate to low condition, and 0% (rest) for degraded sites or a downward trend.</p> <p>GT/SS Wildernesses: Inyo LRMP LRMP Amendment #6 standards.</p>	<p>Range readiness: no change from standards in Alternative 2.</p> <p>Stream bank alteration: no change from standards in Alternative 2.</p> <p>Grazing utilization: Inyo LRMP Amendment #6 for all areas including pastures in the non-wilderness and in the GT/SS Wildernesses.</p>
Montgomery Pass Wild Horse Viewing Area	n/a	Maintain use at current level (1000 service days) between mid-April and mid-June. Camps remain in current location.	Use levels are the same as Alternative 2. Move base camps out of Pizona Springs and Truman Meadows.
Golden Trout Wilderness Use	n/a	<p>Camping at existing sites except in 8 locations where sites would be designated.</p> <p>Use levels are set at 115 total trips. Case-by-case approvals are authorized.</p> <p>Day rides would be controlled by herd size.^a</p>	<p>Camping at existing sites except in 8 locations where sites would be designated.</p> <p>Case-by-case approvals are not authorized and use is set at a total of 1,085 service days (approximately 82 trips).</p>
South Sierra Wilderness Use	n/a	<p>Camping at existing sites except at one location where a site would be designated.</p> <p>Day ride would be controlled by herd size.^a</p> <p>Use is set at 25 overnight trips total.^a</p>	<p>Camping at existing sites except in one location where a site would be designated.</p> <p>Use is set at 250 service days (approximately 25 trips total).</p>
Ansel Adams and John Muir Wildernesses Use	n/a	Quotas and wilderness and day ride destinations are assigned. 2005 AA/JM ROD direction is incorporated. Service days assigned to one outfitter/guide.	No change from Alternative 2.

^a. These features of Alternative 2 were modified for the Selected Alternative. Amendment #6 will be used for all pack stock grazing in the project area, a maximum of 10 overnight trips rather than 25 trips will be allowed in the SS Wilderness, and day use levels in the Golden Trout/South Sierra (GT/SS) Wildernesses will be limited to serving 250 clients.

Alternatives Considered but Not Analyzed in Detail

As described above in the *Public Involvement* section, comments received in response to the proposed action suggested alternative methods for implementing the project. I worked with the interdisciplinary team during the preliminary analysis of these suggestions and developed six additional alternatives that are briefly analyzed in the EIS. The six alternatives included:

1. Issue permits with terms shorter than 20 years.
2. Reduce herd size at all pack stations to less than what is currently authorized.
3. Move pack stations that are within Riparian Conservation Areas (RCAs) and close pastures associated with commercial pack stations to grazing.
4. Reduce quotas/service days for the Mammoth Lakes Basin and the GT/SS Wilderness below the levels in Alternative 3.
5. Reduce the number of permitted pack stations and outfitter/guides.
6. Reduce commercial pack stock use levels in the AA/JM Wildernesses below the levels prescribed in the 2005 AA/JM FEIS/ROD.

As explained in Chapter 2, section 2.5 of the FEIS, these alternatives were not analyzed in detail because they were either outside the scope of the purpose and need for the proposal, were represented by one or more of the alternatives considered in detail, or they included components that would cause unnecessary environmental harm. Additional analysis of the first four of the above alternatives is included in the project record, in the document titled "Analysis of 4 alternatives considered but eliminated from detailed study."

Environmentally Preferable Alternative

The environmentally preferable alternative is often interpreted as the alternative that causes the least damage to the biological and physical environment, but other factors relevant to this determination are provided in Section 101 of NEPA. Section 101 states that it is the continuing responsibility of the Federal Government to:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- Attain the widest range of beneficial uses of the environment without degradations, risk to health or safety, or other undesirable and unintended consequences;
- 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;
- Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Based on the factors listed above, I consider Alternative 3 to be the environmentally preferable alternative. While adverse effects associated with both Alternative 2 and 3 are expected to be minor in intensity, Alternative 3 would implement more localized improvements in physical and biological

conditions than Alternative 2. Alternative 3 would maintain current herd sizes and day use levels, contributing to a wide range of beneficial recreational uses of the project area environment. Like the Selected Alternative, it would preserve important historic, cultural, and natural aspects of our national heritage and maintain an environment which supports diversity and variety of individual choice. Forest visitors would have the ability to choose the unique recreational experience provided by commercial pack stock services, although not to the same extent as the Selected Alternative.

Removing all pack station operations from the Inyo National Forest as called for under Alternative 1 (No Action) would eliminate a source of impact on the biological and physical environment. However, I did not identify Alternative 1 as the environmentally preferable alternative because it would not preserve important historic, cultural, and natural aspects of our national heritage or maintain an environment which supports diversity and variety of individual choice. It would also not attain the widest range of beneficial uses without undesirable consequences. As discussed in the FEIS, Alternative 1 would limit the public's ability to choose the method by which they want to access and enjoy the Inyo National Forest, and severely limit the recreational opportunities of the segment of the population that needs pack stock support to recreate in these areas.

Non-Significant Forest Plan Amendment

My decision includes an amendment to the management direction contained in the 1982 Golden Trout (GT) Wilderness Plan, which was incorporated into the 1988 Inyo National Forest Land and Resource Management Plan (LRMP). This amendment will be adopted as **Forest Plan Non-Significant Amendment # 11**. More information about Amendment #11 and the evaluation of significance under the National Forest Management Act (NFMA) is provided below.

Forest Plan Amendment #11

Management direction for the Golden Trout Wilderness is contained in the 1982 Golden Trout (GT) Wilderness Plan, which was incorporated into the 1988 Inyo National Forest LRMP. Direction in the 1982 GT Wilderness Plan limited use in the GT Wilderness to the following operators: Cottonwood Pack Trains, Kennedy Meadow Pack Trains, Golden Trout Wilderness Pack Trains, Mineral King Pack Trains, Knowles Pack Outfit, Mt. Whitney Pack Trains, and Golden Trout Camp. Of those, only Cottonwood Pack Station and Mt. Whitney Pack Trains are still in operation.

Amendment #11 will revise the management direction contained in the 1982 GT Wilderness Plan on page 29, items g(2) and (3).

- g (2). "Existing packer and pasture permittees (except Tunnel Packstation and pasture at Tunnel Mdw., Jordan Hot Springs, and Golden Trout Camp) as of 1980 (Appendix F) will be allowed to continue. No additional permits will be issued for these uses. However, permittees may be replaced through changes in ownership or by prospectus.
- g (3). Cottonwood Pack Trains, Kennedy Meadow Pack Trains, Golden Trout Wilderness Pack Trains, Mineral King Pack Trains, Knowles Pack Outfit, Mt. Whitney Pack Trains, and Golden Trout Camp permittees will continue to operate under special use permit."

Items g(2) and (3) will be replaced with the following (from Chapter 2 of the FEIS, section 2.3.3.5, Item B), which will apply to the portion of the wilderness area managed by the Inyo National Forest:

1. A total of 115⁴ overnight trips per year would be authorized in the GT Wilderness and would be divided among the following operators and destinations with some case-by-case approvals available:
 - Cottonwood Pack Station: 40 trips to the border of SEKI, either to Trail Pass or beyond Cottonwood Pass. 30 trips to destinations within the GT Wilderness;
 - Mt. Whitney Pack Trains: 10 trips to the border of SEKI, either to Trail Pass or beyond Cottonwood Pass, 20 trips to destinations within the GT Wilderness; and
 - 5 case-by-case trips to the border of SEKI, either to Trail Pass or beyond Cottonwood Pass, and 10 trips to destinations within the GT Wilderness. Any Inyo National Forest permitted commercial pack stock operator may apply for trips into GT Wilderness on a case-by-case basis (first-come, first-served) to be approved by the authorized officer. The Forest intends to manage case-by-case trips in the GT Wilderness as a pool of use, and to allocate that pool annually.

Instead of limiting use in the GT Wilderness to just Cottonwood Pack Station and Mt. Whitney Pack Trains, the Selected Alternative will allow all existing pack stations to request use of a limited number of case-by-case trips into the GT Wilderness. The Selected Alternative will allow a maximum of 5 case-by-case trips through the GT Wilderness to the border of Sequoia/Kings Canyon National Parks and 10 case-by-case trips to destinations within the GT Wilderness.

By allowing case-by-case approvals, outfitters that regularly operate in the Ansel Adams (AA) and John Muir (JM) Wildernesses will have the opportunity to extend their operating season by conducting trips in the GT Wilderness when other areas are under snow. The snow pack in the GT Wilderness typically melts before the snow pack in the AA and JM Wildernesses.

Evaluation of Significance

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 the national forest. Several criteria are used to determine the significance of forest plan amendment (Forest Service Handbook 1909.12, Chapter 5.32). Based on the analysis of these criteria, I have determined that Forest Plan Amendment #11 is non-significant.

1. Timing.

In order to implement the direction in the Selected Alternative, the Inyo National Forest will authorize new special use permits for 12 commercial pack stations and one outfitter/guide by April, 2007. The Inyo National Forest LRMP was completed in 1988 and is scheduled to be revised in 2010, towards the end of the Forest Plan planning cycle. This action cannot wait for the revision process to be completed, because the court has ordered completion of the analysis of the impacts of commercial pack stock operations by December 2006.

2. Location and Size.

Amendment #11 applies only to the part of the GT Wilderness (193,000 acres) on the Inyo National Forest (2.1 million acres). The area affected by this amendment represents less than one tenth of the Forest. Furthermore, the GT Wilderness experiences low levels of use (section 3.2.1.2 of the FEIS), so the amendment should affect few of the visitors to the Forest.

⁴ A trip is defined as overnight service provided by a commercial packer utilizing up to the maximum people and stock permitted per party (for both the GT/SS Wildernesses, a maximum of 15 people and 25 stock are permitted per party).

3. Goals, Objectives, and Outputs.

Amendment #11 does not alter the long-term relationships between the levels of goods and services projected by the 1988 LRMP / 1982 GT Wilderness Plan. The increase in the number of case-by-case trip approvals in the GT Wilderness will not trigger an increase or decrease in pack stock use in the rest of the project area.

This amendment is consistent with the goals, objectives and outputs set forth in the Inyo Forest Plan and the 1982 GT Wilderness Plan. It does not add new uses or higher use levels than were authorized in the 1982 Plan. Although additional pack stations will now be allowed to apply for a limited number of case-by-case trips, authorized use levels in the GT Wilderness will remain below those authorized in the 1982 Plan.

4. Management Prescription.

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

Conclusion. Based on consideration of the factors above, I have determined that adoption of this amendment is not significant in the context of NFMA. This amendment is fully consistent with current Forest Plan goals and objectives.

I hereby amend the Forest Plan / 1982 GT Wilderness Plan with this non-significant amendment by allowing all pack stations to request use of a limited number of case-by-case trips into the GT Wilderness.

Monitoring and Mitigation

All practicable means to avoid or minimize environmental harm have been adopted in the design of the Selected Alternative. I have included all of the project design features and mitigation measures that I believe are necessary to avoid, minimize, or rectify impacts on affected resources resulting from pack stock management activities. Management requirements and mitigation measures for the Selected Alternative will be implemented as described in Chapter 2, section 2.3.3.5 of the FEIS, as modified by this decision. My decision also incorporates the mitigation measures listed in the 2006 Programmatic Agreement between the State Historic Preservation Office, Advisory Council on Historic Preservation, and the Forest Service and other interested parties.

Monitoring of pack stock operations will help determine the success of project activities and provide information useful for future adaptive management. The project monitoring plan (Appendix A of this ROD) identifies data collection procedures as well as priorities for monitoring based on needs, risks and uncertainties of certain outcomes. This monitoring direction applies to all parts of the project area except the Ansel Adams/John Muir (AA/JM) Wildernesses.

Operations within the AA/JM Wildernesses will be monitored according to the direction contained in Appendix D of the 2005 AA/JM ROD, which is incorporated by reference here. The monitoring plan includes priority areas, timing, and methods for monitoring within the AA/JM Wildernesses.

While the Forest Service intends to fully implement the monitoring plans set forth in this decision and in the 2005 EIS and ROD, there is the possibility that in the future there will be insufficient funds to fully implement the plan, or that regional and national priorities will change. Further, implementation of all or part of the plans is not a precondition to commercial pack stock operations. See Appendix A for more information about monitoring plan objectives.

Other Required Findings

My decision complies with the plans, laws, and executive orders listed below and described in Chapters 1 and 3 of the FEIS.

Forest Plan Consistency

As described in the section titled *Non-Significant Forest Plan Amendment*, my decision includes an amendment to the 1982 Golden Trout Wilderness Plan, which was incorporated into the 1988 Inyo National Forest Land and Resource Management Plan (LRMP). The amendment is fully consistent with current Forest Plan goals and objectives.

With the amendment, this decision is fully consistent with the current LRMPs for the Inyo and Sierra National Forests, as amended. The Selected Alternative meets the programmatic management direction for the South Sierra Wilderness contained in the LRMP and amended in 1993 (Forest Plan Amendment #1). The Selected Alternative is also consistent with Forest Plan Amendment #10 (2005), which supplemented the LRMP management direction for the Ansel Adams and John Muir Wildernesses.

National Environmental Policy Act (NEPA)

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), including consideration of a reasonable range of alternatives, consideration of cumulative effects, and use of the best available information, data, and science to help estimate environmental consequences. All substantive comments on the DEIS have been summarized and responded to in the FEIS. Responses to comments are contained in Appendix E of the FEIS.

National Forest Management Act (NFMA)

This decision conforms to the 1982 planning regulations (36 CFR 219) that implement the National Forest Management Act (NFMA). These regulations were recently changed (65 FR 67513). Transition language within the new regulations permits plan revisions and amendments, such as the amendment that is part of this decision, to be completed under the 1982 regulations. Consistent with the National Forest Management Act (NFMA), the amendment has been evaluated for significance. The results of that evaluation are provided in the section titled *Non-Significant Forest Plan Amendments*. In addition, my decision uses Management Indicator Species (MIS) to estimate the effects of each alternative on fish and wildlife populations. Effects on MIS are disclosed in Chapter 3 of the FEIS.

Wilderness Act

This section documents our conclusion and findings related to the preservation of wilderness character for the Golden Trout (GT) and South Sierra (SS) Wildernesses as mandated by the Wilderness Act (Public Law 88-577). Findings related to wilderness character in the Ansel Adams (AA) and John Muir (JM) Wildernesses were included in the 2005 AA/JM ROD and are incorporated here by reference. Our findings for each of the four qualities of wilderness character in the GT/SS Wildernesses are discussed below.

Untrammeled. The Selected Alternative will not affect the untrammeled quality of the two wilderness areas. There are no actions contained in the Selected Alternative that impose intentional controls or manipulations of ecological processes that affect ecosystems at the wilderness scale in order to facilitate commercial pack stock use. Although effects of past actions unrelated to pack stock use, most notably

fire suppression, fish stocking, and more recently fish habitat restoration, are still visible on the wilderness landscape, commercial pack stock use will have no additive effect on the untrammeled quality.

Natural Conditions. The Selected Alternative will have minor, localized effects to natural conditions of the two wildernesses. The Wilderness Act makes it very clear that wilderness 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, recognizing that conditions vary, cycle and evolve over time.

Under the Selected Alternative, the natural conditions of these wildernesses will continue to be a contrast to modern civilization. Disturbance by commercial pack stock to natural process will be limited to very few site specific locations where their activities may contribute to local soil erosion from campsites and trails. Water quality will remain good except at few very local areas where there may be slight degradation for a short duration, within standards. Grazing of commercial pack stock will occur in meadows that have been determined to be suitable for grazing and grazing will be regulated with range on dates, and streambank trampling and utilization standards.

The small amount of transportation livestock use that will occur in the same areas as production livestock will not evoke any additional or significant effects to any of these qualities of wilderness character in comparison to the legitimate production livestock.

No significant effects to any species or ecological process will occur as a result of pack stock activities. A rich diversity of flora and fauna will remain. This is because the levels of assigned use are within an acceptable level that protects species and processes, and the use is relatively very low relative to the area of the GT/SS Wildernesses. No more than 70 overnight trips per year will be conducted to destinations in the GT or SS Wilderness. This is not to say that there will be no disturbance or effects to natural conditions, but that the disturbance will occur at few locations and will remain within acceptable levels so wilderness character will be maintained.

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 an undeveloped environment.

The level of development that will ensue with this alternative does not change from current conditions. Trails that are used by packstock as well as the other visitors to these wildernesses are the only feature considered to have any developed characteristics. The scale of this development is so small as to be hardly discernable to the average visitor, especially in the wide open landscape of the Kern Plateau, which makes up most of the GT/SS Wilderness area. Potential future actions to develop trails may value recreational uses over the undeveloped quality, however the scale of this development is insignificant in contrast to the developments for recreation in non wilderness areas. Additionally, trail development also functions to protect resource conditions, such as meadow resources, stream crossings and sedimentation into water. Further, due to its low gradients and sandy soils, relatively little trail development is required or occurs in the GT/SS Wildernesses.

The GT/SS Wildernesses contain a number of fences, corrals, and buildings associated with production livestock grazing. Commercial pack stock will not be allowed to use these facilities, but will be allowed to use public corrals and pastures. Therefore, some previous developments will be utilized under the Selected Alternative. These corrals and pastures help prevent widespread resource damage by concentrating impacts in suitable locations.

Campsites will have no level of development at most locations other than a small diameter (less than two feet) rock ring for containing ash, wood and coals and at some, 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.

Outstanding opportunities for solitude or a primitive and unconfined type of recreation. The Selected Alternative has minor effects on the unconfined recreation of commercial pack stock visitors. With restriction of camping to specific sites in eight general locations, there may be visitors that cannot stay in the exact campsite they desire. Visitation is further regulated by party size, and to previously existing campsites. Commercial pack stock are also not allowed to travel off-trail in meadows before the meadows reach range readiness. However, use for commercial pack stock clients is allowed in almost all locations, and therefore the confinement is minimal. The Selected Alternative does not affect unconfined recreation opportunities of non-commercial pack stock users. It maintains a level of use that will allow the public to enjoy a wilderness experience to almost any location in the GT/SS Wildernesses.

Solitude will be protected in this alternative by the limitations on the total number of annual trips that can occur in the GT/SS Wilderness. No more than 70 overnight trips per year will be conducted to destinations in the GT or SS Wilderness. Because there will not be restrictions on the number of stock that can enter the GT/SS Wildernesses on any one day, there will be occasions when 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. This is true mainly along the trail over Cottonwood Pass and into SEKI, where most use in the GT/SS Wildernesses is concentrated. There are no areas of concentrated camping use currently in the GT/SS Wildernesses. Because the GT/SS Wildernesses will continue to receive a low level of use relative to its size (outside of the Cottonwood Lakes Basin), the Selected Alternative will maintain high opportunities for solitude for commercial and non-commercial visitors.

In summary, throughout the EIS we demonstrate and support a finding of preserving wilderness character summarized above. It is important to highlight that use levels identified in this decision are limited more by our determination of need than by protecting wilderness character. Actual use levels in these two wildernesses are very low, particularly in relation to use levels in the adjacent Ansel Adams and John Muir Wildernesses. The findings from the Needs Assessment led me to my decision to limit the use levels proposed as part of Alternative 2 to ensure that allowable use levels for the GT/SS Wildernesses are within the identified range of need for pack stock services. This level of use, when examined in relationship to the four primary qualities of wilderness character, indicates that some factors are affected more than others, but all factors collectively and individually meet the requirement of the Wilderness Act to preserve wilderness character.

Endangered Species Act (ESA)

Non-Wilderness, Montgomery Pass Wild Horse Viewing Area, Golden Trout, and South Sierra Wildernesses. The Biological Evaluations prepared in compliance with Forest Service 2670 Manual direction determined that implementation of the Selected Alternative would not affect any Federally listed threatened, endangered or proposed wildlife species. No consultation with the U. S. Fish and Wildlife Service is required under Section 7 of the ESA when a “No effect determination” is concluded as part of the biological evaluation process (FSM 2670.31, #5).

Ansel Adams and John Muir Wildernesses. Consultation with the U. S. Fish and Wildlife Service under Section 7 requirements of ESA was required for the John Muir and Ansel Adams portions of the project area. The consultation occurred prior to issuance of the decision on the Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses Project in December, 2005. The Fish and Wildlife Service reviewed the Biological Assessment (BA) for the threatened, endangered and proposed species. In a letter dated November 18, 2005, the Service concurred with the determination that the Selected Alternative is “not likely to adversely affect” the Sierra Nevada bighorn sheep.

National Historic Preservation Act

Analysis of the effects of the various alternatives and compliance with Section 106 and American Indian concerns for this FEIS and the 2005 AA/JMW FEIS was completed under 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 & Sierra National Forests*.

Historic values for each pack station and outfitter guide operating area will be managed according to the *2006 Programmatic Agreement among the Pacific Southwest Region, USDA Forest Service, California State Historic Preservation Officer, Nevada State Historic Preservation Officer and the Advisory Council on Historic Preservation Regarding the Identification, Evaluation and Treatment of Historic Properties within the Area of Potential Effect of Pack Station and Outfitter Guide Operations on the Inyo and Sierra National Forests, California and Nevada (PA)*. Tribal governments and communities have been consulted in development of the PA, which will exist for the life of the permits.

Clean Water Act

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 section 3.3.2 of the FEIS. Further, the water quality monitoring plan will help determine that the Clean Water Act continues to be met in the future.

Clean Air Act

The level of activities proposed under this decision is not anticipated to violate ambient air quality standards (section 3.3.1, FEIS). Parts of the project area are in non-attainment for PM₁₀, but it has been determined that commercial pack stock use does not contribute to the non-attainment.

Executive Orders

Indian Sacred Sites, Executive Order 13007 of May 24, 1996: All of the alternatives comply with this Executive Order.

Invasive Species, Executive Order 13112 of February 3, 1999: Mitigation measures, project design, and standard management practices address the introduction and spread of invasive species.

Migratory Birds, Executive Order 13186 of January 10, 2001: The effects of this action on migratory birds have been addressed through the NEPA process.

Flood Plains and Wetlands (Executive Orders 11988 and 11990): Compliance with these orders will be assured by incorporating the project riparian management objectives and implementing Best Management Practices, Standard Management Requirements, and project design criteria.

Environmental Justice (Executive Order 12898): Activities proposed for the Pack Station Permit Issuance project would not discriminate against low-income and minority populations in the vicinity of the project area. Activities would not have disproportionately adverse effects on human health and safety or environmental effects for minorities, low income, or any other segments of the population. Scoping was conducted to elicit feedback from all potentially interested and affected individuals and groups without regard to income or minority status.

Civil Rights

The Forest Service is committed to equal treatment of all individuals and social groups in its management programs in providing services, opportunities, and jobs. No actual or projected violation of legal rights to equal protection under the law is foreseen for any individual or category of people as a result of this action.

My decision also establishes management direction for the three other analysis units in the project area: non-wilderness areas, Montgomery Pass Wild Horse Viewing Area, and Golden Trout / South Sierra Wildernesses.

2005 Ansel Adams/John Muir Trail and Commercial Pack Stock Management EIS

In April 2000, a lawsuit concerning the effects of commercial pack stock use in the Ansel Adams/John Muir (AA/JM) Wildernesses was filed against the Sierra and Inyo National Forests in the Northern California U.S. District Court. The lawsuit alleged violations of the National Forest Management Act, NEPA, and the Wilderness Act. The judge found in favor of the plaintiffs on the NEPA claim.

A Court Order was issued that required the Forest Service to evaluate the cumulative impacts of commercial pack stock operations in the AA/JM Wildernesses. That analysis was completed in 2005 as part of the Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses EIS (AA/JM EIS). The Record of Decision for the AA/JM EIS established limits on the number of animals used by commercial operators, limits on group size, trail suitability for various uses, and designation of destinations and campsites for use by commercial pack stations.

The Court also ordered that the impacts of special use permits issued to the commercial pack stations be analyzed in a subsequent NEPA analysis to be completed by December 2006. That analysis is disclosed in the EIS for the Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance Project.

The 2005 AA/JM ROD identified and analyzed appropriate use levels, but did not assign those use levels to specific pack stations. My decision for the Permit Issuance project incorporates and implements the management direction for the Ansel Adams and John Muir Wildernesses as described in the 2005 AA/JM ROD. It assigns each pack station: 1) limits on stock in the wilderness at one time; 2) destination quotas; 3) day ride destinations; and 4) all expense trip quotas.

Outfitter and Guide Wilderness Needs Assessments

Needs Assessments have been completed to evaluate and identify the need for commercial pack stock services in the Inyo National Forest portions of the Ansel Adams (AA), John Muir (JM), Golden Trout (GT), and South Sierra (SS) Wildernesses. The AA/JM Needs Assessment was completed as part of the analysis for the 2005 AA/JM EIS and can be found in Appendix D of that document. The GT/SS Needs Assessment is contained in Appendix F of this FEIS.

Ansel Adams and John Muir Wildernesses. Consistency with the Needs Assessment for the Ansel Adams and John Muir Wildernesses was extensively analyzed in the 2005 AA/JM EIS. That Needs Assessment established the need for commercial packing services in the wildernesses and identified a range of use that meets this need. Future needs and anticipated trends were also considered in the Needs Assessment. The Selected Alternative for the AA/JM management direction allows for a level of service that is within the range of need identified in the Needs Assessment While preserving wilderness character. It is important to highlight wilderness character was the limiting factor for the allowable levels of use.

Golden Trout/South Sierra Wildernesses. The Needs Assessment for the Golden Trout/South Sierra (GT/SS) Wildernesses establishes the need for commercial stock packing services and identifies a use range for this need (FEIS, Appendix F). The Needs Assessment indicates that the types of services currently provided by pack stock outfitters are generally consistent with the purposes of the Wilderness Act. However, when demographic trends and current unmet needs were assessed, it was found that Alternative 2 proposed more use than the range of use that was identified as needed. For this reason, I have decided to select a modified Alternative 2 for implementation. The Selected Alternative reduces day use levels in the Golden Trout and overnight use levels in the South Sierra to be consistent with the need identified in the Needs Assessment. The use levels allowed by this decision meet the requirements of the Wilderness Act, and were designed to preserve wilderness character and to authorize use levels consistent with the purposes of the Wilderness Act.

Implementation Plan

The schedule below shows the implementation steps and anticipated timeline. If no appeals are filed within the 45-day time period, implementation of the decision may occur on, but not before, 5 business days from the close of the appeal filing period. When appeals are filed, implementation may occur on, but not before, the 15th business day following the date of the last appeal disposition. Management actions and mitigations described in Chapter 2, section 2.3.3 of the FEIS will be incorporated into the Special Use Permits and/or Annual Operating Permits issued to the authorized pack stations starting with the 2007 season.

Table 2: Implementation Schedule

Action	Timing
Complete administrative review of permit applicants: <ul style="list-style-type: none"> Financial Ability Determination (FAD) Insurance review Environmental Site Report Title VI review (Civil Rights) Fee calculation Complete Compliance Review 	March 2007
Issue Special Use Permits to qualified pack stations and outfitter/guide incorporating management actions and prescriptions of this decision.	March-April 2007
Completion of Annual Operating Plans (AOP) for the pack stations	June of every year (first in 2007) – or prior to 1 st trip of the season. Annually thereafter prior to 1 st trip.
Implement direction contained in 2005 Pack Stock Management EIS/ROD for AA/JM	Anticipated completion 2008 (2005 ROD pg. 41 ~ <i>resources and funding dependant</i>)
Implement mitigations at facilities as described in section 2.3.3 of the FEIS (corrals etc)	December 2008 (2 seasons)
Complete LRMP Amendment #6 assessments on all pastures and refine grazing utilization levels where necessary	December 2008 (2 seasons)
Designate stock camps (12)	December 2009

Appeal Rights

This decision is subject to administrative review (appeal) pursuant to 36 CFR Part 215. Only those individuals and organizations who submitted comments during the 45 day comment period on the draft EIS (36 CFR 215.6) and otherwise meet the specific requirements of 36 CFR 215.13 have standing to appeal. The Environmental Protection Agency published a Notice of Availability (NOA) for the draft EIS in the *Federal Register* on March 24, 2006; the opportunity to comment ended 45 days following that date. Appeals must be filed within 45 days from the publication date of the legal notice of this decision in *The Inyo Register* newspaper. The publication date of the legal notice in *The Inyo Register* is the exclusive means for calculating the time period to file an appeal (36 CFR 215.15 (a)). Those wishing to appeal should not rely on the dates or timeframe information provided by any other source.

Notices of the appeal must meet the specific content requirements of 36 CFR 215.14. An appeal, including attachments, must be filed (regular mail, fax, e-mail, hand-delivery, express delivery, or messenger of service) with the appropriate Appeal Deciding Officer (36 CFR 215.8) within 45 days following the publication date of the legal notice of this decision. Appeals must be submitted (regular mail, fax, e-mail, hand-delivery, express delivery, or messenger of service) to the Appeal Deciding Officer: Bernard Weingardt, Regional Forester, USDA Forest Service, 1323 Club Drive, Vallejo, CA 94592. Appeals may be submitted by FAX (707) 562-9229 or by hand-delivery to the Regional Office, at the address shown above, during normal business hours (Monday-Friday 8:00am to 4:00pm). Electronic appeals, in acceptable formats [plain text (.txt), rich text (.rtf) or Word (.doc)], may be submitted to:

appeals-pacificsouthwest-regional-office@fs.fed.us

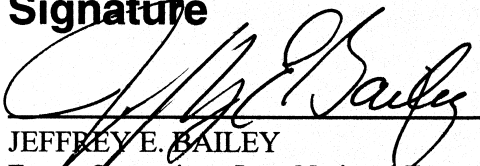
Subject: Inyo NF Commercial Pack Stock Project.

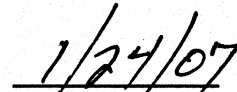
Contact Persons

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

Erin Lutrick, Inyo NF Project Manager
351 Pacu Lane, Suite 200
Bishop CA 93514
(760) 873-2545

Signature


JEFFREY E. BAILEY
Forest Supervisor, Inyo National Forest


Date

Appendix A. Commercial Pack Stock Monitoring, Evaluation and Adaptive Management Plan Summary

Scope of the Monitoring Plan

This monitoring plan applies to commercial pack stock activities outside of the Ansel Adams/John Muir (AA/JM) Wildernesses. Operations within the AA/JM Wildernesses will be monitored according to the direction contained in Appendix D of the 2005 AA/JM ROD.

Goals and Objectives

This monitoring plan incorporates adaptive management to respond to changing conditions, results of monitoring, or new information. Adaptive management is an approach to managing resources where the planning process acknowledges 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 goals of this monitoring plan are to:

1. Describe the monitoring, evaluation and adaptive management process.
2. Prioritize data collection to validate that the management actions described in the Selected Alternative 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 resources.

The Forest Service intends to fully implement the monitoring plans set forth in this decision and in the 2005 EIS and ROD. However, the plans are quite ambitious, and there is the possibility that in the future there will be insufficient funds to fully implement the plan, or that regional and national priorities will change. These are matters that I, as a current decision maker, cannot control. Therefore, while I intend that the monitoring plans set forth in these decisions will be fully implemented, the prior caveats are necessary.

Another important point relative to the monitoring plans is that implementation of all or part of the plans is not a precondition to commercial pack stock operations. That is, the commercial operations approved by this and the 2005 decisions are not contingent upon the implementation of the monitoring plans. All of the environmental impacts displayed in the EISs are based on the amount of authorized packstock operations. Those impacts are not based on the assumption that particular monitoring requirements will be carried out. Therefore, the monitoring plans are not mitigation measures intended to reduce environmental consequences; they are elements of an adaptive management scheme.

Finally, while the adaptive management approach is an important part of these decisions, its success is not dependent on perfect adherence to the monitoring plans. The purpose of the monitoring plans is to gain information and adjust practices based on that information. This adaptive management approach can be successful with varying levels of monitoring, and the FS may be able to make the necessary adjustments to operations even if it has not fulfilled every aspect of the monitoring plan. Furthermore, it is entirely possible that with or without monitoring, no significant adjustments will be necessary in pack stock

operations due to the cautious approach adopted in these decisions and the rigorous analysis supporting the decisions.

Data Collection Process

Standard Forest Service data collection protocols will be used where possible for all the resources and/or features subject to monitoring. Where additional information is necessary, protocols have been developed through the interdisciplinary team process and are documented in the Project Record. Conditions at pastures/meadows, on trails and at pack stations all have designed attribute rating protocols for assessment. Monitoring will be done by Forest staff and trained permittees where appropriate. A training process for staff and permittees is being developed for consistent future data collection and documentation across the planning area. Data collected will be used in the adaptive management process where changes in management become necessary to meet desired conditions. The use of monitoring data for making management changes is described in the toolbox below.

Compliance Monitoring

Objective: Compliance monitoring will be used to validate that the management actions described in the Selected Alternative are being implemented and to monitor compliance with terms and conditions of the permits in locations with frequent commercial pack stock use. This type of monitoring should occur frequently (annually or bi-annually) during the entire permit term and is part of the regular permit administration process. The areas that should receive annual monitoring include the pack stations, authorized pastures, and base camps at Pizona Springs and Truman Meadow. Use level data will be reported by all pack stations monthly throughout the season and will be briefly analyzed monthly and more thoroughly analyzed at the end of each season. The types of monitoring that will be completed are listed in Table A-1.

Table A-1. Compliance monitoring for areas with concentrated commercial pack stock use.

Site Type/ Location	Monitoring Type	Interval
All use areas	Monthly reporting of use by each pack station, including types of trips, destinations, specific locations for camping, grazing in pastures, and any grazing nights in the wilderness.	Monthly
	Inspections of facilities, pastures, trails, wilderness grazing areas, cross country routes. A subset will be chosen for inspection based on reported use.	Annually
Historic Pack Stations*	Historic property condition, including Traditional Cultural Properties (implementation).	Every five years
Pack station facilities and base camps	BMP inspections at facilities less than ¼ mile from water.	Every even numbered year
	Weed inspections at all pack stations.	Annually
	Monitoring of impacts to Father Crowley's lupine at Glacier Pack Train.	Once every 3 years, at minimum

	Monitoring of impacts to William's comb leaf in vernal wet areas in the MPWHT.	Once every 3 years, at minimum
Pastures	Range Readiness determination.	Annually before grazing allowed.
	Utilization measurements Stream and fen alteration (trampling).	Annually (minimum once at the end of grazing season)
	Use reports (see reporting under all use areas above).	Monthly
Meadows in the GT/SS Wildernesses	Range readiness determination (done for both pack stock use and production livestock grazing allotments).	Annually
	Utilization measurements and streambank alteration.	When use >20 stock nights is reported or in conjunction with monitoring of grazing allotments
	Use reports for all grazing (see reporting under all use areas above.)	Monthly
Potential off-Forest sources of weed seeds	Reports of feed and wood sources, wintering locations.	Annually

*"historic property" in this context means historic and potentially historic properties.

Effectiveness Monitoring

Objective: Effectiveness monitoring will be used to determine if the management actions described in the Selected Alternative are working as designed. Results from effectiveness monitoring combined with the information about use from compliance monitoring will be used to implement adaptive management to ensure that changes in management occur as resource condition assessments warrant (see toolbox below). The information collected will determine if the management actions being implemented are effective in maintaining or moving the resource towards desired conditions. Generally this monitoring is done on multi-year intervals to detect change and in locations representative of the larger area. Some monitoring will only be conducted during the initial implementation phase and will be discontinued if management and mitigations are found to be effective. Some locations and/or resources will only be monitored when triggered by certain events, activity, or levels of use. These locations are generally lower priority, but may become higher priority if impacts are documented.

Specialists assessed priorities based on resource concerns and use levels. The following areas have been determined to be the highest need for regular monitoring for effectiveness of the decision. Designated campsites (in the GT/SS Wildernesses), trails, grazing (in the GT/SS Wildernesses), range readiness, fens, recreational impacts, and impacts to heritage resources will be evaluated.

In addition to the monitoring listed, many other monitoring efforts are going on across the Forest in conjunction with other plans and projects. The data from these other projects will be used to inform commercial pack stock management whenever possible. The data being collected includes rare plant surveys and heritage monitoring and surveys.

Table A-2: Effectiveness Monitoring (this table supercedes table 2 in Appendix I of the FEIS)

Site Type/Locations	Monitoring Type	Interval
GT/SS Wildernesses (general area)	Visitor experience, opportunities for solitude, campsite proliferation, campsite condition, and trail condition (Peak season field survey, ranger observations)	Regular wilderness patrols.
	Heritage (trails and camps)	Representative sites, every 2-5 years
	Weed Surveys	Regular wilderness patrols.
Restricted Camping Areas in the GT/SS Wildernesses	Heritage	Representative sites, every 2-5 years
Designated Campsites in GT/SS Wildernesses	Heritage resources effects – representative sites	Representative sites every 2-5 years
	BMP Evaluation (water quality protection)	When selected as part of random BMP evaluation program.
Grazed Meadows in the GT/SS Wildernesses.	Watershed Condition (PFC analysis and Stream Condition Inventory (SCI) where necessary based on PFC).	Every 5-10 years in meadows with average reported use over 75 stock nights.
	Vegetation Condition (Rooted Frequency and Greenline Transects already established for Kern Plateau Monitoring Plan).	Every 5 years
Facilities	Water quality monitoring for fecal coliform and turbidity at pack station facilities closer than 100 feet to water.	Conduct monitoring for at least two years (2007-2008), and longer if water quality degradation is found, to determine whether mitigations are useful. Monitor during snow melt, after a thunderstorm, and in a dry period during the operating season.
Pastures	Vegetation Condition (Rooted Frequency and Greenline transects).	Every five years in each pasture for all monitoring types.
	Stream Condition (Proper Functioning Condition (PFC) and Stream Condition Inventory (SCI) where necessary based on PFC).	Every five years in each pasture for all monitoring types.
	Fen Condition (R5 Fen Condition Checklist).	Every five years in each pasture for all monitoring types.

Site Type/Locations	Monitoring Type	Interval
Approved Day Ride Trails	Forest protocols for "hasty" condition survey, including identification of areas with high resource impacts and evaluation of stream crossings. Utilize existing rating system for rating resource impacts and overall trail resource condition.	Regular patrols
High density recreation areas – Mammoth Lakes Basin, Rainbow Falls, Bishop Creek	Recreational Experience/ conflicts (Peak season field survey).	Every 5 years.
Cross-country routes outside of HDRAs	Monitor for trail related resource impacts and trail development. If new trail becomes evident, record location and follow protocols for resource impacts.	When regular cross-country use to the same destination is reported (two or more trips annually three years in a row, or more than 3 separate trips in one year); or after report of new trail development.
Montgomery Pass Wild Horse Viewing Area	Fen condition	Every 5-10 years
	Campsites (Pizona and Truman)– Best Management Practice (BMP) evaluation.	Every 2 years
Stock Drive/Base Camps: <i>(Tamarack Bench, Glass Mountains, Wells Meadow, Casa Diablo)</i>	Water quality protection (BMP analysis).	Complete BMP analysis on designated stock camps within 2 years of designation. Then, complete BMP evaluation at least once every 5 years. Camps used less than 2 times per year are low priority for BMP evaluation.
	Weed surveys	Every 2-5 years

Toolbox

The following table identifies potential tools for an adaptive management approach to be used over time. The analysis in Chapter 3 of the EIS has considered the outcomes of actions that may need to be modified or adjusted to meet desired conditions, changing conditions or requests for changes. The EIS analysis presumed that the following adaptive tools would be used to meet or move toward desired conditions. 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 A-3 supercedes Table 4 included in Appendix I of the FEIS. It was changed to reflect that this decision has different grazing management for pastures than Alternative 2. This decision will require that Inyo LRMP Amendment #6 is used for grazing management in all areas, including pastures.

Table A-3. Toolbox for Pack Station Adaptive Management

Tools	When to Use	How to Use
Campsites		
Designate a stock camp. Designated spot and dunnage site. Non-wilderness and/or GT/SS Wildernesses	<ul style="list-style-type: none"> When more than occasional competition (5 incidences a year) or conflict occurs at destinations for the use of a campsite between pack stations, or between general public and pack stations. 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. 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. When requested by operator. When a need for a Forest Service administrative stock camp is identified to eliminate conflict with pack stations 	<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).	<ul style="list-style-type: none"> When an operator requests to have an assigned site reserved for their use only and it is an existing designated stock camp. 	Follow procedures for assigned sites in Forest Service Handbook 2709.11 Section 37.21 (h).
Remove a Stock Camp from use	<ul style="list-style-type: none"> If BMP compliance cannot be met Number of sites designated are not needed (in the GT/SS Wilderness only) Monitoring at an area with designated campsites indicates a threshold for management action has been reached, i.e. site does not meet desired conditions or standards. 	<p>Prohibit use of site in annual operating plans.</p> <p>Eliminate and rehabilitate site</p>
Trail Management		
Approve use of a trail in high density recreation area which is	<ul style="list-style-type: none"> Access is requested to a trail which was previously 	SUP administrator evaluates trail after request. Identify key point features or

not currently approved.

- prohibited or not addressed.
- Use to destination is otherwise consistent with desired conditions.
- Conditions which originally created the need to prohibit use have changed or been corrected.
- Route is deemed to be stable at the anticipated use level.

areas of impact, and the presence of risk factors as well as assessment of potential stabilization.

District Ranger assesses trail issues, either through reports generated by field staff, or specialist field visit if potentially large extent or controversial. Evaluate trail stability and consistency with area management.

Remove trail or cross-country route from use by Pack Station.

- New trail has developed due to frequent cross-country commercial stock use, or existing trail shows signs of deterioration relative to baseline condition and unacceptable impacts of resources, *and*
- Risk factors exist which would make it highly unlikely the trail could be stabilized without unacceptable changes in the trail character.
- Impacts to TES, Heritage Resources, or other critical resources cannot be mitigated with continued use.
- Removal of use by pack station will substantially correct trail issues. Other non-commercial use types and levels are not likely to perpetuate continued problems if pack stock use is removed.

SUP administrator 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.

District Ranger assesses issues, either through detailed reports generated by SUP admin, or specialist field visit if potentially large extent or controversy. Specialist(s) evaluates: Extent of physical mitigation, costs, and 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, extent to which commercial stock use is creating the impacts and expectations for improvement with removal of commercial stock.

Reduce amount of approved stock use on trail

- Trail shows signs of deterioration and unacceptable impacts of resources, *and*
- Risk factors exist which would make it highly unlikely the trail could be stabilized without unacceptable changes in the trail character.
- Impacts to TES, Heritage Resources, or other critical resources cannot be mitigated with continued level of use.
- Reduction of use by pack station will substantially correct trail issues. Other non-commercial use types and

SUP administrator 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.

District Ranger assesses issues, either through detailed reports generated by SUP administration.

Evaluate: Extent of physical mitigation, costs, and 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, extent to which commercial stock use is creating the impacts and expectations for

Tools	When to Use	How to Use
	levels are not likely to perpetuate continued problems if pack stock use is reduced.	improvement with reduction of commercial stock.
<p>Confine use to trail outside of HDRAs. (Designate and approve specific access route.)</p> <p>Require physical mitigation and route definition if needed.</p>	<ul style="list-style-type: none"> Access to a destination outside of HDRA is frequent enough that it is causing the development of well-defined trail. Unacceptable impact to riparian or other resources is occurring and cannot be mitigated through dispersal. Defining an access route and performing minor treatments is likely to have a beneficial effect – especially at riparian areas. Use to destination is otherwise consistent with desired conditions. 	<p>SUP administrator evaluates cross-country routes 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>District Ranger assesses issues, either through detailed reports generated by SUP administrator, or specialist field visit if potentially large extent or controversy.</p> <p>Evaluate: Extent of physical mitigation, costs, and 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, extent to which commercial stock use is creating the impacts and expectations for improvement by focusing stock to one maintained route.</p>
Trip Quota Adjustment (Golden Trout and South Sierra Wildernesses only)		
<p>Reduce trip quotas</p> <p>Reduce number of case-by-case approvals in the GT/SS Wildernesses</p>	<p>Impacts at use areas, including trails, use trails, grazing areas, campsite conditions etc, are deteriorating, and corrective mitigations cannot be prescribed. Conflicts become apparent between commercial visitors, and /or between commercial and non commercial visitors.</p> <p>Adjustments to operating plans or permit conditions have not corrected deteriorating resource conditions.</p>	<p>District Ranger directs an assessment of the destination in question to determine if standards, guidelines and desired conditions are being met. If it is found that resource conditions are moving away from desired conditions, adjustments will be made based on this assessment.</p> <p>Resource impact ratings should indicate that commercial pack stock use is a contributing factor to not meeting desired conditions.</p>
<p>Increase trip quotas for allocated outfitters</p> <p>Increase number of case by case approvals in the GT/SS Wildernesses.</p>	<p>Requested by operator.</p> <p>Standards and guidelines for all resources are met and commercial operator demonstrates increased demand, and increased use would maintain condition.</p> <p>Monitoring indicates that resource conditions meet standards.</p>	<p>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.</p> <p>The assessment identifies operator's ability to increase use without a negative impact to desired resource conditions or wilderness character.</p>

Campsites meet BMPs

Standards and guidelines for all resources must currently be met.

Any increase would have to be consistent with identified need for services in the context of the Wilderness Act.

An increase would require an amendment to the Forest Plan.

Adjust Day Ride quotas		
Increase day ride quotas for the Mammoth Lakes Basin	<p>An increase is requested by the operator.</p> <p>The operator identifies increased demand, and standards and guidelines for all resources are met.</p>	<p>District Ranger directs an assessment of the day ride use area in question to determine if standards, guidelines, and desired conditions are being met.</p> <p>The assessment identifies the operator's ability to increase day ride use, without a negative impact to desired resource conditions or wilderness character (if day ride enters wilderness).</p>
Decrease day ride quotas for the Mammoth Lakes Basin	<p>Conditions at use areas, including system trails, use trails, turn around areas, are deteriorating relative to baseline surveys.</p> <p>Conflicts become apparent between commercial visitors and/or between commercial and non-commercial visitors.</p>	<p>The District Ranger directs an assessment of the overall trail system in question to determine if standards, guidelines, and desired conditions are being met.</p> <p>Adjustments will be made based on the assessment, and numbers will be reduced accordingly.</p>
Institute day ride quotas for pack stations that currently do not have quota limits.	<p>Standards and guidelines for any resources are not being met, including system and use trail conditions, use conflicts, and condition of other resources at turn around or lunch areas.</p> <p>Conflicts become apparent between commercial visitors and/or between commercial and non-commercial visitors.</p>	<p>The District Ranger directs an assessment of the overall trail system in question to determine if standards, guidelines, and desired conditions are being met.</p> <p>If it is found that the existing use does not meet desired conditions, and changes in operating plans or other mitigations cannot remedy the situation, then institute day ride quotas at appropriate levels.</p>
Grazing Management		
Reduce utilization in existing pasture or meadow, or rest	<ul style="list-style-type: none"> Monitoring shows that grazing area is not meeting standards/desired conditions or is in a downward trend. Monitoring determines that sensitive plant populations are declining. Monitoring determines that 	<p>District Ranger directs an assessment of pasture condition and trend. Using the adaptive management process in LRMP Amendment #6, decision maker modifies grazing management if possible, or suspends grazing if modification is not sufficient. If pasture or meadow is rested, District Ranger directs establishment of baseline data collection to provide the</p>

Tools	When to Use	How to Use
	fen condition is being degraded.	basis for evaluation of recovery.
Increase allowable utilization in pasture or meadow	<ul style="list-style-type: none"> • Upon Request by Pack station, only when: • Monitoring shows that grazing area is meeting standards/desired conditions at current utilization. 	District Ranger directs an assessment of the pasture or meadow to determine if vegetation and stream conditions are meeting desired conditions. Specialists evaluate the risk of impacts to critical areas and/or special status plant populations. Decision maker modifies utilization using guidelines in LRMP Amendment #6.
Allow grazing in a pasture/meadow rested due to resource impacts.	<ul style="list-style-type: none"> • Upon request by pack station only when: • Monitoring shows improvement in conditions that required rest and grazing area is expected to be meeting or moving towards desired conditions with resumed grazing. 	Rest continues until recovery is documented. District Ranger directs an interdisciplinary team assessment. IDT determines rangeland condition and trend and completes a meadow evaluation including PFC. District Ranger can allow grazing to resume using the adaptive management process and guidelines in LRMP Amendment 6 if monitoring data quantifies improvement in conditions that required rest and IDT determines that resource conditions are sufficient to sustain grazing and stock entry. If grazing is allowed, District Ranger directs IDT to identify any critical areas and determines if any mitigations are needed.
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 an 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.

Herd Size		
Increase Herd Size for non-wilderness use.	<ul style="list-style-type: none"> Requested by operator The operator shows that demand for use is not being met with the current authorized herd size. Resource conditions at pack stations and on trails are being met. 	<p>District Ranger directs permit administrator to evaluate use data, and resource specialists to evaluated increased use and increased herd size held at the pack station on affected resources.</p> <p>Consider both of the above to determine appropriate increase, if any.</p>
Reduce Herd Size for non-wilderness use.	<ul style="list-style-type: none"> Resource conditions at the pack station or on trails are not being met. 	<p>District Ranger directs permit administrator to evaluate use data, and resource specialists to evaluated increased use and increased herd size held at the pack station on affected resources.</p> <p>Consider both of the above to determine appropriate decrease, if any.</p>
Facilities		
Increase frequency of manure removal at pack stations	If manure is found to be entering surface water during rain storms, or has the potential to enter surface water, or water quality monitoring shows that there are elevated levels of fecal coliform and it can be linked to manure in corrals.	Require pack stations to more frequently remove manure from areas near surface water, and either remove it from the site or store it in an appropriate location far from surface water until time for annual removal. Complete annual removal of manure at all pack stations by October 1 st .
Change management of sensitive species at pack station facilities (Glacier).	Monitoring shows a decline in an existing population of sensitive plants.	<p>Improve habitat for sensitive plants by restricting use, fencing, or other appropriate action, depending on the cause of decline.</p> <p>Increase frequency of monitoring to determine effectiveness of treatment.</p>

Tools	When to Use	How to Use
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.

Appendix B. Pasture Grazing Utilization

Estimated initial use factors for pastures in the project area are provided in Table B-1. These estimates may be adjusted as the Forest implements the analysis and process to set standards for each pasture. Because LRMP Amendment #6 is adaptive and utilization factors depend on other restoration or management practices, some pastures have a range of potential use factors. Without other management changes, the initial use factor will likely be at the low end of the range. Pastures should be rested until monitoring shows improvement in conditions and that the pasture will continue to meet or move towards desired conditions if grazing is resumed. See Appendix A and INF LRMP Amendment #6 for standards and process by which these standards can be adaptively changed depending on resource conditions and grazing management.

Table B-1. Estimated initial use factor for pastures in the Selected Alternative.

Pasture Name	Initial Use Factor
Rodeo	Rest
Evans	40%
Agnew West	Rest
Agnew East	40%
McGee	40%
Upper Rock Creek	0-20%
Lower Rock Creek: Meadow Unit	5-20%
Lower Rock Creek: Forest Unit	40%
North Lake Small	25-40%
North Lake Large	15-40%
Art's Pasture	40%
Bishop Park: Office Field Unit	20-40%
Bishop Park: Cardinal Mine Unit	25-35%
Intake 2	None - unsuitable
Donkey – Lower Unit	20-40%
Big Meadow	None - unsuitable
McMurry	40%

Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance Project

Final Environmental Impact Statement (FEIS) Errata

1. FEIS, Volume I, Abstract, page i: The list of counties where the action is located should include *Mineral County, Nevada* in addition to Inyo, Mono, Madera, Tulare, and Fresno Counties, California.

2. FEIS, Volume 1, Chapter 2, page 2-19, heading “C. Activities, Services”: The third paragraph under this heading should be replaced with the following to correct a typographical error in the second sentence.

Authorize the following service and use levels in the AA/JM Wildernesses: Outfitting and guiding services including spot and dunnage, full service trips, day rides, and re-supply trips. *The stock in the wilderness at one time limit is 75.* See Table 2.5 for authorized overnight and day ride destinations and quotas.

3. FEIS, Volume II, Appendix F, page F-19, heading “E. Extent Necessary for Commercial Services in the Golden Trout and South Sierra Wildernesses”: The paragraph under this heading should be replaced with the following to correct typographical errors in the third sentence.

The client survey responses indicate most if not all commercial pack stock clients are using the service to support activities that are proper for wilderness. Although not all clients have had a public need to take a commercial pack stock trip, the total public need will likely grow in the future due to unmet needs, the effects of Forest management actions in the Ansel Adams and John Muir Wildernesses, and demographic trends. This Needs Assessment has identified a range of need of 542 to 768 overnight clients annually for the GT/SS Wildernesses. The range of need for day rides is estimated to be 236 - 263 day riders annually.



United States
Department of
Agriculture

Forest
Service

Inyo National Forest

351 Pacu Lane, Suite 200
Bishop, CA 93514
(760) 873-2400
(760) 873-2538 TDD

File Code: 1900/2320/7730

Date: March 27, 2007

Subject: *Errata #2 for the Commercial Pack
Station and Pack Stock Outfitter/Guide Permit
Issuance*

Dear Interested Parties:

The Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance Final EIS and associated Record of Decision were released to the public in January 2007. Also distributed to the public in January 2007 was Errata #1. This Errata #2 contains an additional correction to those documents. For additional information or questions, please contact Erin Lutrick, Project Leader, Inyo National Forest, at (760) 873-2545.

Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance - Errata #2

1. Delete the following sentence on page 2-26 of the Final EIS under the heading "Authorize the following services and use levels in the Golden Trout Wilderness (for Mt. Whitney Pack Trains)": *A maximum of two of these trips may originate from Horseshoe Meadow Trailhead.*

As stated on page 2-14, B (1) of the Final EIS, authorized use levels for Mt. Whitney Pack Trains are set at 10 trips to the border of SEKI, either to Trail Pass or beyond Cottonwood Pass, and 20 trips to destinations within the Golden Trout Wilderness.

/s/ Garry Oye

Acting For:

Jeffrey E. Bailey

FOREST SUPERVISOR



Errata #3 for the Commercial Pack Station and Pack Stock Outfitter Guide Permit Issuance Final Environmental Impact Statement

- a) The existing paragraph under section D-3, page 2-7 of the Final Environmental Impact Statement states that pack stations are limited to their approved trails for day rides throughout the project area. That was included in error, and was not consistent with direction provided on page 2-6, section D-1. This errata changes the paragraph on page 2-7, section D-3 of the FEIS, to the following:

“Pack stations are limited to their approved trails for day rides within High Density Recreation Areas. Authorized pack stations are listed by trail in Table 2.3. For all-expense trips and for ingress and egress to the Wilderness, each pack station operator may use any trail approved for any commercial operator, consistent with assigned destination quotas for the AA/JM Wildernesses.”

- b) Page 3-276, second paragraph, second to last sentence should be changed to, *“Pit toilets will be decommissioned at the 6 pack stations that currently have them.”*
- c) In Table 2.5 (p. 2-53), for Red’s Meadow Pack Station, add a four trip destination quota to 77 Corral in the Cargyle Analysis Unit as follows:

Analysis Unit	Destination	Quota
Cargyle	77 Corral	4

Red’s Meadow Pack Station’s quota to 77 Corral was established in the 2005 AA/JM FEIS, as included on page II-155, under the Ansel Adams West geographic unit. The quota was omitted accidentally from Table 2.5 of the Permit Issuance FEIS.



File Code: 1950-3

Date: August 20, 2007

Dear Interested Party:

The Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance Final EIS and Record of Decision were released to the public in January 2007. Errata #1 was also issued in January, 2007, followed by Errata #2 and 3 in March, 2007. This Errata #4 contains additional corrections to the Final EIS and Record of Decision. For more information, please contact Erin Lutrick, Project Leader, at (760) 873-2545.

Sincerely,

/s/ Marlene Finley
MARLENE FINLEY
Acting Forest Supervisor

Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance—Errata #4

1. **2006 FEIS, Appendix D, pp. D-10 and D-11, Table D-2:** Replace the Rock Creek (page D-10) and Pine Creek (page D-11) tables with the tables below, which correct typographical errors in the destination quotas to Morgan Lakes for both pack stations. The destination quota to Morgan Lakes for Rock Creek Pack Station was mistakenly listed twice in the table on page D-10 of the FEIS, while Pine Creek Pack Station's destination quota to Morgan Lakes was mistakenly omitted from the table on page D-11. As shown in the corrected table below, both Rock Creek and Pine Creek Pack Stations are allowed four trips to Morgan Lakes, as established in the 2005 Trail and Commercial Management in the Ansel Adams/John Muir Wildernesses FEIS/ROD.

Rock Creek Pack Station (Stock at one time in the wilderness limit: 90)		
Destination Quota		
Analysis Unit	Destination	Quota
Fourth Recess	Fourth Recess Lake	28
Fourth Recess	Upper Mono Creek	30
Hilton Creek	Hilton (Davis/Second Lakes)	44
Hilton Creek	Upper Hilton Lakes	6
Hopkins	Lower Hopkins Basin	8



Little Lakes Valley	Chickenfoot/Long Lakes	12
Little Lakes Valley	Gem Lake	0
Little Lakes Valley	Ruby Lake	6
Morgan Lakes	Morgan Lakes	4
Pioneer	Pioneer Basin	20
Tamarack	Tamarack Basin	16
Multiple	Hilton	15
Multiple	Hopkins	3
Multiple	Mono Creek	6
Multiple	Pioneer Basin	5
Multiple	Rock Creek Pack Station –Mammoth	8
Multiple	Rock Creek Pack Station-Yosemite NP	3
Multiple	Rock Creek Pack Station-Pine Creek Pack Station	2
Multiple	Tamarack	5
Day Rides		
Destination		Type of Ride
Box Lake		½ Day
Chickenfoot Lake		Full Day; ¾ Day
Davis Lake		Full Day
Dorothy Lake		Full Day; ¾ Day; ½ day; 2hr
East Fork Rock Creek		Full Day; ½ Day
Francis Lake		Full Day
Heart Lake		½ day
Hilton Lake #4		Full Day
Hilton Lakes		Full Day; ¾ Day
Hilton Lake #2		Full Day; ¾ Day
Hilton Lake #3		Full Day; ¾ Day
Kenneth Lake		2 Hr.
Little Lakes Valley		Full Day; ½ day; 2hr
Long Lake		½ day
Morgan Pass		Full Day
Ruby Junction		½ Day
Destination		Type of Ride
Ruby Lake		Full Day; ½ Day
Ruby Lake - Mono Pass		¾ Day
Sand Canyon		Full Day
Summit Lake		¾ Day
Tamarack Basin		Full Day; ½ day; 2 hr
Tamarack Lake		Full Day
Destination		Type of Ride
Upper Trail		½ day; 2hr; 1 hr

Pine Creek Pack Station (Stock at one time in the wilderness limit: 50)		
Destination Quota		
Analysis Unit	Destination	Quota
Hilton Creek	Hilton (Davis/Second Lakes)	4
French Canyon	Elba/Moon/L Lakes	2
French Canyon	French Canyon	10
French Canyon	French Lake	2
French Canyon	Merriam Meadow	4
French Canyon	Royce Lakes	2
Glacier Divide	Hutchinson Meadow	4
Horton	Horton Lake	2
Morgan Lakes	Morgan Lakes	4
Pine Creek	Honeymoon Lake	28

Pine Creek	Pine Creek Zone	30
Multiple	All Expense	4
Day Rides		
Destination	Type of Ride	
Hilton Creek	½ Day	
Honeymoon Lake	Full Day	
Morgan Lake	Full Day	
Pine Lakes	Full Day; ½ day; 5hr	
Pine Creek Pack Station	Full Day; ½ day; 2hr; 1hr	
Upper Pine	Full Day	

2. **2006 FEIS, Appendix D, p. D-15:** Under the heading “D. Party Size”, party size varies from the 15 person/25 stock wilderness-wide limit in **13** site-specific locations, not 14 locations as listed in the FEIS. See item #3a below for more information.
3. **2006 FEIS, Appendix D, p. D-16, Table D-3:** Replace the table on page D-16 with the table shown below, which corrects the following typographical errors:
 - a. Party size limits for trips to Ruwau Lake in the Bishop/Humphreys Geo Unit. Party size limits do not apply to this location because the trail to Ruwau Lake was designated as Not Suitable for Commercial Stock (NSCS) in the Selected Alternative for the 2005 *Trail and Commercial Pack Stock Management in the Ansel Adams/John Muir Wildernesses* (Record of Decision, Appendix B, p. 120). The reference to party size limits at Ruwau Lake has been removed from the table below.
 - b. Party size limitations apply to the Steelhead Lake located in the McGee Analysis Unit, not the French Analysis Unit. This error has been corrected in the table below.

Table D-3. 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	Marie Louise Lake: 6 persons/10 stock
	French	Merriam Meadow: 10 people/20 stock
	Glacier Divide	Honeymoon Lake : 6 persons/12 stock
	Glacier Divide	Packsaddle Lake: 6 persons/6 stock
	Sabrina	Baboon Lake: 8 persons/15 stock
Fish Creek/ Convict /McGee	Convict	Cloverleaf Lake: 15 persons/8 stock
	McGee	Steelhead Lake: 6 persons/6 stock
	Purple Bench	Above Ram Camp: 8 stock
	Silver Divide	Peter Pande: 10 persons/15 stock
	Upper Fish	Tully Lake: 8 persons/15 stock

4. **2006 FEIS, Volume 1, pg. 2-24, Sequoia Kings Pack Trains:** Under the heading, “A. Facilities”, the facilities include **four** corrals, not three corrals as listed in the FEIS.

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United States
Department of
Agriculture

Forest Service

Pacific Southwest
Region

Inyo National Forest

R5-MB-136
December 2006



Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance

Final Environmental Impact Statement

Volume 1 - Chapters 1-4



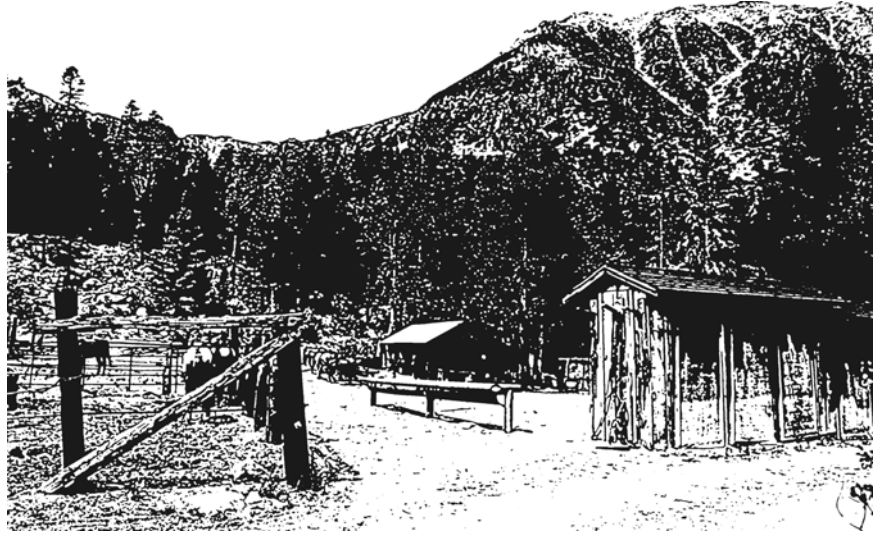
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Inyo National Forest



Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance

Final Environmental Impact Statement



VOLUME 1 OF 2
CHAPTERS 1-4
DECEMBER 2006

Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance

Final Environmental Impact Statement Inyo, Mono, Madera, Tulare, and Fresno Counties, California

Lead Agency: USDA Forest Service, Inyo National Forest

Responsible Official: Jeff Bailey, Forest Supervisor
251 Pacu Lane, Suite 200
Bishop, CA 93514

For further information: Erin Lutrick, Project Leader
351 Pacu Lane, Suite 200
Bishop, CA 93514
760-873-2545

Abstract: This *Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance Final Environmental Impact Statement* (FEIS) discloses the environmental impacts associated with the reissuance of special use permits for commercial pack stock services (guided trips supported by horses, mules, or burros) on much of the Inyo National Forest and portions of the Sierra National Forest. Action is needed because many of the existing permits are due to expire in the near future. This FEIS presents site-specific environmental analyses for three alternatives:

- **Alternative 1 (No Action)** - None of the existing commercial pack stations or outfitter/guide would be issued special use permits. All commercial pack stock services would be discontinued and facilities maintained solely for commercial pack station operations would be removed from National Forest System lands. There would be some rehabilitation of existing sites including revegetation and soil decompaction.
- **Alternative 2 (Preferred Alternative)** - All 12 existing commercial pack stations and one existing outfitter/guide would be issued special use permits. The special use permits would authorize the pack stations and outfitter/guide to conduct overnight trips, day rides, cattle drives, and other activities and uses on Inyo National Forest lands and portions of the Sierra National Forest in the Ansel Adams/John Muir Wilderness. This alternative would implement different control mechanisms (e.g., trip quotas, service days, or destination quotas) for specific areas to limit use based on resource concerns and management objectives. Alternative 2 would increase herd size for five pack stations and allow for increases in use.
- **Alternative 3** – Alternative 3 would also issue special use permits to the 12 existing commercial pack stations and one existing outfitter/guide. Alternative 3 is different from Alternative 2 in that it would maintain current herd sizes for all pack stations, authorize lower allowable use to the border of Sequoia-Kings Canyon National Park, measure use in the Golden Trout Wilderness using ‘service days’ instead of trip quotas, and establish more restrictive standards for pasture grazing. Other differences between the alternatives are listed in section 2.3.4.1 of Chapter 2 of this FEIS.

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Summary

Introduction

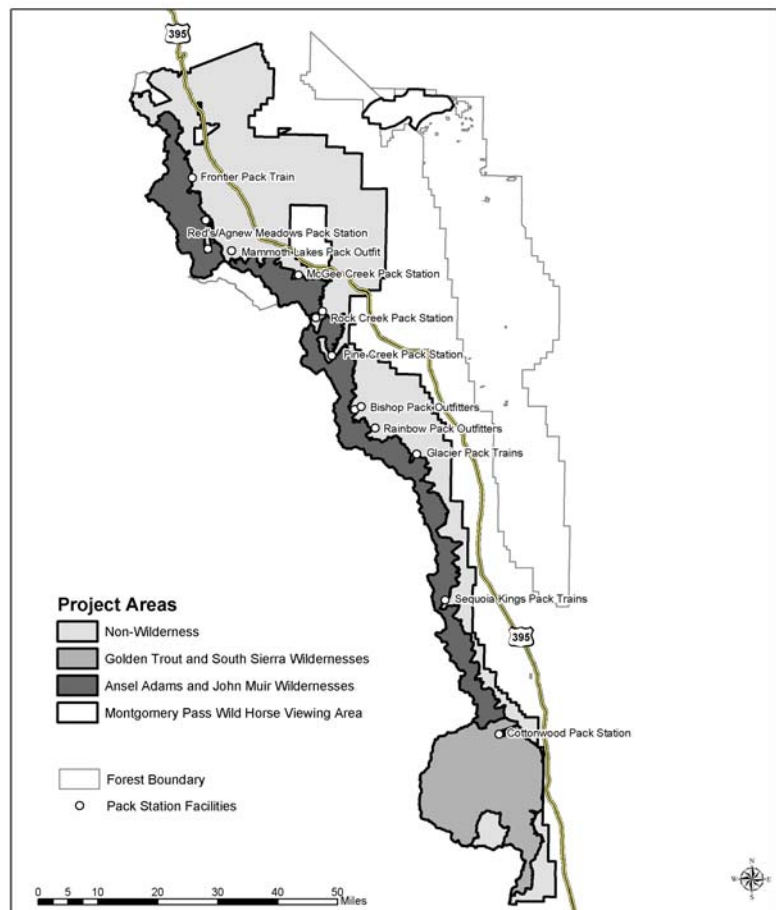
This *Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance Final Environmental Impact Statement* (FEIS) discloses the environmental impacts associated with the issuance of special use permits for commercial pack stock services (guided trips supported by horses, mules, or burros) on much of the Inyo National Forest (see Figure 1 – Project Area). The project area is divided into four analysis units: Non-wilderness areas, Montgomery Pass Wild Horse Viewing Area, Golden Trout/South Sierra Wildernesses, and the Ansel Adams/John Muir Wildernesses. The non-wilderness analysis unit includes all of the Inyo National Forest outside of the designated wilderness lands, excluding the eastern portion of the Forest in the White and Inyo Mountains.

This FEIS presents site-specific environmental analyses for the permit applications submitted by twelve pack stations operators and one outfitter/guide. It incorporates and implements the management direction for the Ansel Adams and John Muir Wilderness Areas as described in the 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses Record of Decision and Final Environmental Impact Statement (2005 AA/JM ROD/FEIS).

Purpose of and Need for Action

The underlying need for this proposal is to process applications for special use permits received from 13 pack stock service providers and to identify the terms and conditions of the permits, including facilities, activities and uses. The action is needed because many of the existing permits are due to expire in the near future. In

Figure 1. Project Area



meeting the aforementioned needs the action must also achieve the following purposes:

1. Provide stock packing services as part of a wide range of recreational activities on the Inyo National Forest, available in geographically dispersed locations (1988 Inyo National Forest Land and Resource Management Plan (LRMP); 2005 Ansel Adams / John Muir Needs Assessment; 2006 Golden Trout South Sierra Needs Assessment)
2. Implement the 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses FEIS/ROD, which provides direction related to pack stations use in the two wildernesses.
3. Provide for a business and operational climate that encourages long-term and predictable stability for commercial pack stock operations, contributing to the economic sustainability of surrounding communities (2001 Sierra Nevada Forest Plan Amendment; 1988 Inyo National Forest LRMP).
4. Respond to the Court Order issued in 2001 that required the Forest Service to evaluate the impacts of commercial pack stock operations on the AA/JM Wildernesses prior to issuing permits for these operations.
5. Maintain, or trend toward desired conditions for wildlife, vegetation, soil, water, heritage resources, social experience, and wilderness character (1988 Inyo National Forest LRMP and subsequent Forest Plan amendments).

Alternatives, Including the Proposed Action _____

Alternatives were developed for this environmental analysis to meet the purpose and need while addressing issues and concerns raised during public involvement. The proposed action (described below) was developed by assessing the permit applications and current situation in the analysis area. Based on the issues identified through public comment on the proposed action, the Forest Service developed one alternative proposal that would achieve the purpose and need differently than the proposed action. The Forest Service also analyzed a no-action alternative. The three alternatives are summarized below and described in more detail in Chapter 2 of this EIS.

Alternative 1 (No Action)

None of the existing commercial pack stations or outfitter/guide would be issued special use permits. All commercial pack stock services would be discontinued and facilities maintained solely for commercial pack station operations would be removed from National Forest System lands. There would be some rehabilitation of existing sites including revegetation and soil decompaction.

Alternative 2 (Proposed Action/Preferred Alternative)

To meet the purpose and need, the Forest Service proposes to issue permits to 12 pack station operators and one outfitter/guide for a variety of commercial pack stock related activities. The proposed action responds to applications received from the following applicants: Frontier Pack Train, Red's Meadow and Agnew Meadow Pack Stations, Mammoth Lakes Pack Outfit, McGee

Creek Pack Station, Rock Creek Pack Station, Pine Creek Pack Station, Bishop Pack Outfitters, Rainbow Pack Outfitters, Glacier Pack Train, Sequoia Kings Pack Trains, Cottonwood Pack Station, Mt. Whitney Pack Trains, and Three Corner Round Pack Outfit.

The proposed action authorizes the terms, conditions, and appropriate use levels for the pack station and outfitter/guide permits. It would implement different control mechanisms (e.g., trip quotas, service days, or destination quotas) for specific areas to limit use based on resource concerns and management objectives. Specifically, the proposed action includes:

1. Authorization of pack station facilities.
2. Implementation of grazing standards including range readiness, utilization, and streambank alteration limits for pack stock in pastures associated with base facilities as well as for grazing incidental to trips in the GT/SS Wildernesses;
3. Restricting commercial pack stock travel to existing trails within identified high density recreation areas (areas that currently receive high-density recreation use; see Operations Maps in Appendix J);
4. Pack station/outfitter guide-specific use authorizations in the GT/SS Wildernesses;
5. Pack station/outfitter guide-specific use authorizations in the AA/JM Wildernesses; and
6. The incorporation of management direction and standards and guidelines related to the AA/JM Wildernesses made in the 2005 ROD, including destination quotas, stock limits, day rides, party size limitations, trail suitability determinations, and designated campsites (Appendix D includes additional information on management direction that is specific to the AA/JM Wildernesses).

A forest plan amendment would be required to implement this alternative.

Alternative 3

Like Alternative 2, Alternative 3 would authorize commercial pack stock uses for the 12 pack stations and one outfitter/guide. Alternative 3 is different from Alternative 2 in that it:

1. Limits stock drives (herding permitted pack stock to and from the pack station) to two per pack station annually;
2. Limits all commercial stock travel to approved routes except in the following areas that permit cross-country travel: MPWHVA, Monache Meadows, and GT/SS Wildernesses;
3. Implements the Inyo National Forest LRMP Amendment #6 utilization standards to manage commercial pack stock grazing in authorized pastures;
4. Sets herd sizes at the current authorized level (Alternative 2 raises the herd size for five operators);
5. Limits day ride use in the Mammoth Lakes Basin to the current level (7,000 service days);
6. Eliminates case-by-case approvals for trips in the GT Wilderness;
7. Lowers the allowable use to the border of SEKI through the GT Wilderness;
8. Relocates commercial pack stock camps out of Truman Meadows and Pizona Springs in the MPWHVA to upland sites; and

9. Controls use into the GT/SS Wildernesses through service days (rather than number of trips).

Issues and Concerns

Comments from the public, organizations, federal and state agencies were used to formulate issues concerning the proposed action. The Forest Service separated the issues into two groups: significant and non-significant. Significant issues were defined as those directly or indirectly caused by implementing the proposed action. Non-significant issues were 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) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence.

The Forest Service identified the following significant issues from public comments related to the scoping document.

1. Commercial pack stock use in Sequoia/Kings Canyon National Parks

The number of commercial pack stock originating from the Inyo National Forest and traveling into Sequoia/Kings Canyon National Park (SEKI) under the proposed action may create adverse effects in the Park. These effects are related to the grazing that may occur with this permitted use.

2. Day ride use in the Mammoth Lakes Basin

The proposed action may allow for a level of commercial pack stock that may exacerbate the current high recreational use situation in the Mammoth Lakes Basin and degrade the recreational experience for some forest users.

3. Commercial pack stock operations as proposed, including facilities, pasture grazing and camps in riparian conservation areas (RCAs), may adversely affect water quality and RCA condition and trend.

4. Service days in the GT/SS Wildernesses may be a more effective and exact method to regulate commercial pack stock use levels compared to the number of trips as relied upon in the proposed action.

5. Interpreting the Golden Trout Wilderness Plan (as the proposed action does) to allow case-by-case approvals for additional operators may limit the revenue opportunities of existing operators.

6. The proposed action may not adequately address off-trail travel by commercial stock. Off-trail travel may create new trails and impact off-trail resources, including heritage resources, hydrology/soils, and sensitive plants.

As explained in Chapter 1 of this EIS, these issues were addressed in several ways, including refining and/or clarifying the proposed action, developing an alternative to the proposed action (Alternative 3) and several alternatives eliminated from detailed study, and evaluating the effects of the alternatives in Chapter 3.

Environmental Consequences

Overall, potential adverse effects of Alternative 2 are expected to be minor and localized. The environmental consequences of Alternative 2 (the Preferred Alternative) are summarized below.

- **Wildlife** – Some wildlife disturbance would occur with pack station operations, but mitigations would reduce impacts to suitable unoccupied willow flycatcher habitats in pastures. The feeding of grain at the pack station would continue to contribute to brown-headed cowbird songbird nest parasitism events.
- **Vegetation** – Three pasture units would have an upward trend in functioning condition, 2 pasture units would have an upward trend in fen condition, and 1 pasture unit would have an upward trend in ecological condition. Grazing would be available in 27 out of 34 requested meadows in the GT/SS Wilderness.
- **Soil** – Up to 300 acres would have continued minor to major soil compaction. Reduction in compaction in up to three pastures.
- **Water Resources and Quality** – Some effects to water quality, almost solely in pastures. Alternative 2 would reduce potential for water quality degradation at Pizona Camp, and at all pack stations due to the implementation of manure removal at least once every season.
- **Trails** – Commercial stock at the authorized use levels may create moderate increases in trail maintenance needs on highly localized trail segments, which would be a very minor increase in maintenance needs at the project area scale.
- **Heritage Resources** – Resources of interest will be protected
- **Social Experience** – High commercial pack stock use will continue in certain areas, resulting in encounters with hikers and other recreationists. The increase in front country use allowed by this alternative (assumed to be around 20%) would provide a more varied recreational experience for more visitors.
- **Wilderness Character** – Wilderness character would be maintained with full utilization of authorized use levels. Adverse effects to wilderness character are not expected in the Golden Trout and South Sierra Wildernesses because the areas experience little use. Impacts to wilderness character in the Ansel Adams/John Muir Wildernesses would range from low to high at a few site specific locations (2005 AA/JM FEIS/ROD), but desired conditions would be met.

In many cases, effects of Alternative 3 are expected to be similar to those of Alternative 2. Effects of the alternatives are compared in section 2.6 of Chapter 2.

Decision Framework

The Responsible Official will review the alternatives and their environmental consequences in order to make the following decision:

- Whether or not to issue the permits.
- The specific terms and conditions of the permits, if authorized.
- Whether to approve the forest plan amendment required to implement the decision.

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Chapter 1 - Purpose of and Need for Action

Introduction

This *Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance Final Environmental Impact Statement* (FEIS) discloses the environmental impacts associated with the issuance of special use permits for commercial pack stock services (guided trips supported by horses, mules, or burros) on much of the Inyo National Forest (see Figure 1.1 – Vicinity Map and Figure 1.2 – Project Area Map).

Figure 1.1 Vicinity Map

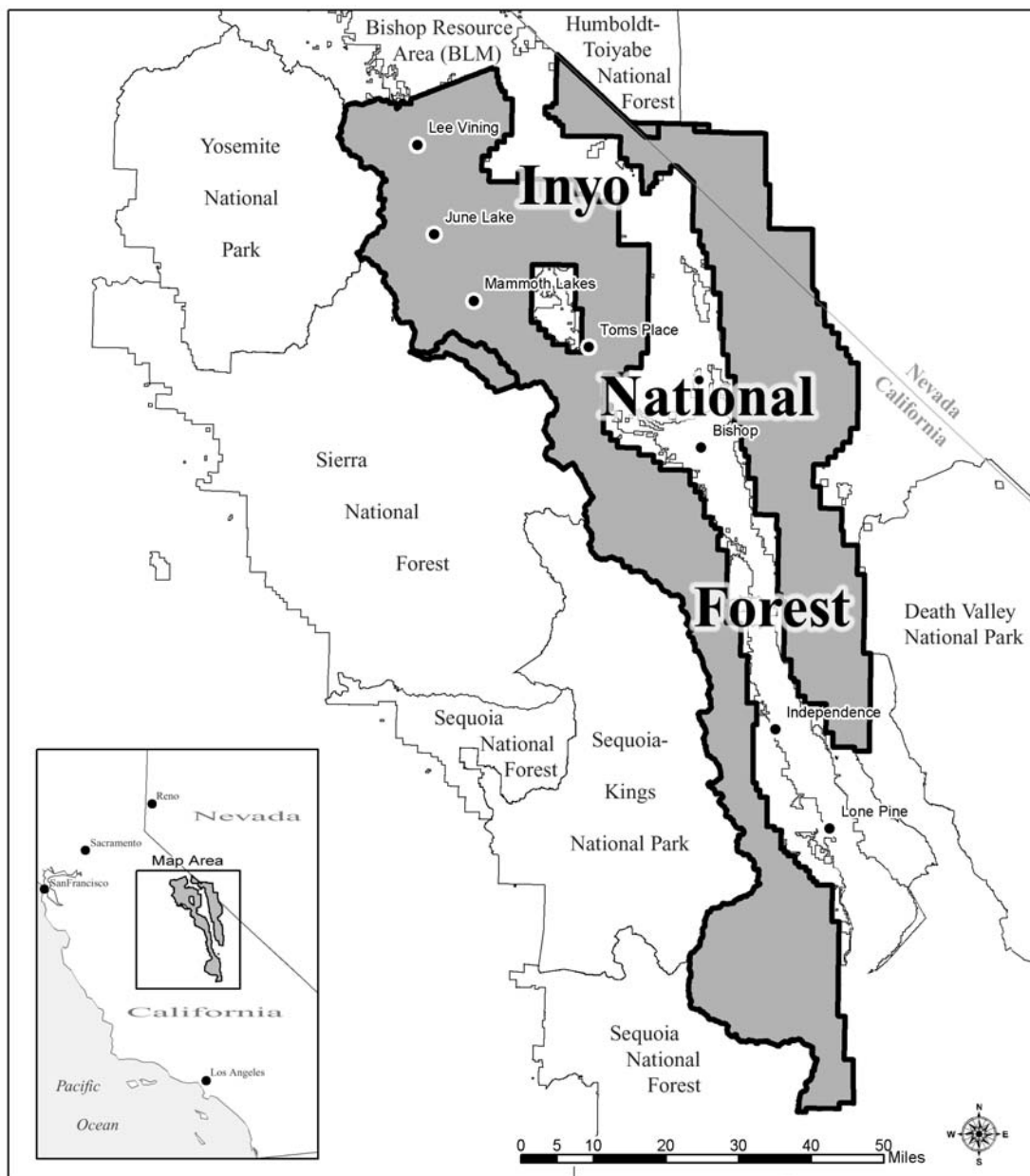
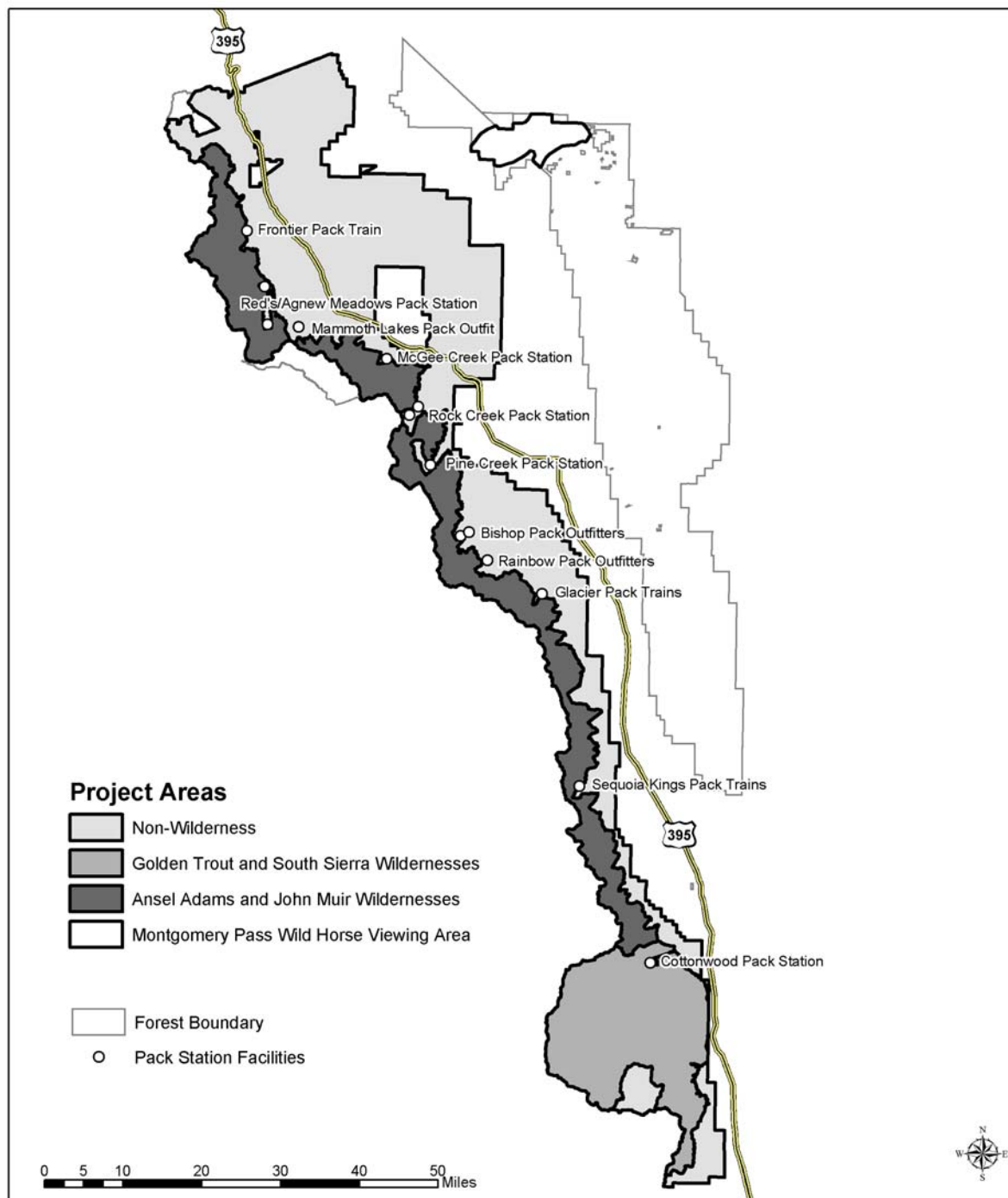


Figure 1.2 Project Area Map



This FEIS presents site-specific environmental analyses for the permit applications submitted by twelve pack stations operators and one outfitter/guide. It incorporates and implements the management direction for the Ansel Adams and John Muir Wilderness Areas as described in the 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses Record of Decision and Final Environmental Impact Statement (2005 AA/JM ROD/FEIS). For more information about the 2005 AA/JM ROD/FEIS see sections 1.1.2 and 1.5.

This FEIS varies slightly from the organization established by CEQ regulations (40 CFR 1500-1508). This document has a combined “Affected Environment and Environmental Consequences” chapter in order to provide consolidated information on each resource. The list of preparers and list of agencies, organizations, and persons to whom copies of this EIS have been sent are combined into “Chapter 4 Consultation and Coordination” rather than having two very short chapters. The document is organized as follows:

- **Chapter 1. Purpose and Need for Action:** This chapter briefly describes the proposed action, the need for that action, and other purposes to be achieved by the proposal. This section also details how the Forest Service informed the public of the proposed action and how the public responded.
- **Chapter 2. Alternatives, including the Proposed Action:** This chapter provides a detailed description of the agency’s proposed action as well as alternative actions that were developed in response to comments raised by the public during scoping. The end of the chapter includes a summary table comparing the proposed action and alternatives with respect to their environmental impacts.
- **Chapter 3. Affected Environment and Environmental Consequences:** This chapter describes the environmental impacts of the proposed action and alternatives.
- **Chapter 4. Consultation and Coordination:** This chapter provides a list of preparers and agencies consulted during the development of the environmental impact statement.
- **Index:** The index provides page numbers by document topic.
- **Appendices:** The appendices provide more detailed information to support the analyses presented in the environmental impact statement.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Inyo National Forest Supervisor’s Office in Bishop, CA.

1.1 Background

1.1.1 Analysis Area

The project area for this analysis includes most of the Inyo National Forest other than the White and Inyo Mountain areas (see Figure 1.1 – Vicinity Map and Figure 1.2 – Project Area Map). This project area is broken into four analysis units: Non-wilderness areas, Montgomery Pass Wild Horse Viewing Area, Golden Trout/South Sierra Wildernesses, and the Ansel Adams/John Muir Wildernesses. The non-wilderness analysis unit includes all of the Inyo National Forest outside of

the designated wilderness lands, excluding the eastern portion of the Forest in the White and Inyo Mountains.

Uses in the Ansel Adams and John Muir Wildernesses will not be re-analyzed in this project as decisions related to commercial pack stock for these areas were made in the 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses Record of Decision and Final Environmental Impact Statement (referred to hereafter as the 2005 AA/JM ROD/FEIS). However, the uses as analyzed and decided in the 2005 AA/JM ROD/FEIS will be assigned and authorized to specific pack stations in this analysis.

1.1.2 History

In April 2000, a lawsuit concerning the effects of commercial pack stock use in the Ansel Adams/John Muir (AA/JM) Wildernesses was filed against the Sierra and Inyo National Forests in the Northern California U.S. District Court. The lawsuit alleged violations of the National Forest Management 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 evaluate the cumulative impacts of commercial pack stock operations in the AA/JM Wildernesses. The Court also ordered that the impacts of special use permits issued to the commercial pack stations be analyzed in a subsequent NEPA analysis to be completed by December 2006.

In December 2005, the AA/JM ROD/FEIS was issued for commercial pack stock in the Ansel Adams and John Muir Wildernesses and included broad as well as site-specific management direction for these operations. The decisions in the ROD as well as the analysis included in the FEIS are incorporated by reference into this document. The ROD included a destination management strategy that considers the desired condition at the destination and utilizes a quota that controls the frequency, intensity and location of use to each destination. Direction also includes designated campsites, stock numbers, grazing, and party size. The AA/JM ROD/FEIS responded to the Court's order to evaluate the cumulative effects of the commercial pack stock operations in the AA/JM Wildernesses.

On the Inyo National Forest, twelve pack stations continue to be authorized under term permits. Concurrent with the preparation of this FEIS, the Sierra National Forest is also analyzing the effects related to the issuance of special use permit to their pack stations which access portions of the AA/JM Wildernesses from the west side. 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.

In 2005, special use permit applications were received from these twelve pack stations, one outfitter/guide using traditional pack stock (burros), and one outfitter/guide using non-traditional pack stock (llamas). Between the DEIS and FEIS, the application for the outfitter/guide using llamas was denied due to non-responsiveness of the applicant. Consequently, that application will not be considered in this analysis. The environmental impacts of the activities and facilities

associated with the remaining permit applications are described in this document and the 2005 AA/JM FEIS.

1.2 Purpose and Need for Action

The underlying needs for this proposal include:

1. A need for action on applications from twelve resort pack stations to issue resort permits and identify terms and conditions for their facilities, activities and uses, and any new uses on portions of the Inyo National Forest including the Ansel Adams (AA), John Muir (JM), Golden Trout (GT), and South Sierra (SS) Wildernesses and non-wilderness areas. The action is needed because many of the existing permits are due to expire in the near future. In some cases, the applicants requested more use than in the past in areas outside the AA/JM Wildernesses. The twelve resort pack stations are: Bishop Pack Outfitters, Cottonwood Pack Station, Frontier Pack Train, Glacier Pack Train, Mammoth Lakes Pack Outfit, McGee Creek Pack Station, Mt. Whitney Pack Trains, Pine Creek Pack Station, Rainbow Pack Outfitters, Red's Meadow and Agnew Meadow Pack Stations, Rock Creek Pack Station, and Sequoia Kings Pack Trains.
2. A need for action on a permit application from one existing outfitter and guide to issue a term permit (Three Corner Round Pack Outfit).

In meeting the aforementioned needs the action must also achieve the following purposes:

1. Provide stock packing services as part of a wide range of recreational activities on the Inyo National Forest, available in geographically dispersed locations. These activities and the number and locations of permits issued is consistent with the determination in the AA/JM Needs Assessment (2005); the Golden Trout South Sierra Needs Assessment (2006); and for the non wilderness areas, the Inyo Land and Resource Management Plan (LRMP) direction to provide, "A broad range of developed and dispersed recreation opportunities in balance with identified existing and future demand" (pg. 68).
2. Implement the 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses FEIS/ROD. A comprehensive analysis was conducted from 2001-2005 to assess the cumulative effects of pack stations and their uses in these wildernesses. The 2005 AA/JM FEIS provides programmatic direction but also site specific direction related to pack stations use in the two wildernesses. Therefore, this document is merely incorporating and implementing, not revising or revisiting, the recent 2005 direction into this analysis.
3. Provide for a business and operational climate that encourages long-term and predictable stability (as it relates to government regulations) for commercial pack stock operations, contributing to the economic sustainability of surrounding communities. As stated in the 2001 Sierra Nevada Forest Plan Amendment (SNFPA) ROD (pg. 7), "The first priority for stewardship of the national forests is to maintain or restore ecological sustainability to provide a sustainable flow of uses, values, products and services from these lands", and an Inyo LRMP Forest goal is, "The Forest is managed in an economically efficient and

cost-effective manner while responding to the economic and social needs of the public and local communities” (p. 66).

4. Respond to the Court Order issued in 2001 that required the Forest Service to evaluate the impacts of commercial pack stock operations on the AA/JM Wildernesses prior to issuing permits for these operations. The court ordered that, “The Forest Service shall complete the NEPA process analyzing the cumulative effects of pack stock operations [in the Ansel Adams and John Muir Wildernesses] no later than December 31, 2005...No later than December 31, 2006, the Forest Service must complete site-specific environmental analyses under NEPA for each permittee.” This decision incorporates and implements direction from the 2005 AA/JM Plan that analyzed cumulative effects of pack stock operations.
5. Maintain, or trend toward desired conditions for wildlife, vegetation, soil, water, heritage resources, social experience, and wilderness character as identified in the 1988 Inyo National Forest Land and Resource Management Plan and subsequent Forest Plan amendments.

1.3 Proposed Action

The action proposed by the Forest Service to meet the purpose and need is to issue permits to 12 existing resort special use permit holders (commercial service supported by horses and mules) for a variety of commercial pack stock related activities. The Forest Service also proposes to issue a permit for one existing outfitter and guide (commercial service supported by burros). The term of the permit is not a part of this proposed action because it is a ministerial action that does not require NEPA analysis. The permit for resort special use permit holders may be up to 30 years, and the permit for the outfitter/guide may be up to 10 years. The permit term will be determined using the process outlined in Forest Service Handbook 2709.11, which is an administrative process. These services would occur on the Inyo National Forest, including non-wilderness areas, the GT/SS Wildernesses and in the AA/JM on both the Inyo and Sierra National Forests. The proposed action authorizes the terms, conditions, and appropriate use levels for these activities. Specifically, the proposed action includes:

1. Authorization of pack station facilities.
2. Implementation of grazing standards including range readiness, utilization, and streambank alteration limits for pack stock in pastures associated with base facilities as well as for grazing incidental to trips in the GT/SS/AA/JM Wildernesses;
3. Restricting commercial pack stock travel to existing trails within identified high density recreation areas (areas that currently receive high-density recreation use; see Operations Maps in Appendix J);
4. Pack station/outfitter guide-specific use authorizations in the GT/SS Wildernesses;
5. Pack station/outfitter guide-specific use authorizations in the AA/JM Wildernesses; and
6. The incorporation of management direction and standards and guidelines related to the AA/JM Wildernesses made in the 2005 ROD, including destination quotas, stock limits, day rides, party size limitations, trail suitability determinations, and designated campsites

(Appendix D includes additional information on management direction that is specific to the AA/JM Wildernesses).

This proposal responds to applications received from the following applicants:

1. Frontier Pack Train
2. Red's Meadow and Agnew Meadow Pack Stations
3. Mammoth Lakes Pack Outfit
4. McGee Creek Pack Station
5. Rock Creek Pack Station
6. Pine Creek Pack Station
7. Bishop Pack Outfitters
8. Rainbow Pack Outfitters
9. Glacier Pack Train
10. Sequoia Kings Pack Trains
11. Cottonwood Pack Station
12. Mt. Whitney Pack Trains
13. Three Corner Round Pack Outfit

The applications were reviewed and screened by the Forest Service to assure that the applications were complete and consistent with the Forest Land and Resource Management Plan (1988), as amended, Montgomery Pass Wild Horse Management Plan (1993), Management Direction for the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses Record of Decision (2001) as amended by the Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses Record of Decision (2005), Golden Trout Wilderness Plan (1982), and South Sierra Implementation Plan (1991) and the screening criteria identified in 36 CFR 251.54. This document tiers to these programmatic documents.

The proposed action is described in more detail in Chapter 2 under Alternative 2 – Proposed Action and will require a forest plan amendment.

1.4 Decision Framework

Given the purpose and need, the deciding officer reviews the proposed action, the alternatives, and their environmental consequences, in order to make the following decision:

- Whether to issue the permits and under what terms and conditions, or whether to not authorize the activities and services and require removal of all facilities from National Forest System lands.

Implementation of Alternative 2 would require a Forest Plan Amendment.

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

The decision on this project will be made in accordance with a number of laws, regulations and agency policies including:

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.

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.

The **Wilderness Act (1964)** provides for the establishment of designated wilderness lands that are to be protected for their ecological, geological, recreational, historical, scientific, educational and scenic values. This Act designated a National Wilderness Preservation System. (Portions of the Ansel Adams and John Muir Wildernesses were two of the original areas designated as wilderness. The Golden Trout Wilderness was designated in 1978 and the South Sierra Wilderness was designated in 1984.) Managing agencies are to preserve the wilderness character of the designated lands, yet the Act does not establish standards for this to occur.

The **Clean Water Act**, 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 System lands in California.

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 **Clean Air Act Amendment (1977)** designated areas of the country 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 AA/JM 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. The GT/SS Wildernesses are not in Class I airsheds.

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 and the Central Valley Regional Water Quality Control Board.

Inyo National Forest Land and Resource Management Plan (1988; LRMP) contains general management direction applicable to all areas within the Forest. This direction includes multiple use goals and objectives, forest-wide standards and guidelines, management area direction (prescriptions), and monitoring and evaluation requirements.

Amendment 6 to the Inyo LRMP (1995) was developed to establish utilization standards for production livestock grazing. These standards were designed to be adaptive and provide for accelerated restoration and improvement of degraded range sites as well as to maintain those sites currently in a fully functional condition.

The Sierra Nevada Forest Plan Amendment Record of Decision 2004 (2004 ROD) amended the Inyo LRMP. 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 (USDA Forest Service 2004). 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.

The 2004 ROD also contains direction regarding the involvement of American Indian tribes, communities, and organizations in land management and for consideration of traditional cultural values, uses and access.

This document included standards and guidelines for noxious weed management, directing project level weed risk assessments and inclusion of weed prevention measures when re-issuing pack stock operator permits, as well as encouraging use of weed free hay and straw.

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 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses Record of Decision (2005) amended the 2001 Wilderness Plan for the Ansel Adams, John Muir and Dinkey Lakes Wildernesses and established commercial pack stock related management direction and a trail plan for the Ansel Adams and John Muir Wildernesses.

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 Golden Trout Wilderness Management Plan (1982) contains a number of management objectives including managing for golden trout, maintaining the large open meadows that are a key characteristic of the area and its landscape, allowing for the historical improvements associated with cattle grazing, and emphasizing recreational pack and saddle stock use.

The South Sierra Wilderness Implementation Plan (1991) emphasizes maintaining and perpetuating the wilderness resources and its character over time, ensuring that ecosystems are not affected by human presence, and to “minimize those uses and activities generally prohibited by the Wilderness Act of 1964, but specifically excepted by the Act or subsequent legislation.”

1.6 Public Involvement

A Notice of Intent to prepare an Environmental Impact Statement for the Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance project was published in the Federal Register on August 9, 2005. The notice requested that comments on the proposed action be received by September 30, 2005. Approximately 100 comments on the proposed action were received. While many of the comments were general in nature and did not directly address the proposed action as scoped, a few comments specifically addressed pack station permit issuance. An issue disposition document can be found in the project record. Table 1 provides a summary of all comments broken down by response type.

Table 1.1 Summary of scoping responses

Agency	Interest Group	Commercial Pack Station	Individual	Form Letter	Total
2	2	3	57	36	100

The Draft EIS (DEIS) was placed on the Inyo National Forest website and mailed to interested parties on March 17, 2006. The public comment period began March 24, 2006, when the DEIS Notice of Availability was published in the *Federal Register*. One public meeting was held on April 10, 2006 in Bishop, California. Twelve people attended the meeting. The comment period closed May 15, 2006.

Over 200 comments were received on the DEIS, over half of which were the same form letter. The table below summarizes the comments received on the DEIS. The response to comments is in Appendix E of this document.

Further, a Lahontan Regional Water Quality Control Board engineer visited 8 of the pack station facilities, and a Central Valley Regional Water Quality Control Board representative visited one. Both offered recommendations about water quality protection that were incorporated into this document.

Table 1.2 Summary of DEIS comments

Agency	Congress-person	Interest Group	Commercial Pack Station	Individual/Business	Individual - Form Letter	Total
3	1	9	5	69	120	207

1.7 Scope of the Analysis

Issues Studied in Detail

Comments from the public, organizations, federal and state agencies were used to formulate issues concerning the proposed action. The Forest Service separated the issues into two groups: significant and non-significant. Significant issues were defined as those directly or indirectly caused by implementing the proposed action. Non-significant issues were 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) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence.

The Council on Environmental Quality (CEQ) NEPA regulations explain 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 non-significant issues (for example, comments related to administration of the permits and enforcement) and reasons why they were found non-significant may be found in the project record located at the Inyo National Forest Supervisor's Office in Bishop, CA.

The Forest Service identified the following significant issues, developed from public comments related to the scoping document. Indicators for each of these issues are contained in the appropriate resource section:

Significant Issue #1: Commercial pack stock use in Sequoia/Kings Canyon National Parks

The number of commercial pack stock originating from the Inyo National Forest and traveling into Sequoia/Kings Canyon National Park (SEKI) under the proposed action may create adverse effects in the Park. These effects are related to the grazing that may occur with this permitted use.

How the issue was addressed:

- Clarification that the Inyo National Forest will authorize use only in the Forest, and that the National Park Service is responsible for authorizing all uses and use levels in SEKI.
- Alternative 3 has a lower quota than Alternative 2 for commercial pack stock trips accessing the SEKI border through the GT Wilderness (Chapter 2, 2.3.4.6).
- Evaluation of the effects of each alternative's use levels into SEKI in the cumulative effects sections in Chapter 3.

Significant Issue #2: Day ride use in the Mammoth Lakes Basin

The proposed action may allow for a level of commercial pack stock that may exacerbate the current high recreational use situation in the Mammoth Lakes Basin and degrade the recreational experience for some forest users.

How the issue was addressed:

- Alternative 3 limits the number of day rides in the Mammoth Lakes Basin to 7000 trips (the current level) (Chapter 2, Section 2.3.4.7).
- Evaluation of an alternative considered but not analyzed in detail that would reduce use in the Mammoth Lakes Basin below Alternative 3 levels (Chapter 2, Section 2.5). The alternative was not fully analyzed because the team found that, despite the high use levels, very few complaints about conflicts with pack stock have been received from visitors. Further discussion of the reasons for not analyzing the alternative in detail are described in Chapter 2, section 2.5, #6.

Significant Issue #3: Commercial pack stock operations as proposed, including facilities, pasture grazing and camps in riparian conservation areas (RCAs), may adversely affect water quality and RCA condition and trend.

How the issue was addressed:

- Alternative 3 (section 2.3.4.4) moves Pizona and Truman camps out of the RCA, and implements LRMP Amendment #6 for grazing management forest-wide. Implementation of Amendment #6 includes the rest of Rodeo, West Agnew, Upper Rock Creek, Cardinal Mine unit of the Bishop Park, and Art's Pastures.
- Consideration of an alternative eliminated from detailed study that moves pack stations that have any potential for affecting water quality to areas out of RCAs, and closing all commercial pack station pastures to grazing. This alternative would not meet the purpose and need for this project, as explained in Chapter 2, section 2.5.

- Evaluation of each alternative's actions on water quality, stream geomorphology, meadow ecological condition, rare plants, fens, streamflow, and soil quality in the effects analyses in Chapter 3.

Significant Issue #4: Service days in the GT/SS Wildernesses may be a more effective and exact method to regulate commercial pack stock use levels compared to the number of trips as relied upon in the proposed action.

How the issue was addressed:

- Alternative 3 (section 2.3.4.6) regulates commercial pack stock in the GT/SS Wildernesses through the use of service days.
- Alternative 2 (section 2.3.3.5B) regulates commercial pack stock in the GT/SS Wildernesses through use of trip quotas.
- Evaluation of the effectiveness of different control mechanisms on wilderness experience and resource condition in the effects analyses in Chapter 3 (sections 3.2.1, 3.3.2).

Significant Issue #5: Interpreting the Golden Trout Wilderness Plan (as the proposed action does) to allow case-by-case approvals for additional operators may limit the revenue opportunities of existing operators.

How the issue was addressed:

- Alternative 3 (section 2.3.4.6) limits operations in the Golden Trout Wilderness to two operators (Cottonwood Pack Stations and Mt. Whitney Pack Trains) and does not allow for case-by-case approval.
- Alternative 2 allows approval of up to 5 case-by-case trips through the GT Wilderness into SEKI, and 10 trips with destinations in the GT Wilderness by any permitted commercial pack station.
- Evaluation of each alternative on operations and socioeconomics (Section 3.2.5).

Significant Issue #6: The proposed action may not adequately address off-trail travel by commercial stock. Off-trail travel may create new trails and impact off-trail resources, including heritage resources, hydrology/soils, and sensitive plants.

How the issue was addressed:

- Alternative 3 (section 2.3.4.2C) requires that commercial pack stock stay on authorized routes except in the GT/SS Wildernesses, the Montgomery Pass Wild Horse Territory, and the Monache Meadows area.
- Alternative 2 (section 2.3.3.1D) does not allow commercial pack stock to travel off-trail in high density recreation areas (HDRAs) and where resource conditions necessitate remaining on trails. Evaluation of each alternative's trail management on heritage resources (Chapter 3, section 3.2.4), hydrology and soils (section 3.3.2), and sensitive plants (section 3.4.2).

1.8 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 Section 7 of the Federal Endangered Species Act of 1973, as amended.

No consultation with the USFWS was required for this EIS since the biological evaluation process resulted in a determination of “no effect” for federally listed species or designated critical habitat. Consultation did occur for Sierra Nevada bighorn sheep as part of the 2005 AA/JM EIS and can be found in the project record for that document.

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

Compliance with Section 106 of the National Historic Preservation Act 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 State Historic Preservation Office (SHPO). The Forest Service has consulted with the Council and the SHPOs of California and Nevada on this undertaking.

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 to the Council, the SHPOs, and interested parties for comment in March 2004. The Strategy provides for the development of the *Programmatic Agreement among the Pacific Southwest Region, USDA Forest Service, California State Historic Preservation Officer, Nevada State Historic Preservation Officer, & the Advisory Council on Historic Preservation Regarding the Identification, Evaluation, & Treatment of Historic Properties within the Area of Potential Effect of Pack Station & Outfitter Guide Operations on the Inyo & Sierra National Forests, California and Nevada* (PA) to complete Section 106 compliance for pack station and outfitter guide operations. This PA has been completed and executed.

Government-to-Government Consultation

The Forests have worked with tribal governments and tribal communities to develop mutually acceptable protocols for government-to-government and tribal community consultations. Tribal governments and communities have been consulted in development of the Strategy and the PA. Vegetation community conditions have been assessed where a specific area has an identified importance to an affected tribe or tribal community. The Forest Service 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).

Chapter 2 - Alternatives, Including the Proposed Action

2.1 Introduction

This chapter describes and compares the alternatives considered in the Commercial Pack Station and Pack Stock Outfitter/Guide Permit Issuance Final EIS. It describes both the alternatives considered in detail and those eliminated from detailed study.

The description and comparison of the three alternatives begins with Section 2.3, *Alternatives Considered in Detail*. This section is followed by a description of each alternative. At the end of the chapter are detailed tables that show the alternatives and their effects in tabular format so that the alternatives and their environmental impacts can be readily compared. The final table, Table 2.5, shows the authorized travel routes and use allocations in the AA/JM Wildernesses, by pack station. Appendix H includes the existing permit authorizations for each pack station.

2.2 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 permit applications and current situation in the analysis area. Specifically, commercial pack stock use, the activities and the conditions at the pack stations, on the trails, and at campsites, pastures and grazing areas not already analyzed in the 2005 EIS were analyzed. 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 National Forest to identify actions to include in the proposed action and proposed standards considered necessary to manage commercial pack stock.

Alternatives to the proposed action were developed, responding to the issues raised during the public scoping process (see Chapter 1 – Public Involvement). The alternatives, other than the No Action, were developed to meet the purpose and need of this project. The purpose and need for this project identifies the desire to provide a wide range of recreational activities, geographically distributed across the Inyo National Forest, and that resources be protected. Operations significantly above those proposed in Alternatives 2 would pose a threat to the environment. Operations significantly lower than those under Alternative 3 would have similar effects to the no action alternative and therefore analysis would be redundant. Further, they would not meet the purpose and need. Further analysis of alternatives considered but eliminated from detailed study can be found in section 2.5 of this Chapter.

The three alternatives range from the No Action to two variations with varying use levels, campsite locations, pasture grazing management, herd sizes and control mechanisms. Each alternative, other than the No Action, was developed to comply with the purpose and need for this project.

Some changes were made to the document between the DEIS and this FEIS. First, five alternatives considered but not analyzed in detail were added. These help explain the process by which the Forest developed and considered alternatives, and address some public concerns. Second, the application for Long Valley Llamahaul outfitter/guide is no longer being considered in the FEIS. Further, more mitigations were added to Alternative 2 to help address public concerns about environmental effects.

2.3 Alternatives Considered in Detail

Based on the issues identified through public comment on the proposed action, the Forest Service developed one alternative proposal that achieve the purpose and need differently than the proposed action. In addition, the Forest Service is required to analyze a No Action Alternative. The proposed action, alternative to the proposed action and the No Action Alternative are described in detail below, and summarized in Table 2.1 below. The elements listed in the first column are the type of activity or area with actions proposed under Alternatives 1, 2 and 3.

Table 2.1. Comparison of Alternatives

Element	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3
Facilities	All pack station facilities removed	Current facilities authorized. Some minor changes to current authorizations are displayed in Section 2.3.3.6 by individual pack station.	With the exception of the Sawmill Corral not being rebuilt, no change from Alternative 2.
Herd Size	n/a	For five pack stations, larger herd sizes are authorized (compared to current authorizations). One pack station resort and one outfitter/guide would be assigned herd sizes where they have not had herd sizes previously allocated.	Current herd size only is authorized for all pack stations except for Glacier Pack Train.
Non-Wilderness Use Levels	n/a	Non-wilderness use is limited by herd size authorizations for each pack station. In the Mammoth Lakes Basin, 10% growth (700 service days) over current authorization (7,000 service days) is authorized. For Red's Meadow, 1,500 service days are authorized for day rides on the Rainbow Falls Trail.	Non-wilderness use is limited by herd size authorizations for each pack station. Use in the Mammoth Lakes Basin is capped at the current authorized level (7,000 service days). For Red's Meadow, no change from Alternative 2.
Stock Drives	n/a	For authorized operators, four stock drives per year are approved on authorized routes.	For authorized operators, two stock drives per year are approved on authorized routes.
Travel Management	n/a	In HDRAs only, commercial pack stock limited to authorized routes. Outside of HDRAs, cross-country travel is permitted except in areas identified as having resource impacts or user conflicts related to commercial stock.	Commercial pack stock is limited to authorized routes except in the following areas where cross-country travel is permitted: MPWHVA, Monache Meadows area, and the GT/SS Wildernesses.

Element	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3
Grazing Standards	n/a	<p>Range readiness: Inyo NF LRMP standards would be implemented for all pack stock grazing.</p> <p>Stream bank alteration: 20% standard for grazing in pastures and incidental to pack trips in the GT/SS Wildernesses, except in wild trout waters where the standard is 10%.</p> <p>Grazing utilization: Non-wilderness: Based on vegetation and soil conditions; 40% use for high condition, 30% for moderate to low condition, and 0% (rest) for degraded sites or a downward trend.</p> <p>GT/SS Wildernesses: Inyo LRMP Amendment #6 standards.</p>	<p>Range readiness: no change from standards in Alternative 2.</p> <p>Stream bank alteration: no change from standards in Alternative 2.</p> <p>Grazing utilization: Inyo LRMP Amendment #6 for all areas including pastures in the non-wilderness and in the GT/SS Wildernesses.</p>
Montgomery Pass Wild Horse Viewing Area	n/a	Maintain use at current level (1000 service days) between mid-April and mid-June. Camps remain in current location.	Use levels are the same as Alternative 2. Move base camps out of Pizona Springs and Truman Meadows.
Golden Trout Wilderness Use	n/a	Camping at existing sites except in 8 locations where sites would be designated. Use levels are set at 115 total trips. Case-by-case approvals are authorized.	Camping at existing sites except in 8 locations where sites would be designated. Case-by-case approvals are not authorized and use is set at a total of 1,085 service days (approximately 82 trips).
South Sierra Wilderness Use	n/a	Camping at existing sites except at one location where a site would be designated. Use is set at 25 trips total.	Camping at existing sites except in one location where a site would be designated. Use is set at 250 service days (approximately 25 trips total).
Ansel Adams and John Muir Wildernesses Use	n/a	Quotas and wilderness and day ride destinations are assigned. 2005 AA/JM ROD direction is incorporated.	No change from Alternative 2.

2.3.1 Alternative 1 – No Action

Under the No Action Alternative, none of the existing uses (or proposed uses) would be authorized under special use permit and all facilities maintained solely for commercial pack station operations would be removed from National Forest Service lands. There would be some rehabilitation of existing sites including revegetation and soil decompaction. There would also be a weed monitoring and, if necessary, removal program (Monitoring Plan, Appendix I).

2.3.2 Actions Common to Alternatives 2 and 3, for all pack stations¹

A. Facilities/Operations

Standard clauses that are to be found in all permits are in Appendix H. Those requirements for all pack stations not in the standard clauses are listed here.

1. Allow commercial pack stock use of administrative and public pastures, corrals or other facilities only with prior written approval of Forest Service, specified in annual operating plans (see pack station specific descriptions in Section 2.3.3.6). Administrative facilities may not be used by commercial entities in wilderness areas.
2. Remove manure off of pack station facilities at least once at the end of every season and dispose of properly, off-site. During the season, manure would be stored at least 100 feet away from water or in an approved container for frequent removal (such as a dumpster). More frequent manure removal may be required for specific sites.
3. Dispose of gray water more than 100 feet from water.
4. Each pack station will have a Historic Property Management Plan (HPMP). HPMPs are a requirement of the Programmatic Agreement (PA). The HPMP will spell out what the operators have to do to protect historic properties throughout their operating areas. These requirements will be included as a permit condition. They will be developed by the Forest Service and reviewed by the State Historic Preservation Officers of CA and NV as appropriate, and the Advisory Council on Historic Preservation. Input will be accepted from operators and other consulting parties to the PA who indicated interest in the HPMP.
5. Each pack station would be assigned a maximum “herd size.” For use in the Ansel Adams and John Muir Wildernesses, each individual pack station would be assigned a number of stock at one time. This is usually smaller than the herd size. See Section 2.3.3.6 and Table 2.5 for pack stations specific herd size assignments.
6. All permits for overnight use in any wilderness would be issued through the Forest Service.

2.3.3 Alternative 2 – Proposed Action (Agency Preferred Alternative)

The project area has been divided into four analysis units: non-wilderness areas, Montgomery Pass Wild Horse Viewing Area, Golden Trout and South Sierra Wildernesses, and the Ansel Adams/John Muir Wildernesses (see Figure 2 at the end of Chapter 1). Sections 2.3.3.1 through 2.3.3.7 summarize the proposed action, and then describe in detail the actions proposed for each of the analysis units. Section 2.3.3.6 describes the pack station specific proposed actions.

¹ Except where otherwise noted, these actions do not apply to the Ansel Adams/John Muir Wildernesses. See Section 2.3.4 and the 2005 AA/JM Wildernesses ROD for specific management direction for these wildernesses.

2.3.3.1 Summary of the Proposed Action

- All 12 existing commercial pack stations would be issued up to a 30-year² special use permit for activities and uses occurring on Inyo National Forest lands and AA/JM Wilderness portions of the Sierra National Forest lands (see Figure 2, Project Area Map). In addition, the alternative would permit commercial pack stock services for one existing outfitter/guide.
- Authorizes specific elements including services, facilities, and activities with allowance for some growth in the existing levels of activities and services.
- Herd size would be larger than currently authorized at 5 pack stations, while the others would remain the same. One pack station resort and one outfitter/guide would be assigned herd sizes where they have not had herd sizes previously allocated.
- The proposed action limits non-wilderness use through the use of a herd size limit, except in the Mammoth Lakes area and the Montgomery Pass Wild Horse Viewing Area (MPWHVA). Pack station-specific herd size authorizations would provide limits on day ride use, as well as non wilderness overnight use. The following shows the locations with specific day ride or trip allocations.
 - In the Ansel Adams and John Muir Wildernesses, use will be controlled through a combination of destination quotas and stock at one time in the wilderness limits, as included in the 2005 AA/JM FEIS.
 - In the Mammoth Lakes Basin, 7,700 service days would be permitted (10% over the existing service day allocation of 7000 service days).
 - In Red's Meadow, use of the Rainbow Falls Trail is limited to 1,500 service days (equivalent to the current level of use).
 - In the MPWHT, use authorizations from mid-April to mid-June would not change from historical levels identified in the plan for the area (which is 500 service days for both Rock Creek and Frontier Pack Stations).
 - In the Golden Trout Wilderness, 115 overnight trips would be authorized. In the South Sierra Wilderness, 25 overnight trips would be authorized. These levels are similar to historic permitted levels. For each Wilderness, the above trips quotas include five trips that may be granted to any operation on a case-by-case basis.
- Grazing: Implements range readiness standards identified in the 1988 Inyo National Forest Land and Resource Management Plan (LRMP). Implements Inyo LRMP Amendment #6³ to determine grazing utilization standards for pack stock in the GT/SS Wildernesses to be consistent with the production livestock grazing in the same areas. For

² The term of the permit is not a part of this proposed action because it is a ministerial action that does not require NEPA analysis. The term for the resort special use permit holders may be up to 30 years, and the term for the outfitter/guide may be up to 10 years. Permit term and type will be determined using the process outlined in FSH 2709.11.

³ Inyo LRMP Amendment #6: *Forest-wide Range Utilization Standards* amended the Forest Plan in 1995. For a full description of this amendment, consult Appendix A, Glossary.

pack stock pastures, grazing utilization standards on key species would be based on vegetation and soil conditions; 40% for high condition, 30% for moderate condition, and 0% (rest) for low condition or sites with a downward trend. Pasture suitability and estimated forage availability are summarized in Table 2.4. Site-specific exceptions can be made where pasture management plans have been developed (see Grazing Management section below).

- Trails: Commercial pack stock may travel off trail in all areas of the Forest other than high density recreation areas, which are areas generally surrounding the pack stations themselves. This does not apply to the AA/JM Wildernesses.
- This plan incorporates management direction from the 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses Record of Decision (2005 AA/JM ROD). Decisions on the management direction were made in the 2005 AA/JM ROD and are summarized in Section 2.3.3.4 and fully described in Appendix D.
- A Forest Plan Amendment would be required to allow case-by-case trips in the Golden Trout (GT) Wilderness by commercial operators other than Cottonwood Pack Station and Mt. Whitney Pack Trains. The 1982 Golden Trout Wilderness Plan, which was adopted by the Forest Plan, provided a list of the commercial pack stations authorized to operate in the GTW. The only existing pack stations on this list are Cottonwood Pack Station and Mt. Whitney Pack Trains. (See Section 2.3.3.5 for more information on these case-by-case approvals.)
- This alternative incorporates the Monitoring Plan and Adaptive Management Plan included in Appendix I.

A. Facilities/Operations

See section 2.3.3.2

B. Case-by-Case Trips

Services in areas outside of the defined project analysis area can be considered on a case-by-case basis by the District Ranger, and are not analyzed in this document. Future decisions must comply with NEPA. This includes all uses in the White Mountains and Inyo Mountains and other areas where new use or occasional trips may be requested.

C. Cattle Drives

Allow operators to participate in cattle drive activities (roundup of cattle on an active grazing allotment and cattle drive on an approved route) in association with a permitted activity by a valid livestock grazing permittees. Cross-country travel may occur in conjunction with these cattle drive activities.

D. Travel Management

1. Commercial pack stock travel is restricted to designated routes in high density recreation areas (HDRAs) and in other areas where resource impacts or user conflicts related to commercial stock exist. HDRAs are categories used only for this project. They are

defined as areas where a variety of other recreational uses occur at moderate to high levels and include the Concentrated Recreation Areas (as designated in the 1988 Inyo LRMP). Typically, HDRAs occur in the vicinity of trailheads, around campgrounds, pack stations, day use areas, and other popular recreation destinations. Fourteen HDRAs have been identified in the project area. These areas can be found in the Operations Maps in Appendix J.

2. Commercial pack stock cross-country travel is allowed in all other areas outside the AA/JM Wildernesses, except where resource impacts are identified. In the Montgomery Pass Wild Horse Territory, cross-country travel is permitted within the “viewing” area (referred to hereafter as the Montgomery Pass Wild Horse Viewing Area) identified by the commercial packers that use the area. The Operations Maps in Appendix J identify this activity area. Other specific trail limitations can be found in Section 2.3.3.6, *Actions by Individual Pack Stations*.
3. Pack stations are limited to their requested and approved trails for day rides. Authorized pack stations are listed by trail in Table 2.3. For all-expense trips and for ingress and egress to the Wildernesses, each pack station operator may use any trail approved for any commercial operator, consistent with assigned destination quotas for the AA/JM Wildernesses.
4. Stock drives (herding the permitted pack stock to and from the pack station facilities) must occur on approved stock drive routes, as listed in Table 2.3, and may be used by any operator accessing their pack station or holding facilities.

E. Grazing Management

1. Pasture use is authorized as an ancillary activity to pack station operations (see Table 2.4 and Section 2.3.3.6 for pastures authorized for specific pack stations).
2. Grazing incidental to trips is authorized in wilderness areas. In the AA/JM Wildernesses, the grazing is authorized by grazing stock nights by grazing zone or meadow (see 2005 AA/JM Wilderness ROD/EIS for specific grazing standards and guidelines). In the GT/SS Wildernesses, grazing is authorized in all areas not deemed unsuitable for grazing (see GT/SS Wilderness section for specific standards and unsuitable meadows).
3. Range readiness standards as identified in the 1988 Inyo National Forest Land and Resource Management Plan (p. 85) would be implemented. The Forest Service would provide approximate on-dates annually, for all pastures used in conjunction with pack station facilities and for grazing in the GT/SS and AA/JM Wildernesses. On-dates may be modified to earlier or later than the general on-date, depending on site-specific conditions. Controlling stock to prevent entry in non-range ready areas would be the responsibility of the operator with support in identifying range readiness from Forest Service staff.
4. Pack stock streambank trampling associated with grazing in pastures and the GT/SS and AA/JM Wildernesses may not exceed total streambank alteration standards identified in

the INF LRMP (1988) (pg. 78-9). Streambank alteration standards include disturbance due to all factors (natural, cattle grazing, pack stock etc.). The standard in areas outside of state designated wild trout waters is no more than 20% disturbance in a stream reach. In drainages designated as wild trout waters, streambank alteration may not exceed 10%. The majority of the GT/SS Wildernesses managed by the INF are designated as wild trout waters (a map is available in the project file).

5. Grazing utilization standards for pastures in the non-wilderness will be based on the vegetation and soil conditions; 40% (by weight) use of key species for areas in high condition, 30% for areas in moderate to low condition, and rest (0%) for areas in degraded condition such as meadows dominated by early seral vegetation with active erosion or sites in a downward trend. Site-specific modifications can be made via a pasture management plan as long as desired ecological conditions are met and no downward trend is observed (For example, the existing pasture management plan for the North Lake Pastures. See Bishop Pack Outfit section). Vegetation condition and trend will be determined using USFS Region 5 standard protocols (see monitoring plan, Appendix I). Grazing utilization standards for the GT/SS Wildernesses can be found in Section 2.3.3.5.

F. Weed Control

1. The permittee shall prepare, in cooperation with the Forest Service, a weed plan for the authorized permit area to be included as part of the annual operating plan. It would detail the measures for preventing, reporting, controlling and monitoring weeds [non-native plants as listed in the Jepson Manual (Hickman, 1993)] that would be taken by the permittee, its employees, contractors, and subcontractors. These measures may include equipment cleaning and use of weed-free materials (soil, gravel, straw, and mulch) and seed mixes. Herbicides would not be used for weed control unless further NEPA analysis is completed. Major ground disturbance would also require further NEPA analysis.
2. It is recommended that certified weed free forage be used for feeding stock. When the California certification program for weed free hay and straw is operational and certified products become available, certified hay and straw would be required.

G. Operating Areas

1. Specific primary operating areas are not assigned. Overlap of operators may occur as a result of traveling trips, or in the few locations where multiple operators have been assigned spot/dunnage destination quotas.
2. All packers would be allowed to use all open trails for all-expense trips, and for wilderness egress and ingress.
3. All expense itineraries (for the “multiple destinations”) would need to be approved to ensure that there are no operational conflicts and that resource protection objectives are being met.

2.3.3.2 Actions Specific to Non-Wilderness Areas of the Forest Outside of the Montgomery Pass Wild Horse Viewing Area

A. Facilities

Facilities specific to individual pack stations are addressed in section 2.3.3.6, “Actions by Individual Pack Stations.”

Use of stock holding facilities would be allowed by all pack stations and private stock users at Shepherd, Taboose and Sawmill trailheads. Allow for the rebuilding of stock holding facilities at the Sawmill trailhead.

B. Use Levels

1. Use in non-wilderness areas other than the Mammoth Lakes area would be controlled by the pack station-specific herd authorizations (see Section 2.3.3.6 for herd size authorizations). Specific use location, dates, and numbers will be reported by each pack station.
2. In the Mammoth Lakes Basin, 10% growth over existing authorized use (currently 7,000 service days⁴ are authorized) would be permitted.
3. For the Red’s Meadow area, a maximum of 1,500 service days are allocated for day rides on the Rainbow Falls Trail. This allocation is equivalent to the current level of commercial pack stock day use on the trail. The use occurring on National Park Service lands (Devil’s Postpile), and is dependent upon a separate authorization from the Park Service.
4. For all pack stations, the number of day rides, and their type (i.e. 1 hour, ½ day), will be reported to the Forest Service.

C. Campsites

Overnight camping with commercial pack stock is limited to existing sites⁵, unless otherwise specifically approved by the District Ranger. All campsite locations and itineraries must be submitted by the pack stations and approved by a District Ranger.

D. Travel Management

See Section 2.3.3.1 for project area travel management direction.

E. Stock Drives

1. Allow no more than four annual stock drives (herding the permitted pack stock to and from the pack station) per pack station (for the pack stations authorized this use), up to two in the spring and two in the fall.
2. Manage stock to follow approved routes as identified in Table 2.3. It is assumed that stock would travel within a 200 foot corridor on either side of trails.

⁴ A service day is defined as a day or any part of a day on National Forest System lands for which an outfitter or guide provides goods, services, including transportation, to a client.

⁵ An existing site is a site that is already disturbed and has been used in the past for camping by any recreational group including commercial packing groups or backpacking groups.

3. On National Forest lands, operators running stock drives must use approved campsites as identified on the Operations Maps in Appendix J.

2.3.3. 3 Actions in the Montgomery Pass Wild Horse Viewing Area⁶

A. Use Levels

Authorize 1000 service days for wild horse viewing and related activities from mid-April to mid-June. The service days would be split between Rock Creek Pack Station and Frontier Pack Train (500 service days each). This 1000 service day authorization is the level of use established in the 1988 MPWHT Plan.

B. Campsites

1. Overnight camping with commercial pack stock is approved for the base camps in Pizona Springs and Truman Meadows.
2. Truman Meadow camp would remain in its current location.
3. Required mitigation to reduce sediment and manure into Pizona Creek includes:
 - Removing manure at the end of each season;
 - Drain water leaking from the trough into vegetation rather than through the corral and directly into the creek; and
 - Building berms or installing silt fences, hay bales, or other barriers to prevent manure and sediment from entering Pizona Creek.
 - Move those facilities at the camp where other mitigations are not sufficient to prevent manure or sediment from entering Pizona Creek.

C. Travel Management

1. When viewing/following wild horses, cross-country travel is permitted, except in seasonal wetland areas, including meadows, vernal pools, and spring heads.
2. Access to the camps in Pizona Springs and Truman Meadows would be by approved routes utilizing existing roads (see the Operations Maps in Appendix J for location of these routes).

⁶ The area analyzed in this project is known as the Montgomery Pass Wild Horse Viewing Area (MPWHVA). This area has been identified by commercial packers as the area they use for their wild horse viewing. The MPWHVA is within the legally defined boundaries of the Montgomery Pass Wild Horse Territory (MPWHT).

Photo 1. Truman Camp kitchen area, during its operating season.



2.3.3.4 Actions in the Ansel Adams and John Muir Wildernesses

The Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses Record of Decision (2005 AA/JM ROD) amended the 2001 Ansel Adams, John Muir, and Dinkey Lakes Wildernesses Record of Decision and contains management direction and use levels for all commercial pack station activities in these wilderness areas. Management direction and use level decisions made in the 2005 AA/JM ROD are summarized below and are fully explained in Appendix D. The 2005 AA/JM FEIS/ROD determined destination quotas, all expense trip quotas, stock at one time, and whether day rides were allowed for each pack station. However, because it was a programmatic document, it did not use the pack station names, only their location. This document assigns the use to the operator. The destination quotas, day ride destinations and stock limits for individual pack stations are listed in Table 2.5.

A. Use Levels and Stock Numbers

The 2005 AA/JM ROD established use levels, but did not assign these uses to specific pack stations. Those assignments would be made in this decision and can be found in Table 2.5.

1. **Day Rides:** Day rides in the AA/JM are authorized in the locations identified in Table 2.5. The use levels for these wilderness day rides are managed by the limit on stock in the wilderness at one time identified by pack station in Section 2.3.3.6 and in Table 2.5.

2. **Overnight Use:** Overnight use would be controlled by seasonal destination quotas, maximum stock at one time in the wilderness, designated stock camps, party size limitations, and trail suitability determinations. Seasonal destination quotas and stock in the wilderness at one time are identified by pack station in Table 2.5. Designated stock camps, party size limitations, and trail suitability are included in Appendix D. All clients for spot/dunnage trips must be dropped only within an approved destination area, and each drop or pick up would be counted against the destination quota.
3. **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 is lower, based on the physical capacity, setting, and management objectives for the area (see Appendix D for a list of these areas).

B. Campsites

All overnight holding of stock would take place at a designated stock camp. All party members on an all expense trip, base camp, or traveling trip must stay in a designated stock camp. These sites would be signed as stock camps. Appendix D contains a list of the designated sites in the AA/JM Wildernesses.

C. Travel Management/Trail Suitability

1. **System Trails:** The 2005 AA/JM ROD adopted a trail plan for all users in the wilderness, including commercial pack stock. This trail plan identified which trails would be managed as system trails and included trails identified as “Not Recommended for Stock” (NRFS). This NRFS trail designation has no regulatory effect; it serves as an educational and informational tool. In addition, 89 miles of system trail are designated as “Not Suitable for Commercial Stock” (NSCS) in the AA/JM Wildernesses. A NSCS designation closes the trail to commercial stock use. A list of these trails is included in Appendix D.
2. **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. Approved use trails and routes are included in Appendix D.
3. **Use trails** would 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 would be limited, suspended or disapproved.

D. Grazing Management

Grazing in the AA/JM would meet utilization standards in the 2005 AA/JM ROD. Grazing would be allocated to packers on an annual basis (stock nights) by District Rangers and documented in annual operating plans.

1. Where more than one operator desires to graze an area, each affected operator would submit a grazing request proposal each year prior to the season. The appropriate Authorizing Officers would consider the requests and allocate the available grazing based on the current estimate of stock nights, type of trip, history of use or non-use, and destination quotas. Resultant allocations would be documented in the annual operating plans. To ensure actual use conforms to requested use, operators would also be required to provide detailed grazing reports immediately following each trip.
2. **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. Monitoring of vegetative utilization and streambank disturbance would occur at selected key areas as described in the 2001 Ansel Adams, John Muir, Dinkey Lakes Wilderness Final EIS, Appendix G (pp. 7-10) and the 2005 AA/JM EIS monitoring plan using methods in 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 Appendix D). The estimated stock nights are intended as a pre-season trip planning guide to be used during annual operating plan development. Operators would not be allowed to schedule itineraries that intentionally exceed stocking rates unless suitable alternatives are proposed (i.e. packing feed). The complete grazing strategy for the AA/JM Wildernesses can be found in Appendix D.
3. **Drift Fences:** 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 would be removed. For a list of approved drift fences see Appendix D.

E. Campfires

Campfire direction specific to commercial pack stock and the AA/JM Wildernesses can be found in Appendix D.

2.3.3.5 Actions in the Golden Trout and South Sierra Wildernesses

A. Facilities

1. Use of administrative pastures/corrals is not authorized in wilderness.

2. Pack station operators may use public corrals at trailheads. Use of other public pastures/corrals is allowed with prior approval in their operating plan. Commercial pack stock use of the Horseshoe Meadow Equestrian Camp is not authorized.
3. Do not approve or allow use of facilities (cabins, pastures, and corrals) authorized for production livestock grazing in wilderness areas.

B. Use Levels

1. A total of 115⁷ overnight trips per year would be authorized in the GT Wilderness and would be divided among the following operators and destinations with some case-by-case approvals available:
 - Cottonwood Pack Station: 40 trips to the border of SEKI, either to Trail Pass or beyond Cottonwood Pass. 30 trips to destinations within the GT Wilderness;
 - Mt. Whitney Pack Trains: 10 trips to the border of SEKI, either to Trail Pass or beyond Cottonwood Pass, 20 trips to destinations within the GT Wilderness; and
 - 5 case-by-case trips to the border of SEKI, either to Trail Pass or beyond Cottonwood Pass, and 10 trips to destinations within the GT Wilderness. Any permitted commercial pack stock operator may apply for trips into GT Wilderness on a case-by-case basis (first-come, first-served) to be approved by the authorized officer. The Forest intends to manage case-by-case trips in the GT Wilderness as a pool of use, and to allocate that pool annually.
 - a) Adding the above, a total of 55 trips are authorized to travel to the border of SEKI from the Golden Trout Wilderness, allocated as stated in the preceding paragraph. SEKI would regulate use into and within the park.
 - b) Day rides in the GT/SS Wildernesses would be controlled by herd size. It is assumed that, with the projected need (Appendix F) and population trends, the use will be between 200-300 day rides.
2. A total of 25 trips would be allowed in the SS Wilderness allocated as follows with an allowance for some case-by-case approval:
 - Cottonwood Pack Station: 5 trips;
 - Glacier Pack Train: 5 trips;
 - Mt. Whitney Pack Trains: 10 trips; and
 - Case-by-case: 5 trips (approved by the District Ranger on a first-come, first-served basis).
3. For the GT and SS Wildernesses, a maximum of 15 people and 25 stock are permitted per party. (Note: the maximum allowable party size in SEKI is 15 people and 20 stock, so trips that cross into SEKI from the GTW cannot have more than 20 stock.)

⁷ A trip is defined as overnight service provided by a commercial packer utilizing up to the maximum people and stock permitted per party (for both the GT/SS Wildernesses, a maximum of 15 people and 25 stock are permitted per party).

4. All wilderness permits would be issued by the Forest Service. In the event that wilderness permits or reservation services are contracted out, the contractor would be performing the function of the U.S. Forest Service. All use will be reported to the Forest Service by specific date, destination, number of clients, length of trip, grazing locations and stock nights, and any other information deemed necessary.

C. Campsites

The following proposed actions are in response to known specific resource problems attributed to campsite location. In some areas, campsites would be designated to concentrate use to protect resources. The District Ranger may designate additional campsites in the future in response to identified problems.

1. Campsites will be 100 feet from water. Camps need to meet best management practices. Use only pre-existing campsites.
2. Stock must be held at least 100 feet from water.
3. In the Golden Trout Wilderness, the authorized officer would designate and sign campsites and appropriate access prior to authorizing trips in the areas surrounding the following areas. Within these eight areas, camping is limited to the designated sites.
 - Templeton Meadow
 - Ramshaw Meadows
 - Strawberry Meadows
 - Big Dry near Templeton Meadow
 - Gomez Meadows
 - McConnel/Tunnel Trail intersection
 - Old Tunnel Airstrip
 - Little Whitney Meadow
4. In the South Sierra Wilderness, designate a site and appropriate access in the area surrounding Summit Meadow.

D. Travel Management

Allow travel on all trails and routes in the GT/SS Wildernesses. Cross-country travel is allowed except through meadows and riparian areas prior to range readiness date (determined annually by range staff).

E. Grazing Management

1. Grazing incidental to trips in the GT/SS Wildernesses is allowed except in locations determined to be unsuitable. Areas currently identified in the Golden Trout Wilderness as unsuitable for grazing are: Volcano Meadow, South Fork Meadow (headwaters of South Fork of the Kern River), Bullfrog Meadow, Fat Cow Meadow, the lower end of Big Whitney Meadow (below the confluence of the two main tributaries), Big Dry Meadow (near Gomez Meadow), and parts of Ramshaw Meadow. Grazing is allowed in Ramshaw

Meadow near Kern Peak Stringer (map available in project file). The meadows previously permitted as pastures are closed to any grazing. They are: South Fork Meadows (on Cottonwood Creek) and Overholster Meadow (on Little Cottonwood Creek) (see Cottonwood Area Operations Map). No unsuitable areas are currently identified in the SS Wilderness.

2. As described in the “Actions Common to All Pack Stations in the Project Area,” range readiness would be determined by standards as identified in the 1988 Inyo National Forest Land and Resource Management Plan (pg. 85). Pack stock streambank trampling associated with grazing in the GTW may not exceed total streambank alteration standards identified in the INF LRMP (1988) (pg. 78-9). The standard in areas outside of state designated wild trout waters is 20%. In drainages designated as wild trout waters, streambank alteration may not exceed 10%. The majority of the watersheds in the GT/SS Wildernesses managed by the INF are designated as wild trout waters, including all areas that drain to Cottonwood Creek, Golden Trout Creek and to the South Fork of the Kern River (map available in project file.)
3. Pack stock grazing utilization standards would be determined using Inyo LRMP Amendment #6 in the GT/SS Wilderness Areas. LRMP Amendment # 6 was developed to establish utilization standards for production livestock grazing. These standards were designed to be adaptive and provide for accelerated restoration and improvement of degraded range sites as well as to maintain those sites currently in a fully functional condition. Application of the Inyo LRMP Amendment #6 standards for pack stock grazing would create one allowable use standard in meadows of the GT/SS Wildernesses where production livestock and pack stock grazing overlap.

2.3.3.6 Actions by Individual Pack Stations

The section below describes the proposed action for specific pack stations. For each pack station, there is a section for facilities, pastures, activities and services, travel management, and herd size. All facilities proposed for authorization currently exist. Most activities and services provided by each pack station have been previously authorized. Appendix J contains the Operations Maps that display the location of pack stations and pastures.

Frontier Pack Train

Authorize the operation and maintenance of a high complexity⁸ commercial pack station with facilities near Silver Lake in the June Lake Loop area.

A. Facilities: Authorize the following facilities on 4.29 acres (previously permitted 3.5⁹ acres): four large corrals, barn with tack room, kitchen and central building, trailer ports for living

⁸ For a definition of high, moderate, and low complexity operations, refer to Appendix B, Glossary, under “Operational Complexity”.

quarters, roads and parking areas, four loading platforms, three water troughs, hay storage yard, wooden hitching rails, feed storage bin, equipment platform, and four tack sheds. The water and sewage system is provided by the June Lake PUD.

B. Pastures: Authorize grazing in Rodeo and Evans Pastures. Implement non-wilderness grazing standards, with an initial use factor for Rodeo Pasture of 30%, and for Evans, 40%. These use factors may change based on changing ecological conditions (described in section 2.3.3.1 (E) above). Exclude fens in Evans Pasture. Exclude stream in mid-section of Rodeo. Pasture Acreage: Rodeo = 32 acres, Evans = 17 acres.

C. Activities/Services: Authorize pack stock supported outfitting/guiding in the non-wilderness, including the Montgomery Pass Wild Horse Viewing Area (MPWHVA), and in the AA/JM Wildernesses. Authorize trips in the GT/SS on a case-by-case basis. Authorize boarding for up to 12 private horses. Authorize participation in permitted cattle drive activities.

Authorize the following non-wilderness services: Wild horse viewing in the MPWHVA, horse-riding instruction, hay rides, day rides, and up to four annual stock drives. Authorize 500 service days for wild horse viewing and related activities in the MPWHVA. Authorize use of the existing base camp at Truman Meadows, consistent with the MPWHT Plan.

Authorize the following service and use levels in the AA/JM Wildernesses: Outfitting and guiding services including spot and dunnage, full service trips, day rides and re-supply trips. The stock in the wilderness at one time limit is 75. See Table 2.5 for authorized overnight and day ride destinations and quotas.

D. Travel Management: Refer to Table 2.3 for approved stock drives and designated routes in HDRAs. No “organized stops” (lunch, camping) or leaving road when riding through the pumice sand flats between Mammoth and Mono Lake during stock drives or other trips (sensitive plant habitat, see Operations Maps, Appendix J). No travel through or stopping on the ephemeral ponds/vernal pools (habitat for sensitive plant) in the MPWHVA.

E. Herd Size: Authorize 110 stock.

Red’s Meadow and Agnew Meadow Pack Stations

Authorize the operation and maintenance of a high complexity commercial pack station with facilities at Reds and Agnew Meadows.

A. Facilities: Authorize the following facilities on 20.9 acres (previously permitted 25 acres): Reds Meadow (18.2 acres): store, cabins (six housekeeping cabins and two cabins for owner/manager), concrete slab for future building, café (with counter), 14 employee housing units, eight sheds, six large corrals and four to six temporary paneled corrals for resort guest, and archway over the road before entering the resort. Agnew Meadow (2.73 acres): office, residence, saddle shed, corral, three small sheds, and three employee housing units. Authorize three water rights owned by the Inyo National Forest for use at Red’s Meadow Pack Station. Authorize

⁹ The pack station permit areas were made more accurate for all pack stations, based on the actual area of the pack station facilities. This document does not enlarge or shrink the pack station facilities, simply corrects past inaccuracies.

conveyance structures associated with the water use of these three water rights. Authorize sewage system. The pack station would maintain its driveways and parking lots to prevent soil erosion, especially erosion that causes sedimentation into Agnew Meadow.

B. Pastures: Authorize grazing in Agnew Meadows Pastures (east and west). Implement non-wilderness grazing standards, with an initial use factor for the West Pasture of 30%, and 40% for the East Pasture. These use factors may change based on changing ecological conditions (described in section 2.3.3.1 (E) above). In west pasture, fence stock out of the stream corridor. Monitor headcuts in east pasture. Acreage: Agnew Pasture (east) = 17 acres, Agnew Pasture (west) = 15 acres. The Minaret Falls Meadow and the Johnston Meadow Pasture in the AA Wilderness (see the 2005 AA/JM ROD), the Red's Meadow Government Pasture and the Government Guest Pasture would not be authorized.

C. Activities/Services: Authorize pack stock supported outfitting/guiding in the non-wilderness and in the AA/JM Wildernesses. Authorize participation in permitted cattle drive activities. Authorize the following services at the pack station: retail sales and lodging and meals for guests and employees.

Authorize the following non-wilderness services: Day rides, wagon rides (on existing roads) and up to four annual stock drives. A maximum of 1,500 service days are authorized for day rides on the Rainbow Falls Trail. This 1,500 service day limit on the Rainbow Falls Trail does not count against the AA/JM stock in the wilderness at one time limit¹⁰.

Authorize the following service and use levels in the AA/JM Wildernesses: Outfitting and guiding services including spot and dunnage, full service trips, day rides and re-supply trips. The stock in the wilderness at one time limit is 90. See Table 2.5 for authorized overnight and day ride destinations and quotas.

D. Travel Management: Refer to Table 2.3 for approved stock drives and for designated routes in HDRAs.

E. Herd Size: Authorize 125 stock. Use on the Rainbow Falls Trail does not count against the 90 in wilderness at one time limit. Additional animals may be held at Red's Meadow resort for Mt. Whitney Pack Trains use, see Mt. Whitney Pack Trains. No more than 125 animals may be used for Red's/Agnew Meadow Pack Station.

Mammoth Lakes Pack Outfit

Authorize the operation and maintenance of a moderately complex commercial pack station with facilities in the Mammoth Lakes Basin.

A. Facilities: The following facilities are authorized on 13.91 acres (previously permitted 15 acres): permit owner's residence, manager's residence, front office, bunkhouse, four cabins, office building, kitchen and dining building, restrooms, packing shed, pump house, packer's tack

¹⁰ The use to Rainbow Falls does not count against service days because the time spent in the AA Wilderness on each leg of the trip is 10-15 minutes. This time is inconsequential for effects to overall wilderness character and it is impractical to count this against stock-at-one-time quotas in the AA Wilderness.

room, two saddle sheds, loading platform, twelve corrals, hitching posts, parking area, propane tank, and six recreation vehicle hookups. Authorize water line easement from Mammoth Community Water District and sewer system that is connected with the Forest Service sewage system. Mammoth Lakes Pack Outfit owns two appropriative water rights, both from Lake Mary.

B. Pastures: No pastures authorized.

C. Activities/Services: Authorize pack stock supported outfitting/guiding in the non-wilderness and in the AA/JM Wildernesses. Authorize cattle drive participation activities. Authorize trips in GT/SS on a case-by-case basis. Authorize the following services at the pack station: retail sales and lodging and meals for guests and employees.

Authorize the following non-wilderness services: Day rides, walk and lead trail (within permitted pack station boundary), up to four annual stock drives, and up to 4 overnight pack trips in the Glass Mountains, with overnight stops in existing sites at Sentinel and Sawmill Meadows. No camping within one-quarter mile of goshawk nest in Sawmill Meadow. The District Ranger would designate campsites near these meadows prior to authorizing trips. No grazing or cross-country travel through meadows in the Glass Mountains area. For day rides in the Mammoth Lakes Basin, authorize 10% increase (from 7000 to 7,700 service days) in current service day authorizations.

Authorize the following service and use levels in the AA/JM Wildernesses: Outfitting and guiding services including spot and dunnage, full service trips, day rides, and re-supply trips. The stock in the wilderness at one time limit is 90. See Table 2.5 for authorized overnight and day ride destinations and quotas.

D. Travel Management: Refer to Table 2.3 for approved stock drives and designated routes in HDRAs. Do not allow use on trail between Lake George and McCloud Lake until trail construction is complete.

E. Herd Size: Authorize 120 stock (75 in AA/JM Wildernesses at one time).

McGee Creek Pack Station

Authorize the operation and maintenance of a moderately complex commercial pack station with facilities in the McGee Creek drainage.

A. Facilities: Authorize the following facilities on 5.4 acres (previously permitted 5 acres): small parking lot, picnic area, residence and bunkhouse, office, tack shed, packing shed, storage shed, saddle shed with packing dock, foundations of two bunkhouses, tent cabin, corrals, generator shed, propane tank, and public restroom. Authorize use of water from three developed springs with associated pipelines. Authorize septic system for human waste disposal. For a complete list of facilities, consult the project record.

B. Pastures: Authorize grazing in the McGee Pasture. Implement non-wilderness grazing standards, with an initial use factor of 40%. This use factor may change based on changing ecological conditions (described in 2.3.3.1 (E) above). Monitor fens. Acreage: McGee = 40.

C. Activities/Services: Authorize pack stock supported outfitting and guiding in the non-wilderness and the AA/JM Wildernesses. Authorize trips in GT/SS on a case-by-case basis.

Authorize up to four overnight pack trips in the Glass Mountains, with overnight camps in existing sites at Sentinel and Sawmill Meadows. No camping within one-quarter mile of goshawk nest in Sawmill Meadow. The District Ranger would designate campsites near these meadows prior to authorizing trips. Authorize participation in permitted cattle drive activities.

Authorize the following non-wilderness services: Day rides, wagon rides, and up to four annual stock drives. Wagon rides would be on existing roads and would occur on an irregular basis. Authorize the sale of retail items at the pack station.

Authorize the following service and use levels in the Ansel Adams and John Muir Wildernesses: Outfitting and guiding services including spot and dunnage, full service trips, day rides and re-supply trips. The stock in the wilderness at one time limit is 60. See Table 2.5 for authorized overnight and day ride destinations and quotas.

D. Travel Management: Refer to Table 2.3 for approved stock drives and designated routes in HDRAs.

E. Herd Size: Authorize 85 stock.

Rock Creek Pack Station

Authorize the operation and maintenance of a high complexity commercial pack station with facilities in the Rock Creek drainage.

A. Facilities: Authorize the following facilities on 5.2 acres (previously permitted 2 acres): Upper Corral (3.02 acres): two corrals, five loading docks, one horse saddle shed, two mule saddle sheds, office, four outhouses, one kitchen/dining building, one bunkhouse, tent platforms, access road, parking area, gate and sign. Lower Corral (2.23 acres): one corral and lane, one residence, one saddle shed, one loading dock, access road, sign on Rock Creek Road, gate and one outhouse (outhouse use would cease by November 2008 and if necessary, would be replaced by another type of toilet). The corral would be reconfigured to prevent manure entry into surface water, because it is currently too close to surface water. Final design must be approved by Forest personnel. Permit all existing facilities, except replace temporary trailers with tent platforms. Authorize use of the water conveyance system consisting of spring boxes, diversion structures, and pipelines. Also authorize gray water septic/leach that meet Inyo county Department of Environmental Health Services (ICDEHS) specifications.

B. Pastures: Authorize grazing in Upper Corral Pasture and Lower Corral Pasture (both upper meadow and lower forested units). The lower forested unit would require construction of fence before use. At the pasture near the Lower Corral of Rock Creek Pack Station, the perennial stream segment along the road would be fenced out of the pasture. Allow installation of a watering trough if necessary for watering stock.

Set grazing utilization standard at 20% in the Upper Corral Pasture to protect the fen and monitor fen conditions. Implement non-wilderness grazing standards (see section 2.3.3.1(E) above) in the Lower Pasture, with an initial utilization factor of 30% in the meadow unit and 40% in the forest unit. These use factors may be changed based on changing ecological condition. In the Lower Corral Pasture, exclude sloping springs in upper meadow unit and monitor rare plants.

Acreage: Upper Corral Pasture = 11 acres; Lower Corral Pasture: Meadow Unit = 29 acres, Forest Unit = approximately 15.8 acres.

C. Activities/Services: Authorize pack stock supported outfitting/guiding in the non-wilderness (including the Montgomery Pass Wild Horse Territory) and in the AA/JM Wildernesses. Authorize participation in permitted cattle drive activities.

Authorize the following non-wilderness services: Day rides, up to four annual stock drives, and wild horse viewing in the Montgomery Pass Wild Horse Viewing Area (MPWHVA). Authorize 500 service days for wild horse viewing and related activities in the MPWHVA and use of the existing base camp at Pizona Springs, consistent with MPWHT Plan.

Authorize the following service and use levels in the AA/JM Wildernesses: Outfitting and guiding services including spot and dunnage, full service trips, day rides and re-supply trips. The stock in the wilderness at one time limit is 90. See Table 2.5 for authorized overnight and day ride destinations and quotas.

D. Travel Management: Refer to Table 2.3 for approved stock drives and designated routes in HDRAs.

E. Herd Size: Authorize 110 stock. (Additional animals may be added to Rock Creek's herd size and used for Mt. Whitney Pack Trains use in the GT/SS Wildernesses, see Mt. Whitney Pack Trains).

Pine Creek Pack Station

Authorize the operation and maintenance of a moderately complex commercial pack station with facilities in the Pine Creek drainage.

A. Facilities: Authorize the following facilities on 2.5 acres (previously permitted 2 acres): two corrals, seven hitch rails, hay storage areas, residence trailer, 40' kitchen trailer, 40' pack equipment trailer with two 40'x20' loading docks and attached roof frame, one pack saddle shed, one office/shower/bathroom/freezer/laundry building, two tack sheds, one 250 gallon propane tank, underground utilities, electric power poles, one shoe equipment shed and platform area, one grain shed, one tack repair shed, one tool shed, six tent cabins, parking lot, BBQ area, client staging area, one sign, entrance gate, cedar rail fencing, drift fence/gate on trail at pack station boundary, and access road around corrals. The ditch that skirts the corral on the uphill side must be maintained to prevent water from entering the corral. Authorize use of water from an existing developed spring with pipeline to holding pond and corrals/office and septic system for human waste disposal.

B. Pastures: No pastures authorized.

C. Activities/Services: Authorize pack stock supported outfitting/guiding in the non-wilderness and in the JM Wilderness. Authorize the sale of retail items and occasional meal services for guests at the pack station. Authorize cattle drive participation activities.

Authorize the following non-wilderness services: Day rides and up to four annual stock drives.

Authorize the following service and use levels in the JM Wilderness: Outfitting and guiding services including spot and dunnage, full service trips, day rides, re-supply trips, providing access into SEKI. The stock in the wilderness at one time limit is 50. See Table 2.5 for authorized overnight and day ride destinations and quotas.

D. Travel Management: Refer to Table 2.3 for approved stock drives and designated routes in HDRAs. Do not allow use on “Aspen Loop” day ride trail between Gable Mill site ruins and Pine Creek Pass Trail until determination of trail stability.

E. Herd Size: Authorize 65 stock.

Bishop Pack Outfitters

Authorize the operation and maintenance of a moderately complex commercial pack station with facilities at North Lake and Aspendell in the Bishop Creek drainage.

A. Facilities: Authorize the following facilities on 4.5 acres (previously permitted 8.3 acres⁸): North Lake (2.98 acres): one corral, two loading docks, two tack sheds, one outhouse (use would cease by November 2008 and if necessary, toilet would be replaced by a self contained toilet), one tack repair trailer, one office/cookhouse, access road, gate, entrance sign, and eight tent platforms to replace trailers. Authorize the water system, including use of water from a spring, pump with catch basin, 300 gallon holding tank, and pipeline. Authorize chemical toilets and temporary use of outhouse for employees and customer use throughout the operating season. Outhouse use would cease by November 2008 and if necessary, toilet would be replaced by a self contained toilet type. Aspendell (1.53 acres): office/bunkhouse, permittee living quarters, three corrals, one tack shed, two outbuildings, and sewer to Aspendell. Authorize water system at Aspendell including spring box and water line (garden house) with gravity flow to corrals and residence.

B. Pastures: Authorize pack stock supported grazing in North Lake Pasture (small), North Lake Pasture (large), Bishop Park Pasture (Cardinal Mine and Office units), and Art’s Pasture (east Aspendell). Grazing is not authorized at Intake 2. Continue existing management plan in North Lake Pastures (small and large). Fence out the spring head (to protect the spring from trampling and manure) in the small pasture and install a watering trough if necessary for stock watering. Implement non-wilderness grazing standards (see section 2.3.3.1 E above) in Bishop Park (both Cardinal Mine and Office Units) and Art’s Pasture. Monitor fences in Art’s Pasture. Implement non-wilderness grazing standards. An initial use factor for these two pastures was set at 40%. These use factors may change based on changing ecological conditions (described in section 2.3.3.1 (E) above). Acreage: North Lake (large) = 16 acres, North Lake (small) = 3 acres, Art’s Pasture (east) = 7 acres, Bishop Park Pasture (Cardinal and Office Units) = 27 acres.

C. Activities/Services: Authorize outfitting/guiding in the non-wilderness and in the JM Wildernesses. Authorize cattle drive participation activities.

Authorize the following non-wilderness services: Day rides and up to four annual stock drives.

Authorize the following service and use levels in the JM Wilderness: Outfitting and guiding services including spot and dunnage, full service trips, day rides and re-supply trips. The

stock in the wilderness at one time limit is 60. See Table 2.5 for authorized overnight and day ride destinations and quotas.

D. Travel Management: Refer to Table 2.3 for approved stock drives and designated routes in HDRAs

E. Herd Size: Authorize 75 stock.

Rainbow Pack Outfitters

Authorize the operation and maintenance of a moderately complex commercial pack station with facilities on the South Lake Road in the Bishop Creek drainage.

A. Facilities: Authorize the following facilities on 3.5 acres (previously permitted 4 acres⁸): one office/kitchen, three cabins, two gear sheds, one mule barn, one horse barn, three corrals, outhouse (not to be used as an outhouse), three hitching rails/posts, one clothesline, one propane tank, one temporary travel trailer, one laundry cabin, one hot water shower cabin, dirt road access, parking area, three foundations, two tent platforms, and one loading dock. Authorize entrance sign on South Lake Road, one sign at entrance to parking area, one sign along access road through Parcher's Resort, one sign in parking area, client staging area with picnic table. Authorize water systems (spring box, filter, and pipeline). As of 2000, this water is not allowed for public consumption. Authorize gray water septic/leach field from main cabin and use of chemical toilets throughout the season. Use of the outhouse would remain prohibited. Manure accumulations would be removed from both corrals and taken off-site at least once every two weeks throughout the operating season. Complete removal would occur at season's end. Berms or other features would be constructed along Green Creek to prevent direct entry of pack station runoff into the creek. These features would be inspected and maintained as needed.

B. Pastures: Authorize grazing in Lower Donkey Meadow. No grazing authorized in Big Meadow Pasture. Remove fencing at Big Meadow Pasture. Reconstruct unit boundary fence in Donkey and allow use of upper unit only when it reaches range readiness (typically in dry years). When grazed, implement non-wilderness grazing standards, with an initial use factor of 30%. This use factor may change based on changing ecological conditions (described in section 2.3.3.1 (E) above). Acreage: Donkey Pasture = 54 acres.

C. Activities/Services: Authorize pack stock supported outfitting/guiding in the non-wilderness and in the JM Wilderness. Authorize participation in permitted cattle drive activities. Other services/activities authorized include the use of the pack station for commercial filming, and occasional meal services for guests.

Authorize the following non-wilderness services: Day rides, up to four annual stock drives, and overnight service to non-wilderness destinations. Authorize five annual overnight trips to the following non-wilderness destinations: Green and Brown Lakes.

Authorize the following service and use levels in the JM Wilderness: Outfitting and guiding services including spot and dunnage, full service trips, day rides and re-supply trips. The stock in the wilderness at one time limit is 35. See Table 2.5 for authorized overnight and day ride destinations and quotas.

D. Travel Management: Refer to Table 2.3 for approved stock drives and designated routes in HDRAs.

E. Herd Size: Authorize 55 stock.

Glacier Pack Train

Authorize the operation and maintenance of a low complexity commercial pack station in the Big Pine Creek drainage.

A. Facilities: Authorize the following facilities on 3.4 acres (previously permitted 1.4 acres⁸): office/kitchen/residence, two bunk houses, one saddle shed, one pit toilet (use would cease by November 2008 and if necessary, toilet would be replaced by a self contained toilet type), one pack shed, two hitch rails, two hitch racks/feed bins, entrance sign, access road, parking lot, and corral. Authorize water system (spring box, pressure tank, pipelines) and septic system.

B. Pastures: Authorize grazing in McMurry Meadow Pasture. Authorize irrigation system in this pasture. Implement non-wilderness grazing standards, with an initial use factor of 40%. This use factor may change based on changing ecological conditions (described in section 2.3.3.1 (E) above). The on-date would be after June 16th to protect a sensitive plant population. Implement mitigation measures to protect cultural values once analysis is completed. Acreage: McMurry Meadow Pasture = 47 acres.

C. Activities/Services: Authorize pack stock supported outfitting/guiding in the non-wilderness and in the JM and SS Wildernesses. Authorize cattle drive participation activities.

Authorize the following non-wilderness services: Day rides and up to four annual stock drives.

Authorize the following service and use levels in the JM Wilderness: Outfitting and guiding services including spot and dunnage, full service trips, day rides and re-supply trips. The stock in the wilderness at one time limit is 35. See Table 2.5 for authorized overnight and day ride destinations and quotas.

Authorize the following services and use levels in the South Sierra Wilderness: Outfitting and guiding services including spot and dunnage, full service trips, and re-supply trips. Authorize five trips in the SS Wilderness.

D. Travel Management: Refer to Table 2.3 for approved stock drives and designated routes in HDRAs.

E. Herd Size: Authorize 45 stock.

Sequoia Kings Pack Trains

Authorize the operation and maintenance of a low complexity commercial pack station with facilities at Onion Valley Road. Sequoia Kings Pack Trains' use would be authorized under the Pine Creek Pack Station permit.

A. Facilities: Authorize existing facilities on 2.5 acres (previously permitted 2 acres) including: office/kitchen/supplies store/ shower building, one residential cabin, three corrals, tack shed, small loading platform, hitching posts, one 250 gallon propane tank, one outhouse (use

would cease by November 2008 and, if necessary, toilet would be replaced by a self contained toilet type), parking area, and access road and gate. Authorize water system, including a catch basin consisting of a small rock diversion filling 3" PVC pipe that runs to corrals and facilities. Authorize the septic system.

B. Pastures: No pastures authorized.

C. Activities/Services: Authorize pack stock supported outfitting/guiding in the non-wilderness and in the JM Wildernesses. Authorize cattle drive participation activities.

Authorize the following non-wilderness services: Day rides and up to four annual stock drives.

Authorize the following service and use levels in the JM Wilderness: Outfitting and guiding services including spot and dunnage, full service trips, day rides and re-supply trips. The stock in the wilderness at one time limit is 35. See Table 2.4 for authorized overnight and day ride destinations and quotas.

D. Travel Management: Refer to Table 2.3 for approved stock drives and designated routes in HDRAs.

E. Herd Size: Authorize 65 stock.

Cottonwood Pack Station

Authorize the operation and maintenance of a low complexity commercial pack station with facilities at Horseshoe Meadow.

A. Facilities: Authorize the following facilities on 9.7 acres (previously permitted 8.3 acres): tack/storage shed, five saddle sheds, pack dock, two corrals, three employee sleeping cabins, office/kitchen/shower facility for employees, temporary travel trailer for housing/office, waterline from Forest Service system to pack station facilities, parking area, gate, and access road. Authorize water and septic lines. For a complete list of facilities, consult the project record.

B. Pastures: Rest South Fork Cottonwood Creek Meadow, re-evaluate in 8-12 yrs. Do not allow grazing in Overholster or Windy Flat/Windy Gap Pastures. Remove any old fence material at Overholster Pasture.

C. Activities/Services: Authorize pack stock supported outfitting/guiding in the non-wilderness and in the JM and GT Wildernesses. Authorize participation in permitted cattle drive activities.

Authorize the following non-wilderness services: Day rides on a designated loop trail around pack station with segments in and out of GT Wilderness.

Authorize the following service and use levels in the JM Wilderness: Outfitting and guiding services in the John Muir Wilderness including spot and dunnage, full service trips, day rides, and re-supply trips, providing access to the border of SEKI. The stock in the wilderness at one time limit is 35. See Table 2.2 for authorized overnight and day ride destinations and quotas.

Authorize the following services and use levels in the Golden Trout Wilderness: Packing and guiding, providing access to SEKI, including full service trips, traveling trips, spot, dunnage, re-supply, and day rides. Allow 40 trips through GT Wilderness to the border of SEKI and 30

trips into GT Wilderness (70 trips maximum). Day rides in the GT Wilderness are limited by the herd size authorized for Cottonwood Pack Station.

Authorize the following services and use levels in the South Sierra Wilderness: Packing and guiding, including full service trips, traveling trips, spot, dunnage, re-supply, and day rides. Authorize 5 trips into the SSW.

D. Travel Management: Refer to Table 2.3 for designated routes in HDRAs. No horse drives are authorized.

E. Herd Size: Authorize 80 stock.

Mt. Whitney Pack Trains

Use is authorized for Rock Creek Pack Station and Red's Meadow and Agnew Meadow Pack Stations (Mt. Whitney Pack Trains is a partnership between these two operators). There is no base facility.

A. Facilities: none

B. Pastures: No pastures authorized.

C. Activities/Services: Authorize pack stock supported outfitting and guiding in the non-wilderness and in the JM and GT Wildernesses. Authorize participation in permitted cattle drive activities.

Authorize the following non-wilderness services: Day rides in Monache Meadows.

Authorize the following service and use levels in the JM Wilderness: Outfitting and guiding services including spot and dunnage, full service trips, re-supply trips, providing access to the border of SEKI. See Table 2.5 for authorized destinations and destination quotas. Day rides in the JM Wilderness are not authorized. Stock at one time in the AA and JM Wildernesses is included in the Rock Creek (90) and Red's Meadow (90) allowances.

Authorize the following services and use levels in the Golden Trout Wilderness:

Outfitting and guiding services including spot and dunnage, full service trips, re-supply trips, and access to the border of SEKI. Allow 20 trips with destinations in the GT Wilderness and 10 trips through the GT Wilderness into SEKI (maximum of 30 trips total). A maximum of two of these trips may originate from Horseshoe Meadow Trailhead.

Authorize the following services and use levels in the South Sierra Wilderness:

Outfitting and guiding services including spot and dunnage, full service trips, and re-supply trips. Allow 10 trips into SS Wilderness.

D. Travel Management: Refer to Table 2.3 for designated routes in HDRAs. No horse drives.

E. Herd Size: A maximum of 60 stock may be held on the Forest by Mt. Whitney Pack Trains (for both operators). Stock numbers for Mt. Whitney Pack Trains would be split and added to the authorized herd size for Rock Creek and Red's Meadow. Both Red's Meadow and Rock Creek may hold up to 30 stock for use by Mt. Whitney Pack Trains.

2.3.3.7 Actions for Commercial Pack Stock Outfitter/Guide

Three Corner Round Pack Outfit

Authorize the operation and maintenance of a low complexity operation with a base camp at Pinyon Creek.

A. Facilities: Authorize base camp at Pinyon Creek, with a corral and a ditch diversion (placement of pipe in creek, 15' diameter concrete lined pool).

B. Pastures: No pastures authorized.

C. Activities/Services: Permit guided burro packing trips within the non-wilderness and the AA, JM, GT, and SS Wildernesses.

Authorize the following non-wilderness services: Non-wilderness trips using burros. Authorize 170 service days for this use in the non-wilderness.

Authorize the following service and use levels in the AA/JM Wildernesses: Guided burro packing trips with a maximum of 119 service days allocated for this use. There are no specific destination quotas; use is regulated by trailhead quotas. Annual operating plans would approve use of trailheads to insure consistency with desired conditions of area and to reduce conflicts with other types of use.

Authorize the following services and use levels in the GT/SS Wildernesses: Guided burro packing trips with a maximum of 100 service days allocated for this use.

D. Travel Management: TCR may use any non-wilderness trails and wilderness trails within the AAW and JMW that are authorized for commercial stock use in the 2005 FEIS. TCR is authorized to use all trails and may travel cross country in the GTW, and SSW. When operating in HDRAs, pack animals must stay on trails open to other operators as listed in Table 2.3.

E. Herd Size: Authorize 25 burros.

2.3.4 Alternative 3

2.3.4.1 Summary of Alternative 3

In Alternative 3 (as with Alternative 2) commercial pack stock uses for the 12 pack stations would be authorized for existing activities occurring on the Inyo National Forest and in the AA/JM portion of the Sierra National Forest. In addition, the alternative would authorize commercial pack stock services for Three Corner Round Pack Outfit. Some minor changes to existing individual pack station operations and facilities are included in Alternative 3 and can be found in Section 2.3.4.7, Actions by Individual Pack Stations.

Alternative 3 is different from Alternative 2 in that it:

1. Limits stock drives (herding permitted pack stock to and from the pack station) to two per pack station annually;
2. Limits all commercial stock travel to approved routes except in the following areas that permit cross-country travel: MPWHVA, Monache Meadows, and GT/SS Wildernesses;
3. Implements the Inyo National Forest LRMP Amendment #6 utilization standards to manage commercial pack stock grazing in authorized pastures;

4. Sets herd sizes at the current authorized level (Alternative 2 raises the herd size for five operators);
5. Limits day ride use in the Mammoth Lakes Basin to the current level (7,000 service days);
6. Eliminates case-by-case approvals for trips in the GT Wilderness;
7. Lowers the allowable use to the border of SEKI through the GT Wilderness;
8. Relocates commercial pack stock camps out of Truman Meadows and Pizona Springs in the MPWHVA to upland sites; and
9. Controls use into the GT/SS Wildernesses through service days (rather than number of trips).

Sections 2.3.4.2 through 2.3.4.8 provide the actions associated with Alternative 3.

2.3.4.2 Actions Common to All Pack Stations in the Project Area¹¹

A. Facilities/Operations

Actions are the same as in Alternative 2.

B. Case-by-Case Trips

Management would be the same as in Alternative 2 with the exception that case-by-case trips are not permitted in the GT Wilderness.

C. Travel Management

Commercial stock travel is restricted to approved routes—both inside and outside of HDRAs—except in the following areas: MPWHVA, Monache Meadows area, and the GT/SS Wildernesses. In the MPWHVA, cross-country travel is permitted only in the packer-identified “viewing area.” On approved routes, commercial stock must stay within 50’ each side of approved travel routes (100’ corridor). Cross-country travel is also permitted while participating in authorized cattle drive activities. Hunting trips are allowed to travel off pre-approved routes to hunt and retrieve game.

D. Grazing Management

1. For all units in the project area (including pastures and the GT/SS Wildernesses), grazing utilization would be determined using Inyo LRMP Amendment #6. See Section 2.3.3.1 for a description of Inyo LRMP Amendment #6. For range readiness and stream bank alteration, the direction is the same as Alternative 2.
2. Pasture use is authorized as a part of the resort permit for each individual pack station (see Section 2.3.4.7 for pastures authorized for specific pack stations).

E. Weed Control

The direction is the same as in Alternative 2.

¹¹ This direction does not apply to the Ansel Adams and John Muir Wildernesses (see note on page 3).

2.3.4.3 Actions in Non-Wilderness Areas of the Forest

A. Facilities

1. Herd size authorizations are assigned to each pack station and are the same as is currently authorized for each pack station (except for Glacier Pack Train). See Section 2.3.4.7 for pack station specific authorizations.
 2. Do not allow replacement of Sawmill Pass Trailhead Corral.
- No additional changes to the direction in Alternative 2.

B. Use Levels

As in Alternative 2, use in all non-wilderness areas other than the Mammoth Lakes Basin would be limited to the existing herd size. In the Mammoth Lakes Basin, use would be limited to 7000 service days for day rides (the current level of use). Use levels for the Rainbow Falls Trail are the same as in Alternative 2.

C. Campsites

The direction is the same as Alternative 2.

D. Stock Drives

Allow up to two stock drives (herding permitted pack stock to and from the pack station) per year for each pack station that is permitted for stock drives.

The rest of the direction is the same as Alternative 2.

2.3.4.4 Actions in the Montgomery Pass Wild Horse Viewing Area

A. Use Levels

The direction is the same as in Alternative 2.

B. Campsites

In Alternative 3, the base camps at Truman Meadows and Pizona Springs would be moved out of sensitive areas. The Truman Meadows camp would be moved out of riparian areas to an area where access avoids travel through the meadow. The Pizona Springs camp/corrals would be relocated out of the riparian area. At a minimum, both camps would be moved out of riparian conservation areas.

C. Travel Management

The direction is the same as in Alternative 2.

2.3.4.5 Actions in the Ansel Adams and John Muir Wildernesses

The direction is the same as in Alternative 2.

2.3.4.6 Actions in the Golden Trout and South Sierra Wildernesses

A. Facilities

The direction is the same as in Alternative 2.

B. Use Levels

1. Authorize use only to the packers listed in the GT Wilderness Plan (Cottonwood Pack Station and Mt. Whitney Pack Trains). In Alternative 3, service days are used to regulate use in the GT/SS Wildernesses. The service day numbers are calculated by looking at past trips into the GT/SS Wildernesses and analyzing the average group size and the number of nights these parties spent in the wilderness. A total of 1085 service days (approx. equivalent to 82 trips) would be allowed and divided between the following operators and destinations:
 - Cottonwood Pack Station: 500 service days to GT Wilderness (approx. 25 trips)¹², 150 service days (approx. 30 trips) to the border of SEKI (650 service days total)¹³.
 - Mt. Whitney Pack Trains: 400 service days (approx. 20 trips) in GT Wilderness, 35 service days (approx. 7 trips) to the border of SEKI (435 service days total).
 - Case-by-case authorizations for other pack stations to use the GTW are not permitted.
2. A total of 250 service days (approx. equivalent to 25 trips)¹⁴ would be allowed in the SS Wilderness divided among the following operators:
 - Cottonwood Pack Station: 50 service days (approx. 5 trips),
 - Glacier Pack Train: 50 service days (approx. 5 trips), and
 - Mt. Whitney Pack Trains: 100 service days (approx. 10 trips).
 - Case-by-case: 50 service days (approved by the District Ranger on a first-come, first-served basis).

C. Campsites

Actions are the same as in Alternative 2.

D. Travel Management

Actions are the same as in Alternative 2.

E. Grazing Management

Actions are the same as in Alternative 2.

¹² For trips into the GT Wilderness, it is estimated that one trip is equivalent to approximately twenty service days.

¹³ For trips into SEKI on the PCT, it is estimated that one trip is equivalent to approximately five service days.

¹⁴ For trips into the SS Wilderness, it is estimated that one trip is equivalent to approximately ten service days.

2.3.4.7 Actions by Individual Pack Stations

Unless otherwise noted, all facility and activities/services authorized for individual pack stations in Alternative 2 are included in Alternative 3. For all pack stations, commercial stock travel is restricted to approved routes except in the following areas: the MPWHVA, Monache Meadows area, and GT/SS Wildernesses. Table 2.3 contains a list of approved routes outside of these areas.

Frontier Pack Train

For Frontier Pack Train, management in this alternative is the same as under Alternative 2, with the following exceptions: For pastures, implement Inyo LRMP Amendment #6 to set grazing utilization standards. Rest Rodeo Pasture until standards are met (PFC, vegetative cover, and seral status). For MPWHVA use, the base camp used in conjunction with wild horse viewing trips in the MPWHVA is moved out of the riparian areas at Truman Meadows to an area where access is not on the road through the meadow.

Red's Meadow and Agnew Meadow Pack Stations

In Alternative 3, the west unit of the Agnew Meadows Pasture is rested until recovery is documented. Implement Inyo LRMP Amendment #6 to set grazing utilization standards. Refer to Mt. Whitney Pack Trains for changes to GT/SS Wildernesses use and stock numbers.

Mammoth Lakes Pack Outfit

There is one change to Mammoth Lakes Pack Outfit's operation in Alternative 3. There is no increase in the current level of day rides in the Mammoth Lakes Basin. There would be 7,000 day rides authorized.

McGee Creek Pack Station

McGee Creek Pack Station's operations are the same as in Alternative 2, except for the following:

- The herd size is lowered to the current authorization (73), compared to 85 stock in Alternative 2.
- Inyo LRMP Amendment #6 is implemented to set grazing utilization standards.

Rock Creek Pack Station

Rock Creek Pack Station's operations are the same as in Alternative 2, except for the following:

- In the MPWHVA, the base camp and/or corrals at Pizona Springs must be relocated out of the riparian area.
- Grazing is not authorized in the Upper Corral Pasture. Implement Inyo LRMP Amendment #6 to set grazing utilization standards in Lower Corral Pasture with a management plan to address headcuts, compaction, and protection of sloping springs (in both units).
- Refer to Mt. Whitney Pack Trains for changes to GT/SS Wilderness use and stock numbers.

Pine Creek Pack Station

Actions are the same as in Alternative 2.

Bishop Pack Outfitters

Bishop Pack Outfitter's operations are the same as in Alternative 2, except for the following:

- No grazing authorized in the Cardinal Mine Unit of the Bishop Park Pasture, Art's Pasture (east Aspendell), or at Intake 2. Remove fences for pastures where no grazing is authorized.
- Implement Inyo LRMP Amendment #6 to set grazing utilization standards for pastures where grazing is authorized. Continue existing management plan in North Lake Pastures (small and large) while it remains consistent with the adaptive management strategy in INF LRMP Amendment #6.
- Bishop Pack's herd size is the current authorization (60), compared to 75 in Alternative 2.

Rainbow Pack Outfitters

Under this alternative Rainbow Pack Outfitters' operations would be the same as in Alternative 2, except for the following:

- Implement Inyo LRMP Amendment #6 for pastures to set grazing utilization standards prior to allowing use.
- Rainbow Pack's herd size would be the current authorization (40), compared to 55 in Alternative 2.

Glacier Pack Train

Under this alternative Glacier Pack Train's operations would be the same as in Alternative 2, except for the following:

- For pastures, implement Inyo LRMP Amendment #6 to set grazing utilization standards.
- Use in the South Sierra Wilderness is allocated using service days rather than trips as in Alternative 2. Fifty service days (approx. equivalent to 5 trips) are allocated for use in the SS Wilderness.
- The herd size for Glacier Pack Train is 35 (compared to 45 in Alternative 2 and 30 in the current authorization).

Sequoia Kings Pack Trains

All operations would be the same as in Alternative 2, except that Alternative 3 does not propose to rebuild the Sawmill Corral.

Cottonwood Pack Station

Alternative 3 limits use into the GT/SS Wildernesses with service days rather than trips (as in Alternative 2). Allow 150 service days (approx. equivalent to 30 trips) through the GT Wilderness into SEKI. Allow 500 service days (approx. equivalent to 25 trips) into GT Wilderness. Authorize 50 service days (approximately equivalent to 5 trips) into the SS Wilderness. One hundred service days are allocated for day rides in the GT Wilderness. All other operations would be the same as under Alternative 2.

Mt. Whitney Pack Trains

Under Alternative 3 Mt. Whitney Pack Trains' operations would be the same as in Alternative 2, except for the following: service days are used to regulate GT/SS Wilderness use and the herd size is lowered (compared to Alternative 2).

- For the GT Wilderness, 400 service days (approx. equivalent to 20 trips) in the GT Wilderness, and 35 service days (approx. equivalent to 7 trips) through GT Wilderness into SEKI are authorized. Allow two trips from Horseshoe Meadow Trailhead.
- In the SS Wilderness, 100 service days are authorized.
- Mt. Whitney Pack Trains is authorized 40 stock (compared to 60 in Alternative 2).

2.3.4.8 Actions for Commercial Pack Stock Outfitter/Guide

Three Corner Round Pack Outfit

All of Three Corner Round Pack Outfit's operations would be the same as under Alternative 2.

2.5 Alternatives Considered but Eliminated from Detailed Study

Federal agencies are required to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the proposed action provided suggestions for alternative methods for achieving the purpose and need. Some of these alternatives may have been outside the scope of the need for the proposal, duplicative of the alternatives considered in detail, or determined to be components that would cause unnecessary environmental harm. The following 6 alternatives were considered but eliminated from detailed study. Further analysis of the first four of the following alternatives included in the project record, in the document titled "Analysis of 4 alternatives considered but eliminated from detailed study."

1. Instead of issuing a 20-year resort permit to the existing pack stations, issue a shorter term outfitter/guide permit. This alternative was considered but dismissed for the following reasons:

This EIS discloses the environmental impacts associated with the process for issuing special use authorizations for commercial pack stock services in the Project Area. It will not be used to decide the permit type (outfitter/guide vs. resort) or term (10 to 30 years) that would be issued. Therefore, this concern is beyond the scope of the proposal.

Setting the type of permit for a Special-Use Authorization known as a Special Use Permit (SUP) and its term is an administrative function without environmental consequences. The type and term of a SUP is set entirely by existing Forest Service policy based on the elements of the operation. Guidelines in the Forest Service Manual (FSM) 2701.1 and Forest Service Handbook (FSH) 2709.11, section 19, exhibit 03 provide direction to the type of permit to be authorized including, the types of uses, size, services offered, facilities, and investment, authorization documents, and terms authorized by various laws. The permit term would be determined through

the permit issuance process outlined in FSH 2709.11, Ch. 10. This guidance recommends a maximum of a 10 year permit for outfitters/guides and a maximum 20 year permit for resort permits, unless assets are large enough to allow a 30 year permit (over \$1 million).

The Forest Service is not required to analyze alternatives that are duplicative of alternatives already considered. There are no environmental consequences associated with varying the term of the permit. The prescriptions and monitoring presented in the Record of Decision and the supporting analysis in the FEIS are the same for either a Resort or Outfitter/Guide permit. A 20-year permit does not mean that no changes can occur over the 20-year period. The annual operating plan provides the mechanism to make changes in response to policy changes, conditions, and resource impacts found through monitoring. Whether covered by the standard clauses of an SUP (in Appendix H) or included in the Annual Operating Plan, the management direction of the selected alternative as displayed in the ROD is binding. The prescriptions and monitoring presented in the FEIS and Record of Decision provide the basis for evaluating the annual performance of the permittees. Needed changes would be identified and acted upon. Environmental consequences depend on management direction and not the type or term of the SUP.

2. Reduce commercial pack stock use levels in the AA/JM Wildernesses below the levels prescribed in the 2005 AA/JM FEIS/ROD. This alternative was considered but dismissed for the following reason:

Use levels in the AA/JM Wilderness were established in the 2005 Record of Decision for the Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wilderness FEIS (AA/JM FEIS/ROD). That document analyzed the effects of the selected alternative, two alternatives with lower stock use levels, and one alternative that allowed no commercial pack stock use in the AA/JM Wildernesses. The 2005 AA/JM FEIS provides programmatic direction but also site specific direction related to pack stations use in the two wildernesses. The Record of Decision selected a destination management strategy that regulates use to protect resources and preserve wilderness character.

One purpose of the current proposal is to implement the 2005 AA/JM FEIS/ROD (section 1.2). An alternative that would reduce stock use in the AA/JM Wildernesses below the levels established by the 2005 decision would not meet that purpose.

3. Reduced Herd Size relative to currently authorized numbers.

Different herd sizes were analyzed in detail in Alternatives 2 and 3. As described in section 2.3.4, Alternative 3 would allow the pack stations and outfitter/guide to maintain the current size of herds, while Alternative 2 would increase overall herd size by approximately 9 percent by allowing larger herds at 5 pack stations. An alternative that would reduce herd size below currently authorized levels was not considered in detail for the following reasons.

- a) With a herd size substantially smaller than current levels, it would be difficult for many of the pack stations to provide safe, dependable packing services and to meet visitor demand for

these services. Such an alternative would not meet the purpose of, “Provide stock packing services as part of a wide range of recreational activities on the Inyo National Forest, available in geographically dispersed locations.” Reduced herd size would:

- Make it difficult for packers to meet demand for their services, given that most use is compressed into a six week period between mid-July and the end of August. During this peak season, packers often run several backcountry trips for different groups concurrently. Many packers find it difficult to meet this demand with current herd sizes, compelling them to borrow stock from other packers or operate trips from stations operated by other packers. Reducing herd sizes would further limit the packers’ abilities to meet visitor needs with their own herds and, because all stations would have smaller herds, it would make using stock owned by other packers more difficult.
 - With smaller herds, packers would not be able to purchase and train enough young animals to replace those retired from service due to advanced age or lameness. Currently, approximately 10 percent of the herds are either in training or recovering from lameness.
- b) Substantially reducing herd size relative to current levels would not meet the purpose of allowing for a “business and operational climate that encourages long term and predictable stability for commercial pack stock operations” (Chapter 1, section 1.2). Reducing herd sizes would have a direct financial effect on the pack stations by:
- Reducing the packing services each station could provide to they point that they would likely no longer be able to run a viable business.
 - Under the terms of the special use permit, the stations would be required to pay for the continual upkeep, maintenance, and/or removal of the facilities at the stations (e.g., corrals, barns) even if they are not being used. The facilities at the stations were designed to accommodate current authorized herd sizes. Leases and payments on facilities would still be due as well.
- c) The Forest Service is not required to analyze alternatives that have substantially the same environmental effects.

In the AA/JM Wildernesses, the GT/SS Wildernesses, and the MPWHVA analysis units, more specific controls than herd size are used. These include “stock at one time” limits and destination quotas in the AA/JM Wildernesses, trip quotas or service days in the GT/SS Wildernesses, and service days and designated camp sites in the MPWHVA. These more specific controls would be emplaced to address site-specific resource concerns. Herd size is a coarse control that does not provide site-specific resource concerns when compared to the specific prescriptions analyzed in Alternatives 2 and 3. As analyzed in the physical environment and biological environment sections in chapter 3 of this document (Sections 3.3 and 3.4), herd size has little effect on environmental consequences (Also see Project Record, 4 alternatives considered but not analyzed in detail).

As analyzed in the trails section in Chapter 3 (section 2.2.3), damage to trails, the element with the greatest use in non-wilderness areas, has been found to have the most rapid change with low levels of use. Greater use does not have proportionately greater effects (Kuss 1987,

Washburne 1982). Therefore, reducing herd size by a small enough amount to allow continued commercial pack station operations would not have substantially different environmental effects than alternative 3 and further analysis would not be useful.

4. Reduce the number of permitted pack stations and outfitter guides. This alternative was considered but dismissed for the following reasons:

Substantially reducing the number of pack stations would not meet the purpose of “providing high quality, dependable stock packing services as part of a wide range of recreational activities available in geographically distributed areas of the Inyo National Forest.”

At the peak of commercial packing in 1935, there were 22 pack stations in operation in the project area. By 1965, there were 17 operating pack stations. The current number (12 pack stations and one outfitter/guide) and spatial distribution of pack stations is what remains from a previously more extensive distribution. The remaining pack stations provide the services in locations needed and demanded by visitors. The current stations are all in locations with relatively easy access, and near long or high passes where pack stock support can be necessary for some members of the public to access remote wildernesses. They are also in those locations with the heaviest recreational use and are visible and accessible to many people who desire a stock experience.

In the Non-wilderness, GT/SS Wildernesses and MPWHVA Analysis Units, environmental concerns have not been identified that require reducing the number of pack stations. Further, the number of permits does not necessarily exert any control on the level, type and distribution of pack stock use. The action alternatives have mechanisms that control the amount, frequency, location and timing of use. The number of permits issued is not necessarily relevant. It is possible that a few permits with large allocations of use could have more impact than a larger number of permits with the restricted allocations. It is also possible that a reduced number of permits would reduce the use, and reduce the area accessed by commercial pack stock. In that case, it would not meet the purpose of “providing high quality, dependable stock packing services as part of a wide range of recreational activities available in geographically distributed areas of the Inyo National Forest.”

Reducing the number of pack stations and operating areas would essentially close large blocks of the Forest to commercial pack stock use. In the course of field work and developing the alternatives for both this decision and the 2005 AA/JM FEIS, it was clear that a site specific approach to managing resource conditions would be more effective than closing large areas. The interdisciplinary team (IDT) found no conditions that warranted large areas being closed, but did find specific sites that needed prescriptions modifying or excluding use. These specific sites are included in the action alternatives (Section 2.3), with those in the AA/JM Wildernesses included in Appendix D of this document.

5. Move pack stations that are within Riparian Conservation Areas (RCAs) and close all pastures associated with commercial pack stations to grazing. This alternative was considered but dismissed for the following reasons:

Six pack stations are currently located within Riparian Conservation Areas (RCAs). Moving pack stations would not meet the purpose of “providing for a business and operational climate that encourages long term and predictable stability” because the cost of the move would be prohibitive for many of the pack stations, and they would likely go out of business. In addition, moving pack stations would disturb new ground, affecting resources in the new site locations. Cumulatively, the same amount of ground would be disturbed.

The public raised the concern that pack stations within RCAs have the potential to affect water quality. Water quality testing has been completed at the two pack stations that hold stock near water (Rainbow Pack Station and Mammoth Lakes Pack Outfit). The results of this water quality monitoring shows that, after thunderstorms and during dry weather, fecal coliform levels met Lahontan Regional Water Quality Control Board (LRWQCB) standards of less than 20 coliform forming units (cfu) per 100 mL log mean average over a 30-day period (LRWQCB 1994). Mitigation measures described under Alternative 2 (section 2.3.3.6) would reduce the potential for manure or sediment entry into water during snowmelt. Therefore, it was determined that moving pack stations would not substantially improve water quality.

Closing all pastures has been analyzed in detail in Alternative 1, when there would be no commercial pack station use at all. The effects of closing each pasture have been analyzed separately in Chapter 3 (sections 2.3.2 and 3.4.2).

6. Reduce quotas/service days for the Mammoth Lakes Basin and the GT/SS Wilderness below the levels in Alternative 3. This alternative was considered but dismissed for the following reasons:

Preliminary analysis indicated that effects associated with reducing quotas/service days in the Mammoth Lakes Basin and the GT/SS Wilderness would be similar enough to Alternative 3 that further analysis of this alternative would not be useful.

Concerns raised about quotas for the Mammoth Lakes Basin were primarily focused on the potential for conflicts between commercial pack stock users and other users (day hikers, backpacker, and mountain bikers, among others). Commenters suggested that reducing quotas and/or service days for the area would relieve congestion and enhance the recreational experience for forest visitors.

The Mammoth Lakes Basin has the highest visitor use and highest concentration of competing recreation activities on the Inyo NF. Summer activities include fishing, hiking, camping, bicycling, boating, and several different types of pack stock rides. In order to evaluate the extent of current conflict and congestion concerns, the Forest Service interdisciplinary team examined records of pack station-related complaints, and spoke with staff responsible for the management of the Lakes Basin. The team found that, despite the high use levels, few complaints about conflicts with pack stock have been received from visitors.

An alternative that would reduce quotas in the Mammoth Lakes Basin was not analyzed in detail because records suggest that most visitors to the Mammoth Lakes Basin do not perceive a problem with current pack stock use levels. Alternative 3, analyzed in detail in this EIS, would maintain current authorization levels for day rides. The potential for user conflicts for this alternative is analyzed in section 3.2.2, Recreation.

Concerns raised about quotas/service days in the GT/SS Wilderness were primarily focused on potential impacts to meadows in the Sierra-Kings Canyon National Park (SEKI) caused by pack stock trips originating on the Inyo NF. This alternative was not analyzed in detail because:

- 1) Pack stock use in SEKI, including entry, use levels, and grazing, is regulated by the Park Service. Although the Forest Service cannot regulate pack stock use in the National Park, both Alternative 2 and Alternative 3 establish limits on the number of trips the pack stations can take to the SEKI boundary. Alternative 2 would authorize 55 trips, compared to approximately 37 trips under Alternative 3. SEKI managers would determine whether or not to allow (through the Park's permit issuance process) pack stock outfitters permitted by the INF to enter the Park.
- 2) Annual trip limits for Alternative 3 were established based on comments from SEKI managers. In their scoping comments (9/19/2005), SEKI managers indicated that they expect destination quotas for the Cottonwood Pass Trail (which Inyo NF pack outfitters use to access the Park) similar to those for Kearsarge Pass (i.e., 36 trips). Alternative 3 responds to that concern by restricting the number of trips to the SEKI border to no more than 185 service days, or approximately 37 trips (section 2.4.5).

Within the GT/SS Wildernesses, preliminary analysis showed that effects of use reduced below Alternative 3 would have substantively the same effects as Alternative 3 based on current resource conditions and predicted effects of the alternatives considered in detail. At current low use levels, the only resource concerns observed that might be related to commercial pack stock activities are campsites that are too close to water and cross-country travel effects before range readiness. These concerns are not related to quotas or service days. Alternative 2 and 3 would address these resource concerns by requiring the relocation of certain campsites (section 2.3.3.5) and prohibiting cross-country travel before range readiness (section 2.3.3.5).

The GT/SS Needs Assessment (Appendix F) validates a public need consistent with the purposes of the Wilderness Act. It also finds that the use levels proposed in Alternative 2 and 3 are not more than what has been identified as the extent necessary to meet the purposes of the Act. The analysis for Alternatives 2 and 3 indicate that these levels preserve wilderness character. There are no outstanding circumstances that lead the Forest Service to conclude that anything less than what has been determined as needed should be analyzed. Wilderness character is being preserved with the levels of use proposed in the alternatives analyzed in detail in this EIS.

2.6 Comparison of Alternatives

The following tables provide a brief summary of the alternatives and their environmental impacts in comparative format.

Table 2.2. Comparison of Effects by Alternative

Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3
Wilderness		
<p><u>Undeveloped Quality:</u> There would be negligible effects at the wilderness-wide context since this alternative would not address facilities or structures in the wilderness.</p> <p><u>Natural Quality:</u> There would be minor beneficial effects of long-term duration at the local context since campsites would no longer be used by outfitters. There would be minor long-term effects at the wilderness-wide context due to the continued presence on non-commercial stock.</p> <p><u>Opportunities for solitude or primitive/unconfined recreation:</u> Minor beneficial effects of long-term duration on solitude at the local (Cottonwood Pass & Cottonwood Lakes Trails) and wilderness-wide contexts due to 12 percent fewer visitors. Minor beneficial effects of long-term duration on the unconfined recreation experience at the wilderness-wide context due to 12 percent fewer visitors.</p> <p><u>Untrammeled Quality:</u> There would be no long-term effects at the wilderness-wide context since the alternative does not manipulate ecosystems.</p>	<p><u>Undeveloped Quality:</u> There would be negligible effects at the wilderness-wide scale since this alternative would not address facilities or structures in the wilderness.</p> <p><u>Natural Quality:</u> Allowed levels of use would create minor adverse effects of short-term duration at a limited number of campsites. The intensity and duration of adverse effects on campsites, meadows and riparian areas would be limited by this alternative's management actions and design criteria. Actions to regulate cross-country travel and grazing associated with trips would limit impacts from allowed levels of use to minor adverse effects of short-term duration.</p> <p><u>Opportunities for solitude or primitive/unconfined recreation:</u> This alternative's permitted use levels would allow existing minor (weekdays) to moderate (on weekends) adverse impacts of short-term duration on solitude to continue on Cottonwood Pass and Cottonwood Lakes Trails. Use levels in the remainder of the GT/SS Wilderness would remain low. Any adverse effects on solitude would be minor and of short-term duration.</p> <p><u>Untrammeled Quality:</u> There would be negligible effects at the wilderness-wide scale since the alternative does not manipulate ecosystems.</p>	<p><u>Undeveloped Quality:</u> Effects would be the same as alternative 2 because there would be no differences in facilities or structures.</p> <p><u>Natural Quality:</u> Allowed levels of use would create minor adverse effects of short-term duration at a limited number of campsites. Due to 30 percent lower levels of use than in Alternative 2, the intensity and duration of adverse effects on campsites, meadows and riparian areas would be slightly less. As in Alternative 2, actions to regulate cross-country travel and grazing would limit impacts from allowed levels of use to minor adverse effects of short-term duration.</p> <p><u>Opportunities for solitude or primitive/unconfined recreation:</u> Allowed use levels would be slightly lower than current use, which would have a minor beneficial effect on solitude on the Cottonwood Pass and Cottonwood Lakes Trails. The difference in use between current levels and this alternative in remainder of GT Wilderness would have negligible effects on solitude. As in Alternative 2, overall use levels would remain low in most of GT/SS Wildernesses. Any adverse effects on solitude would be minor and of short-term duration.</p> <p><u>Untrammeled Quality:</u> Same as alternative 2.</p>

Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3
Recreation		
<p>The range of recreational opportunities would be reduced. A segment of the recreating public would no longer be served. Those people who hire the commercial pack stock to access remote areas of the Forest would be denied the opportunity to experience their trips in the same way as the past. They would either have to hike or would be displaced to other areas where such services continue.</p> <p>Special populations needing the help of commercial pack stock would not be able to experience the backcountry and wilderness areas.</p> <p>Overall, the effect to recreation on the Inyo National Forest would be small, because about 1.4% of current forest visitors engage in horseback riding. The discontinuation of pack operations would end commercial wild horse viewing as an activity and reduce the total amount of recreation use in the MPWHVA, which is minimal at present, by 4%.</p> <p>Visitor conflict would have minor reductions in heavy use areas such as the Mammoth Lakes Basin and Red's Meadow area due to the elimination of one competing use. The range of recreational opportunities would be retained.</p>	<p>Special populations needing the help of commercial pack stock would be able to experience the backcountry and wilderness areas.</p> <p>The range of recreational opportunities and activities may increase, slightly, as some operators may expand day ride business in areas outside wilderness.</p> <p>Commercial wild horse viewing would continue to amount to about 4% of all recreational use in the MPWHVA.</p> <p>Under Alternative 2 there may be minor to moderate adverse effects to user conflicts due the opportunity to increase day rides in high density recreation areas, and increase stock drives to 4</p>	<p>Limiting day ride use at Mammoth Lakes Pack Outfit and limiting the herd sizes for five pack stations at current levels would decrease the overall density of recreation in the HDRAs. Relocation of campsites in the MPWHVA would diminish the camping experience for commercial pack stock users. Otherwise, there is no difference in effect from Alternative 2.</p>

Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3
Trails		
<p>Cessation of commercial pack stock operations on trails, roads and routes would have minor reduction in erosion of tread and impacts to trail structures on trails which are currently being used. There would be a minor improvement in trail stability and a negligible to minor reduction in maintenance needs at the project scale. There would be no notable change in road conditions or maintenance needs.</p> <p>There would be a minor reduction in presence of user created routes since commercial stock would no longer travel off of developed paths. Removing all stock from intensively used recreational areas with many other potentially conflicting use types would allow for the remaining users to have greater trail opportunities for those specific uses – most likely mountain biking and hiking. With no commercial stock drives, there would be a slight reduction in current and potential user conflicts – especially with motorized traffic on roads.</p>	<p>Authorizing use only on approved trails in High Density Recreation Areas (HDRAs) would have a minor to moderate beneficial effect to resources by ensuring that commercial pack stock are operating on the most stable and appropriate trails in these areas. It prohibits use from trails with resource or trail user-conflict concerns, so should have minor benefits to resources in the trail corridor, and reduce potential for trail user conflicts in high use areas. Commercial stock at the authorized use levels may create moderate increase in trail maintenance need on highly localized trail segments; but would create a negligible to very minor increase in maintenance needs at the project area scale.</p> <p>Commercial stock is prohibited from traveling off approved routes in HDRAs should allow minor benefits in assuring that fewer user-created trails develop in high use areas. Outside of HDRAs, there is a small risk that new user created trails could form in dispersed areas.</p> <p>Up to four stock drives for each operator could cause negligible to very minor short term effects to condition of roads and routes. Use of stock drives at authorized levels and locations would have no measurable effect on road or trail maintenance needs.</p>	<p>Actions and effects on trails in this alternative are very similar in type and scale as Alternative 2. All commercial stock travel must remain on authorized routes in all areas except the GTW/SSW, Monache Meadows, and MPWHVA. This would have a slightly greater beneficial effect by reducing further the low potential for expansion of use trails outside of HDRAs. Up to two stock drives for each operator are authorized on approved stock drive routes. Effects on roads and trails would be slightly less than those described in Alternative 2, and would likely be negligible. Use of stock drives at authorized levels and locations would have no measurable effect on road or trail maintenance needs.</p>

Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3
Heritage Resources and American Indian Concerns		
<p>There would be no continuing impacts to Resources of Interest from pack station operations.</p> <p>Removal of the pack station facilities would adversely affect historic values associated with the footprints and outlying features that comprise the packing landscape.</p>	<p>In the Non Wilderness AU, 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.</p> <p><u>Travel Corridors:</u> There would be potential adverse/ambiguous effects occurring to 100 Resources of Interest from use of travel corridors.</p> <p><u>Concentrated Use Areas:</u> Commercial pack stock use of camps, corrals and pastures would have potential adverse/ambiguous effects on up to 52 Resource of Interest. Most of these are in the GT/SS Wilderness, and four of those have known direct impacts.</p> <p><u>Dispersed Use Areas:</u> Up to 358 Resource of interest have potential for ambiguous effects from cross country travel. Adverse effects are unlikely.</p>	<p>Effects would be the same as Alternative 2, except in the following areas:</p> <p><u>Concentrated Use Areas:</u> In the non-wilderness AU, direct impacts at three Resources of Interested would be lifted at least until the subject pastures recover.</p> <p>In the MPWHVA, if the base camp in Truman Meadow is moved to nearby areas there is the potential to create new direct adverse impacts to Resources of Interest</p> <p><u>Dispersed Use Areas:</u> The potential impacts to the 358 Resources of Interest in the cross-country travel zone would be removed.</p>
Operations		
<p>Commercial packing permits would not be issued and this service would cease to exist on the Inyo National Forest.</p>	<p>Alternative 2 mostly continues the current levels and locations of commercial stock services, in the non-wilderness, GT/SS Wildernesses, and Montgomery Pass area of the Forest. Some resource protection measures are proposed that may increase the costs of doing business for these operations. Travel management measures are not expected to affect commercial operators.</p> <p>Each commercial pack stock operation was given four measures for revenue increase or decrease, resulting in 52 total measures of revenue change. Of those, 12 are predicted to have increased revenue, 35</p>	<p>Operation effects are similar to those described in Alternative 2, although there should not be as great a chance for operations to increase revenue. Of the 52 measures of revenue at the 13 operations, 7 are expected to increase, 37 are expected to remain static, and 8 are expected to have decreased revenue.</p>

Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3
	are predicted to have no change or equal chance for an increased or decreased revenue, and 5 are expected to have decreased revenue.	
Socioeconomics		
Termination of these permits would result in a maximum loss of approximately 100 jobs (direct, indirect, and induced) and \$1.6 million in direct, indirect and induced labor income for Inyo and Mono Counties. This would represent a loss of approximately 0.02% of overall personal income and 0.5% of all jobs in Mono and Inyo Counties.	No change is expected from the current situation in which commercial packing makes modest contributions to county employment and income. The packing industry would continue to contribute about 100 jobs and \$1.6 million in direct, indirect, and induced labor income for Mono and Inyo Counties.	Socioeconomic effects would be the same as Alternative 2.
Hydrology		
There would be very local, slight to moderate beneficial effects to water quality and stream hydrologic function, and negligible beneficial effects to stream flow with removal of commercial pack stations. Beneficial effects would occur at two pack stations and about 10 pastures, where sediment input into water could slightly decrease. Stream hydrologic function could improve in pastures with removal of stream bank trampling and increased streambank vegetation. Stream flow would increase with cessation of diversions for pack stations, but the increase would be small relative to stream flow.	Negative effects would be very local and negligible on a project-wide scale. There would continue to be slight to moderate, local negative effects to water quality, stream hydrologic function, and negligible local negative effects to stream flow. Negative effects to water quality could occur in about 10 pastures, where manure deposition, stream bank trampling and vegetation loss locally increases fine sedimentation. Stream hydrologic function could have up to moderate negative effects in up to 4 pastures due to streambank trampling and soil effects. Stream flow would be negligibly reduced at 10 pack stations and campsites from water diversions. With mitigations, water quality at pack station facilities should meet standards.	Negative effects would be very local and negligible on a project-wide scale. There would continue to be slight to moderate, local negative effects to water quality, stream hydrologic function, and negligible local negative effects to stream flow. Negative effects to water quality could occur in about 7 pastures, where stream bank trampling and vegetation loss locally increases fine sedimentation. Stream hydrologic function could have slight to moderate negative effects in up to 2 pastures due to streambank trampling and soil effects. Stream flow would be negligibly reduced at 10 pack stations and campsites from water diversions. With mitigations, water quality at pack station facilities should meet standards.

Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3
Soils		
<p>There would be a very local, slight to major beneficial effects to soil productivity with termination of commercial pack station activities. The beneficial effects would occur at the base facilities, in pastures, and, to a lesser extent, at campsites where cessation of use would allow for decreased soil compaction, increased soil cover, and, in the long-term, reduction of soil erosion. The area of potential beneficial effects to soil is on the order of 250 acres due solely to commercial pack station use.</p>	<p>Adverse effects to soil productivity would continue to occur over local areas, with little change from current conditions. The area of potential negative effects due solely to commercial pack station effects is on the order of 300 acres (almost all of which currently have negative effects). Effects would include increased soil compaction, bare soil, and erosion at pack station base facilities, in pastures, at campsites and along trails used by the commercial pack stock. More stringent management of pastures could reduce bare soil and soil erosion slightly in a few pastures, namely Rodeo, Agnew, and Lower Rock Creek Corral Meadows.</p>	<p>Effects to soil productivity would be about the same as under Alternative 2. Differences in management that could have different effects on soil would be the resting of Rodeo, Agnew, and Lower Rock Creek pastures. The rest from grazing would allow more rapid reduction in soil compaction, bare soil, and erosion than under Alternative 2. Other than at 5 pastures, effects would be the same as under Alternative 2, with about 250 acres (currently negatively affected) having potential negative effects to soil productivity due solely to commercial pack station use.</p>
Wildlife		
<p>Suitable unoccupied willow flycatcher nesting habitats at Rodeo, Evans, Agnew, McGee, Art's and North Lake Meadow pastures would have localized improved willow shrub nesting habitat conditions. Mule deer fawning habitat and yellow warbler and blue grouse nesting and brood rearing riparian habitats would improve at 13 pastures on 288 acres. Pack stations would no longer contribute to the maintenance of brown-headed cowbird populations on the INF, and cowbird parasitism of native songbird nests such as the willow flycatcher, and the yellow warbler. Removal of pack station facilities and cessation of all commercial pack station operations would contribute to a minor reduction at the landscape level of human disturbance related impacts to MIS species such as goshawk, yellow warbler, blue grouse, and mule deer.</p>	<p>Implementation of range readiness dates, streambank disturbance standards, and SNFPA forage utilization standards for pastures would mitigate impacts to suitable unoccupied willow flycatcher habitats at Rodeo, Evans, Agnew, McGee Art's and North Lake pastures. Implementation of the above grazing standards would also implement management requirements to mitigate grazing impacts at 13 pastures on 288 acres to mule deer fawning habitat, and yellow warbler and blue grouse nesting and brood rearing habitat on all meadow pastures. Pack stock feeding at pack station corrals and at the Pizona and Truman Meadow camps, and pack stock use of pastures, would continue to contribute to brown-headed cowbird population maintenance on the INF and songbird nest parasitism events. Continued use of Truman and Pizona Meadow Camps would maintain riparian habitat impacts and human disturbance impacts to MIS mule deer and songbirds</p>	<p>Implementation of range readiness dates, streambank disturbance standards, pasture rest, unsuitable pasture determinations, and amendment #6 forage utilization standards for pastures would reduce impacts to a greater degree than Alt 2 in suitable unoccupied willow flycatcher habitats at Rodeo, Evans, Agnew, McGee, Art's, and North Lake pastures. Mule deer fawning habitat and yellow warbler and blue grouse nesting and brood rearing habitat would improve 5 pastures on 92 acres where pastures would be rested or unsuitable for grazing. Eight remaining pastures would be similar to Alternative two mitigated effects to the 3 species. The re-location of Pizona and Truman Meadow Camps out of riparian habitats would improve these meadow areas for MIS mule deer and the yellow warbler. Pack station corrals, grazing areas and the Pizona and</p>

Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3
<p>The removal of camps at Truman and Pizona Meadows would eliminate impacts to MIS mule deer and native songbirds represented by the MIS yellow warbler including the elimination of these areas as attractants for brown-headed cowbird populations.</p>	<p>as represented by the MIS yellow warbler. Continuation of pack station facilities and use of trails and camps as part of commercial pack station operations would contribute to overall landscape level human disturbance related impacts to MIS species such as goshawk, yellow warbler, blue grouse, and mule deer.</p>	<p>Truman Meadow camps would continue to contribute to brown-headed cowbird population maintenance on the INF and songbird nest parasitism events. There would be a continuation of human disturbance related impacts to MIS species such as goshawk, yellow warbler, blue grouse, and mule deer that would be somewhat less than Alternative 2 because of reduced use.</p>
Vegetation – Rare Plants and Weeds		
<p>Rare Plants: There would be no direct impacts from commercial pack stock trampling or grazing on rare plants or their habitat. Existing negative effects, particularly in pastures, from commercial previous pack stock or other use would recover more quickly than under the other alternatives.</p> <p>There would be a slight increase in the potential habitat of rare species in most cases. At one pack station, sensitive plant habitat would be extended slightly. At one pasture currently maintained by irrigation, the removal of the irrigation system could cause drying of the habitat and extirpation of that population. Cattle grazing at this site could replace pack stock grazing, with unknown population effects. This alternative offers the best protection for rare plants and their habitats and least adverse cumulative effect.</p> <p>Weeds: Commercial pack stock, vehicles, clients, and wranglers would not act as weed vectors. Rehabilitation of the pack stations would open habitat for weeds, but revegetation would minimize weed invasion.</p>	<p>Rare Plants: Individual rare plants (47 species) and their habitat may be adversely affected by commercial pack stock activities; however, the effects of these activities would be minor, local, and short-term with implementation of mitigations. Eight species would be at a slight risk of negative impact that would not be affected under Alternative 3, because of the ability to cross country travel. The fact that slightly more use is allowed (growth in Mammoth Basin, more stock drives) results in slightly increased risk of trampling in other areas that get more use.</p> <p>Weeds: Commercial pack stock, vehicles, clients, and wranglers could act as weed vectors. Required weed management at each pack station would minimize the presence of weeds acting as a source of propagules that could be moved by pack stock and other activities. Since there is no restriction on cross country travel in the non-wilderness area, there is a much wider area that could be infested with weeds or act as a source of weed seeds than in Alternative 3. Use could be slightly higher, with an accompanying slight increase in risk.</p>	<p>Rare Plants: Individual rare plants (39 species) and their habitat may be adversely affected by commercial pack stock activities; however, the effects of these activities would be minor, local, and short-term if the mitigations in this alternative are implemented effectively. There would be a slightly lower risk of negative impact than in Alternative 2 because of the restrictions on cross country travel and the fact that slightly less use is allowed. There would be a slight difference in the effects of the riparian habitat in pastures (see grazing).</p> <p>Weeds: The effects would be similar to Alternative 2, except that the restriction of travel to approved routes in the non-wilderness area would reduce the area that could be infested with weeds or act as a source of weed seeds. There would also be a lower limit on use, reducing risk slightly.</p>

Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3
Vegetation – Grazing Resources		
<p>Non-wilderness pastures: <u>Meadow Ecological Condition</u> - Beneficial effects to 13 pasture units Adverse effects to 1 pasture unit <u>Stream and spring condition</u> - Beneficial effects to 8 pasture units Adverse effects to 0 pasture units <u>Fen Condition</u> - Beneficial effects to 5 pasture units Adverse effects to 0 pasture units</p> <p>Pasture Grazing Available (total estimated Animal Months): 0 AM</p> <p>Other non-wilderness vegetation: Meadow, stream, and fen condition are not expected to measurably different between alternatives outside of the fenced pastures.</p> <p>Kern Plateau Meadows: Meadow, stream, and fen condition are not expected to be measurably different between alternatives Amount of grazing available in meadows in the GT/SS Wildernesses: 0</p>	<p>Non-wilderness pastures: <u>Meadow Ecological Condition</u> - Beneficial effects to 0 pasture units Adverse effects to 7 pasture units <u>Stream and spring condition</u> - Beneficial effects to 3 pasture units Adverse effects to 4 pasture units <u>Fen Condition</u> - Beneficial effects to 3 pasture units Adverse effects to 0 pasture units</p> <p>Pasture Grazing Available (total estimated Animal Months): 78-81</p> <p>Amount of grazing available in meadows in the GT/SS Wildernesses: Available in 27 out of 34 requested meadow areas subject to Amendment #6 utilization standards, range readiness, and streambank trampling standards.</p>	<p>Non-wilderness pastures: <u>Meadow Ecological Condition</u> - Beneficial effects to 11 pasture units Adverse effects to 1 pasture unit <u>Stream and spring condition</u> - Beneficial effects to 5 pasture units Adverse effects to 2 pasture units <u>Fen Condition</u> - Beneficial effects to 4 pasture units Adverse effects to 0 pasture units</p> <p>Pasture Grazing Available (total estimated Animal Months): 53-62 AM.</p> <p>Amount of grazing available in meadows in the GT/SS Wildernesses: same as Alternative 2.</p>

Table 2.3. Pack Station Trail Authorizations and Stock Drive Routes

This table displays the authorized non-wilderness routes applicable to Alternatives 2 and 3. Trails are listed in a general north to south order. In Alternative 2 and 3, commercial pack stock travel in HDRAs is limited to the authorized routes indicated with a “Y” in the column “In HDRA.” Day rides are restricted to operators listed in “Authorized Operators” column. In Alternative 3, all non-wilderness commercial pack stock use is limited to the trails identified below (with the exception of travel in the MPWHVA). Stock Drive routes are listed at the end of the table.

Ref #	Requested Route Name	Beginning Termini	End Termini	Miles (Inyo NF)	In HDRA	Authorized Operators ¹⁵
JUN01	Parker Lake	Parker Lk Trailhead	Wild Bdy east of Parker Lk	0.69	N	FPT
JUN02	Parker Bench	Frontier Corrals	Wild Bdy south of Parker Lk	4.60	Y	FPT
JUN03	Parker Viewpoint	Parker Lk Trail	Viewpoint above Silver Lake	0.51	Y	FPT
JUN04	Lower Rush Creek Loop	Frontier Corrals	Loop to Rush Creek north of Silver Lake	1.75	Y	FPT
JUN05	Rush Creek	Frontier Corrals	Wild Bdy below Agnew Lk	2.50	Y	FPT
RED01	Agnew Meadow - Shadow Creek	Agnew Mdw Corrals	Shadow Creek Trail	0.56	Y	RMPS
RED02	Agnew Meadow Loops	Agnew Mdws.CG	Agnew Mdws.CG	0.40	Y	RMPS
RED03	PCT - North	Wilderness Bdy near Agnew Trailhead	Wilderness Bdy near Jct.2614	0.47	Y	RMPS
RED04	Devil's Postpile Boundary Trail	DEPO Bdy west of Reds Mdw Campgd	AAW Bdy at Boundary Creek	1.30	Y	RMPS
RED05	Mammoth Pass	Reds Mdw Corrals	Wild Bdy east of corrals	0.69	Y	RMPS
RED07	PCT - South	Wilderness Boundary @ Jct.2634	Wilderness Boundary @ South end DEPO	0.76	Y	RMPS
RED08	Rainbow Falls Packstation Access	Reds Mdw Corrals	Rainbow Falls Trail	0.50	Y	RMPS
RED09	Red's Wagon Trail	Reds Mdw Corrals	Wild Bdy Near Rainbow Falls	0.60	Y	RMPS
RED10	Rainbow Falls	Rainbow Falls Trailhead	Wild Bdy Near Rainbow Falls	0.30	Y	RMPS
MAM01	Bottomless Pit	Horseshoe Lake	Bottomless Pit	0.70	Y	MLPO
MAM02	Mammoth Mtn- Mammoth Pass C/O	Mammoth Pass Tr	Dragon's Back Viewpoint	1.16	Y	MLPO
MAM03	Mammoth Pass	Horseshoe Lake	Mammoth Pass	0.73	Y	MLPO
MAM04	Mammoth Pass - McCloud Lake	Mammoth Pass Tr	Mammoth Pass via McCloud Lake	0.76	Y	MLPO
MAM05	McCloud lake Spur	Mammoth Pass Tr	McCloud Lake	0.19	Y	MLPO
MAM06	MLPO to Mammoth Pass Trailhead	MLPO Corral	Horseshoe Lake	1.04	Y	MLPO
MAM07	Lake George to McCloud Lake (planned)	Mammoth Crest Tr	Mammoth Pass Tr	1.10	Y	MLPO

¹⁵ Pack station abbreviations are listed in Appendix A, Acronyms

Ref #	Requested Route Name	Beginning Termini	End Termini	Miles (Inyo NF)	In HDRA	Authorized Operators ¹⁵
MAM08	Horseshoe to Lake George	Horseshoe-Mamie Loop	Mammoth Crest Trl./Lake George TH	0.17	Y	MLPO
MAM09	Horseshoe-Mamie Loop	MLPO Corral	Loop to Horseshoe Lk via Mamie Lk	1.92	Y	MLPO
MAM10	Mammoth Crest	Lake George	Mammoth Crest	2.33	Y	MLPO
MAM11	Crystal Lake	Mammoth Crest Tr	Crystal Lk	0.26	Y	MLPO
MAM12	Barrett to Mary	Barrett Lk	Lake Mary	1.08	Y	MLPO
MAM13	Barrett Lake C/O	Jct.2709 @ North end of Barrett Lake	Jct.2709c East of Barrett lake	0.16	Y	MLPO
MAM14	TJ Lake Loop	Barrett Lk	TJ Lake (Loop)	0.37	Y	MLPO
MAM15	Coldwater to Barrett Lake	Coldwater Trailhead	Barrett Lake	2.18	Y	MLPO
MAM16	Coldwater Trailhead connector	Emerald Lk. TH	Duck Pass Trailhead	0.21	Y	MLPO
MAM17	Panorama Dome Loop	M.L.P.O.	Loop	1.50	Y	MLPO
MAM18	Old Mammoth Road	Mammoth Lakes Basin	Jct.2725 Mammoth Rock Trail	0.55	Y	MLPO
MAM19	Mammoth Rock	Old Mammoth Road	Sherwin Creek Road	2.70	N	MLPO
MAM20	MLPO Corral Loops Walk/Lead, Day Rides	MLPO Corral	MLPO Corral	1.70	Y	MLPO
MAM21	Mammoth Consolidated Mine spur	Jct.2710a (Mammoth P.S.-Duck Pass)	Mammoth Mine Trails	0.10	Y	MLPO
MAM22	Mammoth Consolidated Mine	Coldwater Trailhead	Mine Sites	1.17	Y	MLPO
MAM23	Heart Lake	Mammoth Mine Rd	Wild Bdy near Heart Lk	0.70	Y	MLPO
MAM24	Heart Lake Connector	Jct. 2719 Heart Lake Trail	Jct. 2719 Heart Lake Trail	0.32	Y	MLPO
MAM25	Heart Lake Stock Trail	Heart Lake Trail	Heart Lake Trail	0.20	Y	MLPO
MAM26	Mammoth Mine, Heart Lake connector	Mine Road	Heart Lake Trail	0.02	Y	MLPO
MAM27	Mammoth - Monte Cristo Mine	Jct. Mine Road	Heart Lake Trail	0.87	Y	MLPO
MAM28	MLPO to Coldwater Trailhead	M.L.P.O.	Jct. 2710 Duck Pass Trl.	1.80	Y	MLPO
MAM29	Duck Pass	Coldwater Trailhead	Wild Bdy	0.26	Y	MLPO
LON01	Glass Mountain Ride	Arcularius Ranch	Layton Springs via Glass Mtn Ridge	39.20	N	MLPO MCPS
MCG01	Laurel Lakes Rd/Trail	Sherwin Creek Rd	Wild Bdy	3.47	N	MCPS, MLPO
MCG02	Laurel Canyon Alternate	Sherwin Creek Rd	Laurel Lakes Rd/Trail	2.00	N	MCPS, MLPO
MCG03	McGee Creek Pack	McGee Corrals	Wilderness Boundary near Buzztail Springs	1.10	Y	MCPS
MCG04	McGee Pass	Trailhead	Wilderness Boundary near Buzztail Springs	1.00	Y	MCPS
MCG05	McGee Pass Lower Loop	Trailhead	Old campgnd & trailhead	0.30	Y	MCPS
MCG06	McGee Creek-Hilton Creek	McGee Corrals	Hilton Creek Trail	2.70	N	MCPS
RCH01	Crowley Lk. CG Loop	Forest Boundary	Loop around BLM campground	0.80	N	PCPS MCPS

Ref #	Requested Route Name	Beginning Termini	End Termini	Miles (Inyo NF)	In HDRA	Authorized Operators ¹⁵
RCH02	Crowley/Hilton Day Ride Loops	Crowley Lk. CG Road (BLM)	Loops on various roads and to Hilton Trailhead	3.50	N	PCPS, MCPS
RCH03	Hilton Creek	Hilton Creek TH	Wild Bdy below Davis Lk	1.75	N	RCPS, MCPS, PCPS
RCH04	Hilton Lakes	RCPS Upper Corral	Wild Bdy west of Rock Creek Lk	0.90	Y	RCPS,
RCH05	Rock Creek Tarn One Hour Loop	Jct.2904 (Hilton Lakes) near TH	Jct.2904	1.01	Y	RCPS
RCH06	Mono Pass Pack Station Access	RCPS Upper Corral	Wild Bdy west of Mosquito Flat	1.82	Y	RCPS
RCH07	Tamarack Lakes Pack Station Access	RCPS Upper Corral	Tamarack Lakes Trail, east of Rock Creek Lk	1.79	Y	RCPS
RCH08	Wheeler Crest Road	Sand Canyon Rd north of Wild Bdy	Wheeler Crest North of Round Valley Peak	2.88	N	RCPS
RCH09	Tamarack/Wheeler Road	Sand Canyon Rd north of Wild Bdy	Tamarack Bench, south of Pk.10620	0.62	N	RCPS
RCH10	Tamarack Bench	Tamarack Lakes Trail	Sand Canyon Road	0.97	Y	RCPS
RCH11	Tamarack Cutoff	Tamarack Bench Trail	Tamarack - Lower Corral trail	0.20	Y	RCPS
RCH12	Tamarack - Lower Corral	Tamarack Bench Trail	Lower Corral	1.30	Y	RCPS
RCH13	Tamarack Lakes	Rock Creek Lake	Wild Bdy below Kenneth Lk	0.90	Y	RCPS
RCH14	Dorothy Lake Loop	Sand Canyon Rd north of Wild Bdy	Wild Bdy, north of Dorothy Lake	0.51	Y	RCPS
PIN01	Morgan Pass	Morgan Mine Rd	Wild Bdy below Morgan Lks	0.06	Y	PCPS, RCPS
PIN02	Morgan Lakes Mine Road	Pine Creek Pack Station	Morgan Pass Trail at Wilderness Bdy	5.66	Y	PCPS, RCPS
PIN03	Upper Level Mine Road	Morgan Mine Rd	Mining Ruins near Broken Finger Peak	0.77	Y	PCPS
PIN04	Pine Creek Pass Trail	Pine Creek Pack Station	Wild Bdy near Brownstone Mine	2.82	Y	PCPS
PIN05	Tailings Pond Loops	Pine Creek Pack Station	Tailings Ponds East of Pack Station, Return	3.00	Y	PCPS
PIN06	Aspen Grove Ride	Gable Creek Trail near old minesite	Pine Creek Pass Trail west of pack station.	0.40	Y	PCPS
BCN01	Horton Creek Road	Jct. Buttermilk Rd.	Road end at Horton Lks Trail	0.59	N	BPO, PCPS
BCN02	Horton Lakes Trail	Horton Creek Roadend	Wilderness Boundary near Horton Creek Trailhead	0.66	N	BPO, PCPS
BCN03	Longley Lake Road/Trail	Longley Meadow	Longley Lk Trail, Wild Bdy	6.50	N	BPO
BCN04	Buttermilk Lookout	North Lake Pack station	Viewpoint on ridge north of lake	1.46	Y	BPO
BCN05	North Lake Pack Station/Hiker Parking	North Lake Road	Pack Station	0.33	Y	BPO
BCN06	North Lake Road	Hwy 168 above Aspendell	Piute Pass Trailhead	2.50	Y	BPO
BCN07	Piute Pass	Trailhead	Wilderness Boundary	0.42	Y	BPO
BCN08	Lamarck Lakes	Trailhead	Wilderness Boundary below Grass Lake	0.33	Y	BPO
BCN09	Sabrina Basin	North Lake Road	Wilderness Bdy above Sabrina Lake	1.40	Y	BPO

Ref #	Requested Route Name	Beginning Termini	End Termini	Miles (Inyo NF)	In HDRA	Authorized Operators ¹⁵
BCN10	Cardinal Mine	Aspendell Corrals	Cardinal Mine	0.80	Y	BPO
BCN11	Egypt Creek	Jct.Hwy 168 (old road pullout)	Mining ruins on Coyote Ridge	0.56	N	BPO
BCS01	Lindner Prospect	Donkey Meadow	Prospects, Mine on Coyote Ridge	2.00	N	RPO
BCS02	Tyee Lakes	Trailhead	Wilderness Bdy below Tyee Lake	1.81	N	RPO
BCS03	Rainbow Pack Station to Tyee Trailhead	Rainbow Pack Station	Tyee Trailhead via Willow Campground	1.00	Y	RPO
BCS04	Green Lake	Packstation to South Lake Trail	Green Lake	2.33	N	RPO
BCS05	Bishop Pass	South Lake Trailhead	Wilderness Boundary	0.70	Y	RPO
BCS06	Rainbow Pack Station to South Lake	Rainbow Pack Station	South Lake	1.42	Y	RPO
BGP01	Baker Lakes	North Fork Big Pine Trail	Wilderness Bdy below Baker Lake	5.60	N	GPT
BGP02	North Fork Big Pine	Glacier Pack Station	Wilderness Boundary	1.80	Y	GPT
BGP03	South Fork Big Pine Creek	Trailhead	Wilderness Boundary	1.65	Y	GPT
ESE01	Birch Creek Road/Trail	McMurry Mdws Rd	Wilderness Boundary	3.00	N	GPT
ESE02	Red Lake Road/Trail	Trailhead	Wilderness Boundary	2.50	N	GPT
ESE03	Stecker Flat	Red Lake Trailhead	Wilderness Boundary	0.47	N	GPT
ESE04	Taboose Pass	Trailhead	Wilderness Boundary	1.20	N	SKPT, MWPT
ESE05	Shingle Mill Bench	Roadend	Wilderness Boundary	0.47	N	GPT
ESE06	Sawmill Pass	Trailhead	Wilderness Boundary	3.10	N	SKPT, MWPT
ESE07	Shepherd Pass	Corrals on Foothill Rd	Wild Bdy in Symmes Creek	3.40	N	SKPT, MWPT
ONV01	Sardine Canyon	Onion Valley Rd.	Wilderness Boundary	0.96	N	SKPT
ONV02	Grand Group Mine	Onion Valley Rd.	Wilderness Boundary	0.59	Y	SKPT
ONV03	Onion Valley Packstation	Packstation	Kearsarge Pass Trail	0.31	Y	SKPT
ONV04	Kearsarge Pass	Onion Valley Trailhead	Wilderness Boundary	0.80	Y	SKPT
WHT01	Bodie Wagon Ride	Forest Boundary North of Adobe Valley	Forest Bdy East of Mono Lake via powerline	9.90	N	RMPS
WHT02	Adobe Valley Spur	Forest Boundary near Deep Wells	Adobe Hills near Adobe Lake (Dry)	4.90	N	RCPS
WHT04	Truman Camp Road	Hwy 6	Truman Camp	3.50	N	FPT
WHT03	Black Lake to Pizona Road	Forest Bdy Southeast of River Springs	Pizona Camp via powerline and Pizona Road	5.00	N	RCPS
HSM01	Horseshoe Mdw Day Loop	Corrals	Segments of old road and trail creating loop	0.6	Y	CPS
HSM02	Horseshoe Mdw Day Loop	Corrals	Segments of old road and trail creating loop	0.5	Y	CPS
SD01	Frontier Stock Drive	Owens River Road	Rodeo Mdws	22.00	N	FPT
SD02	Mammoth Stock Drive (Sherwin Creek Road)	Corrals, Old Mammoth Rd	Forest Bdy near Laurel Cr	4.40	N	MLPO MCPS

Ref #	Requested Route Name	Beginning Termini	End Termini	Miles (Inyo NF)	In HDRA	Authorized Operators ¹⁵
SD03	Mammoth Stock Drive (Hot Creek Road)	Forest Bdy near Hot Creek	Forest Boundary	2.60	N	RMPS, MLPO MCPS
SD04	McGee Stock Drive (to Whitmore)	Forest Boundary @ McGee Creek Rd	Whitmore Springs Rd	1.85	N	MCPS, PCPS
SD05	McGee Stock Drive (McGee Creek Road)	Forest Boundary	McGee Creek CG	0.85	Y	MCPS
SD06	Chidago Canyon Stock Drive	Forest Bdy north of Casa Diablo Mtn.	Casa Diablo Mtn. Rd	2.52	N	MLPO
SD07	Casa Diablo Stock Drive	Forest Boundary	Casa Diablo Mtn. Rd	30.60	N	MCPS, MLPO, RMPS, FPT
SD08	Black Lake Stock Drive	Forest Boundary	Benton Crossing Rd north of Moran Spr	15.10	N	FPT
SD09	Antelope Springs Stock Drive	Powerline Rd	Forest Rd 3S60	9.70	N	MLPO MCPS
SD10	Owens River Stock Drive	Big Springs CG	Forest Boundary	2.41	N	MLPO, FPT, MCPS
SD11	Rock Creek Stock Drive (Sand Canyon/Swall)	Tamarack Bench north of Wild Bdy	Forest Rd 4S54 near Swall Meadows	8.30	N	RCPS, PCPS
SD12	Rock Creek Stock Drive (Witcher Creek Road)	Sand Canyon Rd	Swall Meadows	2.30	N	RCPS MCPS
SD13	Pine Creek Stock Drive	Forest Boundary	Road at Gravel Pit in Swall Meadow	8.80	N	MCPS, PCPS
SD14	Bishop Stock Drive (Lower Horton Creek)	BLM Boundary south of Horton Campground	Buttermilk Road	2.90	N	BPO, RPO
SD15	Bishop Stock Drive (Buttermilk & SCE Rds)	Buttermilk Road near Hwy 168	Corrals at Aspendell	8.20	Y	BPO
SD19	Rainbow Stock Drive, Coyote	Donkey Meadow	Shannon Canyon via Yribarren Cattle Route	24.50	N	RPO
SD19A	Rainbow Stock Drive, Coyote Road Alternate	Rainbow Stock Drive	Habegggers Camp (South Lk Road)	6.40	N	RPO
SD19B	South Fork Bishop Stock Drive	Bishop Stock Drive (@ Intake2)	Donkey Meadow	4.50	Y	RPO
SD16	Glacier Stock Drive	McMurry Mdws Rd	Glacier Pack Station	9.20	N	GPT, SKPT
SD17	Sequoia Kings Stock Drive (McMurry Mdw)	Forest Bdy near McMurry Mdws	Roads in McMurry Mdws, Birch Creek area	8.50	N	SKPT, GPT
SD18	Sequoia Kings Stock Drive (Onion Valley)	Foothill Road near Shepherd Pass Tr	Onion Valley via old road	7.20	N	SKPT

Table 2.4. Comparison of forage available for grazing in pack stock pastures under each of the three alternatives. Grazing would be regulated using utilization, stream bank trampling, and range readiness standards.

Pasture Name	Estimated Usable Production (lbs)	Alt. 1: No Action	Alt. 2	Alt. 3
		Use Factor	Initial Use Factor	Initial Use Factor
Rodeo	34572	None	30%	Rest
Evans	28990	None	40%	40%
Agnew West	17767	None	30%	Rest
Agnew East	15456	None	40%	40%
McGee	14033	None	40%	40%
Upper Rock Creek	18294	None	20%	None
Lower Rock Creek: Meadow Unit	24099	None	30%	5-20%
Lower Rock Creek: Forest Unit	4509	None	40%	40%
North Lake Small	6190	None	30/20/0% (annual rotation)	25-40%
North Lake Large	11302	None	30/20/0% (annual rotation)	15-40%
Art's Pasture	7259	None	40%	None
Bishop Park: Office Field Unit	5587	None	30%	20-40%
Bishop Park: Cardinal Mine Unit	3550	None	40%	None%
Intake 2	0	None	None	None
Donkey – Lower Unit	12535	None	30%	20-40%
Big Meadow	0	None	None	None
McMurry	57315	None	40%	40%
South Fork Meadow (Cottonwood Creek) (GTW)	0	None	Rest for 8-10 years and re-evaluate	Rest for 8-10 years and re-evaluate
Overholster (Cottonwood Creek) (GTW)	0	None	None	None

Table 2.5. Use Allocations in the Ansel Adams and John Muir Wildernesses

Note: Quotas and destinations were established in the 2005 AA/JM ROD. This table assigns the use to individual pack stations.

Frontier Pack Train (Stock at one time in the wilderness limit: 75)		
Destination Quota		
Analysis Unit	Destination	Quota
Rush Creek	Alger Lakes	10
Rush Creek	Crest Creek	2
Rush Creek	Clark Zone	15
Rush Creek	Summit Lake	2
Rush Creek	Gem/Waugh Lakes	30
Rush Creek	Weber Lake	12
Thousand Islands	Thousand/Upper San Joaquin	0
Parker	Parker Lake	4
Upper Rush	Davis Lake	6
Upper Rush	Lost Lake	2
Upper Rush	Donohue	2
Rush/Upper Rush	All Expense Rush Creek	35
Rush/Upper Rush/Yosemite	All Expense Rush Creek to Yosemite NP	10
Multiple	All Expense	5
Day Rides		
Destination		Type of Ride
Gem Lake		Full Day; ½ day

Red's Meadow and Agnew Meadow Pack Stations (Stock at one time in the wilderness limit: 90)		
Destination Quota		
Analysis Unit	Destination	Quota
Crater Creek Drainage	Deer Creek	2
King Creek	Superior Lake	8 (Up to 14 when trail is improved)
King Creek	Holcomb Lake	6
King Creek	Anona Lake	6
King Creek	Ashley Lake	7
King Creek	Fern Lake	10
King Creek	Lion Point	2
King Creek	King Creek	8
King Creek	Summit Lake	
Minarets	Trinity Lakes	2
Minarets	Emily Lake	0 (Up to 8 when trail is improved)
Minarets	Minaret Creek	20
River High	Agnew Pass	4
River High	High Trail	0
River	River Trail	10
Shadow	Clarice Lake	2
Shadow	Laura Lake	3 (up to 5 when trail is improved)
Shadow	Nydiver Lake	2
Shadow	Ediza Lake	24
Shadow	Shadow Creek	16
Shadow-Ediza	Rosalie/Gladys Lakes	6
Thousand Island	Island Pass	0

Red's Meadow and Agnew Meadow Pack Stations (Stock at one time in the wilderness limit: 90)		
Analysis Unit	Destination	Quota
Thousand Island	Thousand/Upper San Joaquin	45
Thousand Island		
River High		
Thousand Island	Garnet Lake	20
Cascade Valley	Cascade Valley	2
Cascade Valley	Lower Fish Creek	20 (includes Pond Lily)
Multiple	All Expense	28
Multiple	All Expense to Yosemite NP	7
Day Rides		
Destination		Type of Ride
Clark Lakes		Day
Ediza Lake		Day
Rainbow Falls		½ Day; 2 hr; hour
Red Cones		½ day
Rosalie Lake		Day

Mammoth Lakes Pack Outfit (Stock at one time in the wilderness limit: 75)		
Destination Quota		
Analysis Unit	Destination	Quota
Cascade Valley	Cascade Valley	8
Crater Creek Drainage	Deer Creek	12
Cold/Duck	Coldwater Corridor	8
Convict	Cloverleaf	2
Convict	Genevieve/Edith Lakes	6
Purple Bench	Duck Lake/Pika Lake/ Duck Creek	26
Purple Bench	Purple Lake	24
Purple Bench	Ram Bench	4
Purple Bench	Lake Virginia	10
Silver Divide	Chief/Papoose/Lone Indian/Squaw	2
Silver Divide	Grassy Lake	4
Silver Divide	Jackson Meadow	5
Silver Divide	Lost Keys Lakes	2
Silver Divide	Peter Pande Lake	1(Up to 3 trips when trail repaired or rerouted.)
Silver Divide	Wilber Mae Lake	2
Silver Divide	Long Canyon	4
Silver Divide	Olive Lake	6
Upper Fish	Tully Hole	6
Upper Fish	Horse Heaven	3
All expense	Multiple	15
Day Rides		
Destination		Type of Ride
Barney Lake		Full Day
Heart/Emerald		2 hr
Skelton/Rim		½ day

McGee Creek Pack Station (Stock at one time in the wilderness limit: 60)		
Destination Quota		
Analysis Unit	Destination	Quota
Cold Duck	Coldwater Corridor	4
Convict	Cloverleaf Lake	2
Convict	Dorothy Lake	4
Convict	Genevieve/Edith Lakes	14
McGee	Baldwin Canyon	2
McGee	Big McGee Lake	20
McGee	Grass Lake	10
McGee	McGee Canyon	20
McGee	Round Lake	12 (Up to 20 spot and dunnage trips when access to Round Lake is improved.)
McGee	Meadow Lake (Golden)	2
McGee	Steelhead Lake	16
Upper Fish	Horse Heaven	6
Upper Fish	Tully Lake	4
Upper Fish	Upper Fish	18
Hilton Creek	Hilton (Davis/Second Lakes)	12
Multiple	All Expense	5
Day Rides		
Destination		Type of Ride
Beaver Meadow		1/2 day
Davis Lake		Day
Horsetail Falls		2 hour
Round Lake		Day

Rock Creek Pack Station (Stock at one time in the wilderness limit: 90)		
Destination Quota		
Analysis Unit	Destination	Quota
Fourth Recess	Fourth Recess Lake	28
Fourth Recess	Upper Mono Creek	30
Hilton Creek	Hilton (Davis/Second Lakes)	44
Hilton Creek	Upper Hilton Lakes	6
Hopkins	Lower Hopkins Basin	8
Little Lakes Valley	Chickenfoot/Long Lakes	12
Little Lakes Valley	Gem Lake	0
Little Lakes Valley	Ruby Lake	6
Morgan Lakes	Morgan Lakes	4
Morgan Lakes	Morgan Lakes	4
Pioneer	Pioneer Basin	20
Tamarack	Tamarack Basin	16
Multiple	Hilton	15
Multiple	Hopkins	3
Multiple	Mono Creek	6
Multiple	Pioneer Basin	5
Multiple	Rock Creek Pack Station –Mammoth	8
Multiple	Rock Creek Pack Station-Yosemite NP	3
Multiple	Rock Creek Pack Station-Pine Creek Pack Station	2
Multiple	Tamarack	5
Day Rides		
Destination		Type of Ride
Box Lake		½ Day
Chickenfoot Lake		Full Day; ¾ Day
Davis Lake		Full Day

Destination	Type of Ride
Dorothy Lake	Full Day; ¾ Day; ½ day; 2hr
East Fork Rock Creek	Full Day; ½ Day
Francis Lake	Full Day
Heart Lake	½ day
Hilton Lake #4	Full Day
Hilton Lakes	Full Day; ¾ Day
Hilton Lake #2	Full Day; ¾ Day
Hilton Lake #3	Full Day; ¾ Day
Kenneth Lake	2 Hr.
Little Lakes Valley	Full Day; ½ day; 2hr
Long Lake	½ day
Morgan Pass	Full Day
Ruby Junction	½ Day
Ruby Lake	Full Day; ½ Day
Ruby Lake - Mono Pass	¾ Day
Sand Canyon	Full Day
Summit Lake	¾ Day
Tamarack Basin	Full Day; ½ day; 2 hr
Tamarack Lake	Full Day
Upper Trail	½ day; 2hr; 1 hr

Pine Creek Pack Station (Stock at one time in the wilderness limit: 50)		
Destination Quota		
Analysis Unit	Destination	Quota
Hilton Creek	Hilton (Davis/Second Lakes)	4
French Canyon	Elba/Moon/L Lakes	2
French Canyon	French Canyon	10
French Canyon	French Lake	2
French Canyon	Merriam Meadow	4
French Canyon	Royce Lakes	2
Glacier Divide	Hutchinson Meadow	4
Horton	Horton Lake	2
Pine Creek	Honeymoon Lake	28
Pine Creek	Pine Creek Zone	30
Multiple	All Expense	4
Day Rides		
Destination	Type of Ride	
Hilton Creek	½ Day	
Honeymoon Lake	Full Day	
Morgan Lake	Full Day	
Pine Lakes	Full Day; ½ day; 5hr	
Pine Creek Pack Station	Full Day; ½ day; 2hr; 1hr	
Upper Pine	Full Day	

Bishop Pack Outfitters (Stock at one time in the wilderness limit: 60)		
Destination Quota		
Analysis Unit	Destination	Quota
Glacier Divide	Golden Trout Lakes	40
Glacier Divide	Honeymoon Creek/Lake	4
Glacier Divide	Hutchinson Meadow	12
Glacier Divide	Muriel Lake	4 (Up to 14 trips when trail is repaired.)
Glacier Divide	Packsaddle Lake	2
Horton	Horton Lake	4
Humphreys Basin	Desolation Creek/Lake	14
Analysis Unit	Destination	Quota
Humphreys Basin	Humphreys Lakes	10
Humphreys Basin	Tomahawk/Mesa Lakes	8
Lamarck	Lamarck Lakes	5
Piute	Piute Corridor	20
Sabrina	Baboon Lake	3
Sabrina	Blue Lake	6
Sabrina	Dingleberry Lake	16
Sabrina	Donkey Lake	6
Sabrina	Emerald Lakes	25
Sabrina	Upper Sabrina Basin	40
Multiple	All Expense	7
Day Rides		
Destination		Type of Ride
Grass Lake		2 Hr
Loch Leven		Full Day; ½ Day
Piute Lake		Full Day
Piute Pass		Full Day
Desolation Lake		Full Day
Muriel Lake		Full Day

Rainbow Pack Outfitters (Stock at one time in the wilderness limit: 35)		
Destination Quota		
Analysis Unit	Destination	Quota
Bishop Creek	Bull Lake	10
Bishop Creek	Hurd Lake	10
Bishop Creek	Long Lake	10
Bishop Creek	Marie Louise Lake	2
Bishop Creek	Upper Bishop Creek	25
Bishop Creek	Bishop Pass - SEKI	58
Treasure	Treasure Lake	8
Tyee	Tyee Lakes	2
Coyote	Baker Lakes	3
Multiple	All Expense	5
Day Rides		
Destination		Type of Ride
Bishop Basin		Full Day; ½ day
Bishop Lake		Full Day
Chocolate Lake		Full Day; ½ day
Long Lake		Full Day; ½ day
Saddlerock Lake		Full Day; ½ day
Timberline Tarns		½ Day
Treasure Lakes		Full Day; ½ day

Glacier Pack Train (Stock at one time in the wilderness limit: 35)		
Destination Quota		
Analysis Unit	Destination	Quota
Birch	Birch Creek	5
Coyote	Baker Lakes	3
North Fork Big Pine	Black Lake/Summit Lake	30
North Fork Big Pine	North Fork Big Pine	125
South Fork Big Pine	Willow Lake	2
Multiple	All Expense	5
Day Rides		
Destination		Type of Ride
4th Lake Loop		Full Day

Sequoia Kings Pack Trains (Stock at one time in the wilderness limit: 35)		
Destination Quota		
Analysis Unit	Destination	Quota
Kearsarge	Gilbert/Matlock/Bench/Flower Lakes	16
Kearsarge	Kearsarge to SEKI	36
Sawmill	Sawmill to SEKI	2
Shepherd	Shepherd to SEKI	12
Taboose	Taboose to SEKI	8
Whitney	Trail Crest	4
Multiple	All Expense	5
Day Rides		
Destination		Type of Ride
Kearsarge Trail		½ day
Matlock Lake		Full Day
Kearsarge Lakes		Full Day

Mt. Whitney Pack Trains (Stock at one time limit included in Rock Creek/Red's Quota)		
Destination Quota		
Analysis Unit	Destination	Quota
Sawmill	Sawmill to SEKI	1
Shepherd	Shepherd to SEKI	6
Tabose	Taboose to SEKI	5
Multiple JMSE	All Expense JMSE	10
No Day Rides for Mt Whitney Pack Trains		

Cottonwood Pack Station (Stock at one time in the wilderness limit: 35)		
Destination Quota		
Analysis Unit	Destination	Quota
Cottonwood	New Army Pass	4
Cottonwood	Cottonwood Basin	50
Cottonwood	Cirque and South Fork Lakes	6
Whitney	Trail Crest	10
Multiple	All Expense	5
Day Rides		
Destination		Type of Ride
Cottonwood Lakes		Full Day; ½ day
South Fork Lakes		½ day
Upper South Fork Lake		½ day
Lower South Fork		½ Day
New Army Pass		Full Day

Chapter 3 - Affected Environment and Environmental Consequences

Introduction

This chapter describes aspects of the environment likely to be affected by the proposed action and alternatives. Also described are the environmental effects (direct, indirect, and cumulative) that would result from undertaking the proposed action or alternative. Together, these descriptions form the scientific and analytical basis for the comparison of effects in Chapter 2.

Chapter 3 begins with a summary of relevant past, present, and reasonably foreseeable actions considered in each resource in the cumulative effects. The summary is provided in tabular form and includes the project or activity name along with a timeframe under which the activity has occurred or will occur. The various resource sections will contain the cumulative effects discussion, including the extent to which (if any) the project contributes to cumulative effects in the project area.

Sections 3.2 – 3.4 contain the affected environment and environmental consequences discussions for each resource area. Eight resources are considered in this analysis: wilderness, recreation, trails, heritage, socioeconomics (includes commercial pack station operations), physical environment (includes hydrology, soils, and air quality), wildlife and vegetation (includes grazing resources, rare plants, and weeds). The project area is divided into four analysis units: non-wilderness areas of the forest, the Montgomery Pass Wild Horse Viewing Area (MPWHVA), the Ansel Adams and John Muir (AA/JM) Wildernesses, and the Golden Trout and South Sierra (GT/SS) Wildernesses. The Non-wilderness analysis unit includes the entire Inyo National Forest other than the MPWHVA and the White and Inyo Mountains. While the Ansel Adams and John Muir Wildernesses are included in this chapter, the analysis was completed in the 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses Final EIS (2005 AA/JM FEIS). This chapter provides a summary of the effects on the AA/JM Wildernesses along with page references where the entire analysis can be found in the 2005 AA/JM FEIS.

For most of the resources, the sections are organized by these four analysis areas. Some resources further divide the non-wilderness analysis into subunits; for example, the trails discussion utilizes an operating area concept to subdivide the non-wilderness into more manageable parts. Other resources utilize a slightly different organization scheme. In the Operation section (3.2.5.1), for example, the affected environment and environmental consequences discussion is organized around the individual pack stations.

For each resource there is an affected environment discussion that describes the current situation and/or condition of the resource, followed by an analysis of the environmental consequences of each alternative on the particular resource. Most of the resource sections employ a standard Alternative 1, Alternative 2, and Alternative 3 environmental consequences structure, with some resources adding an “effects common to all alternatives” section. Included in the environmental consequences

discussion are direct, indirect, and cumulative effects. The chapter concludes with a short discussion of Short-term Uses and Long-term Productivity, Unavoidable Adverse Effects, Irreversible and Irretrievable Commitments of Resources, and Legal and Regulatory Compliance.

3.1 Past, Present and Reasonably Foreseeable Future Actions

According to the Council on Environmental Quality (CEQ) NEPA regulations, “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 actions (40 CFR 1508.7). In determining cumulative effects, the effects of the following past and present and future actions were added to the direct and indirect effects of the proposed action and alternatives:

Table 3.1 Past, present and reasonably foreseeable future actions contributing to cumulative effects

Project or Activity Name	Affected Area	Resources Potentially Affected by the Activity
Past Actions		
Unmanaged livestock grazing from 1880s to 1930s on Kern Plateau, including cow camps, fencing, water diversion and retention structure.	Golden Trout and South Sierra Wilderness	Wilderness, Heritage, Trails, Hydrology/soils, Vegetation, Wildlife
Construction of facilities in the GT/SS Wildernesses related to livestock grazing	Golden Trout and South Sierra Wilderness	Wilderness
Forest Service reduction in livestock grazing from 1930's to present	All analysis Units	Wilderness, Hydrology/Soils, Vegetation
Rest of Templeton and Whitney Allotments - 2001	Portions of the Golden Trout Wilderness – Templeton and Whitney Cattle Allotments	Wilderness, Hydrology/Soils, Vegetation, Wildlife
Elements of the 2001 Ansel Adams, John Muir, Dinkey Lakes Wildernesses Management Plan, particularly trailhead quotas, use allocation adjustments, elevational fire closures, and permitting requirements	Ansel Adams and John Muir Wildernesses	Operations
2002 Court Ordered Injunctive Relief, including a 20% decrease in commercial pack stock service days and reduced party size.	John Muir and Ansel Adams Wildernesses	Operations
2005 AA/JM FEIS elements, including destination quotas, grazing management by grazing zones, trail designations, and stock at one time in the AA/JM Wilderness Designation.	Ansel Adams and John Muir Wildernesses	Operations, Wilderness, Heritage, Trails, Hydrology/Soils, Vegetation, Wildlife
Motorized vehicle use (OHVs), including off-trail use	Through-out the analysis area, except in the Golden Trout, South Sierra, Ansel Adams and John Muir Wildernesses.	Heritage, Trails, Vegetation

Non-motorized use of trails (mountain bikes, hiking)	Through-out the analysis area	Wilderness, Trails, Hydrology/Soils, Vegetation,
Forest-wide grazing (cattle, sheep, horses, mules)	Through-out the analysis area in active allotments and pastures.	Wilderness, Trails, Hydrology/Soils, Vegetation, Wildlife
Urban development, sprawl, includes campgrounds, recreation residences, power lines, dumping	Near Mammoth Lakes and June Lake, along Bishop Creek, Rock Creek and Big Pine Creek.	Recreation, Heritage, Hydrology/Soils, Vegetation, Wildlife
Resort development and operations (includes ski resorts and lodging resorts)	Near Mammoth Lakes and June Lake, along Bishop Creek, Rock Creek and Big Pine Creek.	Recreation, Operations, Heritage, Trails, Hydrology/Soils, Vegetation, Wildlife
Dams, water diversions	All major creeks on the Eastern slope of the Sierra Nevada Range, some creeks in/near the Montgomery Pass Wild Horse Territory.	Wilderness, Heritage, Hydrology/Soils, Wildlife
Historic Fish Stocking	Throughout the Forest, primarily the JM/AA and GT/SS Wildernesses	Wilderness, Wildlife
Installation of fish barriers to protect Golden Trout	GT/SS Wildernesses, Schaeffer Stringer	Wilderness
Timber harvest/fuel wood cutting (incl. road building related to timber harvest)	Near the towns of Mammoth Lakes and June Lake, and northeast of Mammoth Lakes.	Heritage, Trails, Vegetation, Wildlife
Prescribed burning and thinning for fuels reduction	Across the analysis area. Recently, in the Casa Diablo area, near the town of Mammoth Lakes, near the town of June Lake	Heritage, Vegetation, Wildlife
Fire Suppression	Across the analysis area and region.	Wilderness, Grazing
Mining	Pine Creek, Bishop Creek.	Heritage, Wildlife, Soils/Hydrology
Wildlife Trapping	All Analysis Units	Wildlife
Wild horse use of MPWHVA	Within the Montgomery Pass Wild Horse Viewing Area	Trails, Soils/Hydrology, Vegetation
Use restrictions on Red's Meadow Road	Red's/Agnew Meadows area	Operations, Recreation
Project or Activity Name	Affected Area	Resources Potentially Affected by the Activity
Present Actions		
Illegal artifact collection and vandalism	Across analysis area, particularly in the MPWHVA	Heritage
Continued fish removal from wilderness lakes for Mountain Yellow Legged Frog habitat improvement	AA/JM Wildernesses, GT/SS Wildernesses	Operations, Heritage
Increased fuel and feed prices	Pack Stations	Operations
Cattle and sheep grazing on active allotments	Non wilderness Analysis Unit and GT/SS Wildernesses	Wilderness, Heritage, Hydrology/soils, Vegetation, Wildlife
Los Angeles Department of Water and Power Ranch Management Plan	Non-wilderness Analysis Unit	Operations, Vegetation

Reduced trail maintenance funding for the Forest Service	Entire Inyo National Forest, particularly the AA/JM and GT/SS Wildernesses	Trails, Operations
Project or Activity Name	Affected Area	Resources Potentially Affected by the Activity
Foreseeable Future Actions		
Tungstar Hydroelectric Project	Pine Creek Canyon	Recreation, trails
Rebuilding of Glacier Lodge	Big Pine Canyon	Recreation
The MOU between California government agencies that will require weed-free hay for feed.	All pack stations and the base camps at Pizona and Truman.	Operations, Vegetation,
Region 5 OHV Route Inventory Designation (2008)	Across the analysis area	Trails, Hydrology/Soils, Wildlife
Sequoia Kings Canyon National Park Stock Management Plan	Sequoia Kings Canyon National Park	Wilderness, Operations, Hydrology/Soils
Re-permitting of recreation residences	Non-wilderness Analysis Unit, particularly Mammoth Lakes, Rock Creek, Bishop Creek, and Big Pine Creek areas.	Recreation
Trail maintenance – ongoing	Entire analysis area, especially AA/JM, GT/SS Wildernesses.	Trails, Wilderness
Continued increase in population, driving increased recreation	Entire Inyo National Forest	Recreation, trails, hydrology/soils, wildlife, vegetation

3.1.2 Assumptions

Alternative 2

The following lists shows assumptions about pack station operations under Alternative 2. These assumptions were used by the IDT to focus their analyses:

1. Overall pack stock use is expected to increase by no more than 20% in the non-wilderness analysis unit. This includes any increase in stock drives, wagon rides, overnight trips outside of wilderness, or other front country activities. This estimate is based on the increase in herd size provided by this alternative and discussions with pack station operators.
 - a. Overall, the number of stock authorized to be held and used on forest service land (“herd size”) by all pack stations combined could increase from currently held levels by about 9% (this is different than currently authorized levels, because Three Corner Round and Mt. Whitney Pack Trains do not have a designated herd size, but do hold stock on the forest). Allowing for some unknowns in operations, whereby certain pack stations may choose to use less pack stock in the AA/JM wilderness than is allowed, and therefore have more use in the front country, the increase in herd size was assumed to result in a 20% increase in use across the non-wilderness analysis unit.
 - b. Areas used for front country day rides by Rainbow Pack Station could experience up to 40% more use than current levels. Other pack stations’ increase in front country use may be more, especially those, such as Pine Creek, that have had very few or no day rides in the past. (In the case of Pine Creek, one day ride would be a 100% increase over current levels.) Use increases would be limited to no more than 10% for Mammoth Lakes Pack Outfit day ride use, while Red’s Meadow Pack Station would have no increase in service days for day ride use. However, overall use by all stations and outfitters would be assumed to increase by not more than 20%.
 - c. The increase in stock numbers allowed at 5 pack stations would be used outside of the AA/JM Wilderness areas. The AA/JM wilderness use is constrained by the number of stock at one time in the wilderness. The stock at one time number based on past use, and is expected to maintain past use levels, as analyzed in the 2005 FEIS. Therefore, the increased herd size is assumed mainly to be used for use outside of the AA/JM areas.
2. Off-trail, cross country use outside of the AA/JM Wildernesses would continue to be a very small portion of commercial pack station activities. (Cross-country use is not permitted in the AA/JM Wildernesses [2005 AA/JM FEIS, p. II-4 and II-24].) Based on recent reported use, it is expected that each pack station would take less than 5 overnight trips and 5 day ride trips that travel cross-country. Discussions with pack station owners indicate this use is not expected to increase.

3. Overnight trips in the front country (outside of the wildernesses and the MPWHT) would continue to be few in number, except for on the Tamarack Bench. This is based on recent reported use; most pack stations report less than 5 overnight trips outside of the wilderness annually. Rock Creek Pack Station reported an average of about 120 service days Tamarack Bench annually from 2001-2005. It is assumed that this could increase to 20%, to about 150 days of use overnight on Tamarack Bench. This is because some past AA/JM Wilderness use could shift here. In all other locations, it is assumed that there would be less than 10 trips annually to any overnight camping location. In the Glass Mountains, trips would be limited to 8 total.

Alternative 3

The following lists shows assumptions about pack station operations under Alternative 3. These assumptions were used by the IDT to focus their analyses:

1. There should be little increase in use in the areas outside of the AA/JM Wildernesses and GT/SS Wildernesses relative to recent levels. The number of stock held and used on forest service land by all pack stations would be the same as currently authorized, and those that currently do not have specific herd size limitations would be given their current reportedly held herd size. Despite herd sizes remaining almost the same (possible 30 stock increase for Mt. Whitney Pack Trains), there could be some increase in stock drives, wagon rides, overnight trips outside of wilderness, or other front country activities if pack stations choose to use more stock in the front country and less in the wilderness. The increase in use is expected to be very small, if it occurs at all.
2. Overnight trips in the Non-wilderness Analysis Unit (outside of the wildernesses and the MPWHT) would continue to be few in number, except for on the Tamarack Bench. This is based on recent reported use; most pack stations report less than 5 overnight trips outside of the wilderness annually. Rock Creek Pack Station has reported that an average of about 120 service days to Tamarack Bench annually. This use could increase by about 20%, due to some shift in use from the AA/JM to the front country. In all other locations, such as the Glass Mountains, it is assumed that there would be less than 10 trips annually to any overnight camping location.

3.2 Human Environment

3.2.1 Wilderness

This section of the FEIS discloses the environmental impacts associated with the re-issuance of special use permits for commercial pack stock services (guided trips supported by horses, mules, or burros) on the Golden Trout and South Sierra Wildernesses (see Figure 1.2 – Project Area Map). Environmental impacts on the Ansel Adams (AA) and John Muir (JM) Wildernesses have been summarized from the analysis completed for the 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses Record of Decision and Final Environmental Impact Statement (referred to hereafter as the 2005 AA/JM ROD/FEIS). Effects on the AA/JM Wildernesses will not be re-analyzed in this section as decisions related to commercial pack stock for these areas were made in the 2005 AA/JM ROD/FEIS.

3.2.1.1 Summary - Ansel Adams and John Muir Wildernesses

The effects to wilderness resources for the AA/JM Wildernesses were analyzed in the 2005 AA/JM FEIS. The effected environment was described on pages III-20-III-48 and the environmental consequences were analyzed for the selected alternative, Alternative 2-modified, are analyzed on pages IV-17 to IV-24 and throughout IV-48 to IV-140.

In summary, the 2005 AA/JM FEIS found that the intensity of impacts to wilderness character would be low to moderate and moderate to high at less than 25 site specific locations. 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/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.

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.

There would be no irretrievable or irreversible adverse effects, 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 (Appendix I) 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.

3.2.1.2 Golden Trout and South Sierra Wildernesses

Affected Environment

Introduction

The following section describes the affected environment (i.e., existing resource conditions) of the Golden Trout and South Sierra Wildernesses. It begins with a discussion of the goals for desired conditions in the two wilderness areas. The desired conditions discussion is followed by descriptions of the existing conditions in the wilderness areas. Five factors or topics are used as indicators of the existing condition of wilderness character: 1) existing facilities and structures in the wildernesses, 2) current watershed and range conditions, 3) current condition of campsites, 4) presence and status of California golden trout, and 5) current levels of visitor use.

General Goals for Desired Conditions in the Wilderness Areas

The 1991 South Sierra Wilderness Implementation Plan (SSWIP) allows for the use and enjoyment of the wilderness by the public at levels that protect wilderness character, particularly the outstanding opportunities for solitude. The SSWIP established general goals for desired conditions:

- Protect and perpetuate the wilderness character;
- Provide opportunities for primitive recreation and solitude;
- Maintain or restore wildlife and fish, scenic and watershed values; and
- Provide for use levels that maintain the quality of the recreation experience as well as ecological values.

The desired conditions for the watershed resource in the SS Wilderness are defined by the INF LRMP (1988):

- The reach of the South Fork of the Kern River above Dutch John Flat has been designated as a Wild Trout stream. A 10 percent stream bank alteration standard applies to this reach.
- Downstream from Dutch John Flat, the 20 percent stream bank alteration standard contained in Forest Plan Amendment #6 applies. The stream bank standards are elements of both Alternative 2 and Alternative 3.

The goals of the 1982 Golden Trout Wilderness Management Plan (GTWMP) included the restoration of key resource systems and the re-attainment of a more natural landscape. The resource systems identified for restoration were the California Golden Trout (golden trout) fishery, historic and cultural

resources related to cattle grazing, and meadows that had been damaged by historic livestock grazing. The document identified a set of actions designed to achieve the broad management goals described in the plan. The actions or projects included a Golden Trout Habitat Restoration Plan, a historic resource management plan, a project Environmental Assessment to protect watersheds with pure strains of golden trout, and revised range allotment plans.

Both wilderness areas include segments of designated Wild and Scenic Rivers. The upper 78 miles of the North Fork of the Kern was designated a Wild and Scenic River in 1987 (Public Law 100-174). The INF portion of the “Wild” North Fork of the Kern River includes the reach between the northern and southern boundaries of the GT Wilderness. This segment possesses outstandingly remarkable scenic, recreation, fisheries, vegetative, cultural and geologic values.

The upper 72.5 miles of the South Fork of the Kern River was also designated a Wild and Scenic River in 1987. The “Wild” segment of the South Fork of the Kern runs through the GT Wilderness from its headwaters to the southern wilderness boundary near Monache Meadows. This segment possesses outstandingly remarkable scenic, recreation, fisheries, vegetative and geologic values. The “Wild1” segment of the South Fork of the Kern through the SS Wilderness possesses outstandingly remarkable scenic, recreation and cultural values.

As stated in the 1994 Comprehensive Management Plan for the Wild and Scenic North and South Forks of the Kern (KRCMP), the values which led to the river’s inclusion in the Wild and Scenic system are to be protected and enhanced. Desired conditions for the “Wild” river segments in the wilderness areas are: limited use, very little evidence of human caused modifications (KRCMP pg. 4); and opportunities for solitude, with only occasional encounters with other visitors during the summer months. “Wild1” segments allow higher levels of visitor use than segments with the “Wild” designation. Desired conditions for grazing and livestock management included:

- Reestablish vegetation and hydrologic stability of riparian areas (pg. 40).
- Protect and improve riparian dependent resources to restore Little Kern Golden Trout to its critical habitat (pg .48).
- Update allotment plans and “manage in accordance with wilderness objectives” (36 CFR 293).
- Set 10 percent trampling/streambank alteration standard in Wild Trout sections, which includes the South Fork of the Kern River and Golden Trout Creek.

Overview of the Affected Environment

The adjoining Golden Trout and South Sierra Wilderness Areas (GT/SS Wildernesses) are located at the southern end of the Sierra Nevada range in an area known as the Kern Plateau. The United States Congress designated the Golden Trout Wilderness in 1978 (Public Law 95-237). The 303,511 acre wilderness is jointly administered by the Inyo National Forest (INF) and the Sequoia National Forest. The INF administers 192,765 acres of the northern and eastern portions of the wilderness and the Sequoia National Forest administers 110,746 acres of the southern and western portions of the wilderness. Congress designated the South Sierra Wilderness in 1984 (Public Law 98-425). The

62,084 acre wilderness is also jointly administered by the INF and Sequoia National Forests. The INF administers 31,865 acres of the northern portion of the wilderness and the Sequoia National Forest administers 28,219 acres of the southern portion of the wilderness.

The existing condition of the GT and SS Wildernesses is described below. Five factors or topics are used as indicators of the existing condition of wilderness character: 1) existing facilities and structures in the wildernesses, 2) current watershed and range conditions, 3) presence and status of California golden trout, 4) current levels of visitor use, and 5) current condition of campsites.

1) Existing facilities and structures in the Wilderness Areas. At the time of wilderness designation in 1978, there were structures and uses in the area that did not conform to either the Wilderness Act or Forest Service policy. The GTWMP included management actions to phase out these non conforming uses. In particular, pack stock outfitters were no longer allowed to occupy structures in the wilderness or to use motorized equipment in support of their businesses. Actions taken by the Forest Service to restore the undeveloped quality of wilderness character include the closure of the airstrips at Tunnel and Templeton Meadows in 1978 and the closure of Jordon Hot Springs Resort in 1990. The current condition is a moderate reduction in the number of facilities and structures in the wilderness areas compared to the time of wilderness designation.

The Jordan Hot Springs Resort is the only facility that has undergone evaluation for historical significance; it has been designated as historically significant. The other cabins, cow camps and facilities have not yet been formally evaluated. Until these facilities are evaluated, they are considered eligible for designation as historically significant, and will remain in the wilderness.

Camp facilities and fences to support livestock management as well as tourist pastures and corrals remain in both the GT and SS Wildernesses (GTWMP p. 29-30, SSWIP). Facilities related to production livestock facilities were allowed to remain in accordance with Section 4(d)(4)(2) of the Wilderness Act and the Congressional Grazing Guidelines (Sec. 108, P.L. 96-560, H.R. Report 96-617 11/14/1979, contained at FSM 2323.22). These allowances did not and do not apply to transportation livestock (packs station operations).

“...wilderness designation should not prevent the maintenance of existing fences or other livestock management improvements, nor the construction and maintenance of new fences or improvements which are consistent with allotment management plans and/or which are necessary for the protection of the range.” (Congressional Grazing Guidelines, FSM 2323.22)

The 2001 Templeton and Whitney Grazing Allotment Decision Notice reexamined the livestock facilities on these allotments. The decision rested the allotments and included actions to remove some enclosure fences where monitoring shows that they are no longer necessary for resource protection. Since 2001, some of the fences in Ramshaw and Templeton meadows have been partially removed. The undeveloped quality of wilderness character continues to be affected by the presence of cow camps, structures, fences and corrals.

2) Existing Watershed and Range Conditions in the Wilderness Areas. There has been a history of sheep and cattle grazing on the Kern Plateau since the late 1800's. Current livestock grazing in the GT/SS Wildernesses is managed through four range allotments: the Mulkey, Whitney, and Templeton

Allotments in the GT Wilderness; the Monache Allotment in the GT and SS Wildernesses. There are lasting impacts to watershed and vegetation conditions from the early heavy grazing pressure and continued impacts from current grazing. Further details on the grazing history, current management, and the watershed and vegetation conditions are contained in the watershed (3.3.2) and vegetation/grazing sections (3.4.2.1) of this EIS.

The 1982 Environmental Assessment for the GTWMP found that

“streambank and gully erosion was still a common problem in numerous meadows. The percentage of meadows that are reported as threatened or damaged from erosion are as follows: 86 percent of the Owens River watershed; 71 percent of the Golden Trout Creek watershed; 82 percent of the South Fork Kern River watershed; 65 percent of the Ninemile Creek watershed; and zero percent of the Kern River watershed...Significant degradation has occurred in fish and wildlife habitat, watershed and range resources, and the quality of the wilderness resource” (GTWMP pg. 10).

The document recognized that historic livestock grazing had a major impact on the natural quality of wilderness character. The Decision Notice allowed livestock grazing to continue at a level commensurate with the protection of natural resources. To enhance managers' ability to protect range resources, some facilities and range improvements were allowed to remain after wilderness designation. This was consistent with the Congressional Grazing guidelines stating *“There shall be no curtailments of grazing in wilderness areas simply because an area is, or had been designated as wilderness”*.

Because these types of conditions are typically slow to recover, meadow conditions have not changed substantially since 1982. Recent actions by the Forest Service, however, have had beneficial effects on natural qualities. On the Templeton and Whitney Allotments, for example, a 2001 Environmental Assessment and Decision Notice cancelled the term grazing permits and implemented a period of rest. This decision was made to allow for the most rapid rate of recovery toward the desired watershed and aquatic habitat conditions (USDA FS, 1998; USDA FS, 2000; USDA FS, 2001).

3) Existing Condition of Campsites and Campfires in the Wilderness Areas. The interdisciplinary team evaluated the campsites requested through the pack stock outfitters' permit applications. All evaluated campsites have been used for a number of years by commercial trips, non-commercial visitors, or livestock operations. The evaluation found that campsites in ten areas were located in areas with sensitive resources. The interdisciplinary team could not differentiate the impacts from the recent history of less than 15 stock trips annually into the Golden Trout Wilderness from impacts caused by past livestock grazing, non-commercial backpackers, non-commercial stock trips, and outfitter/guide backpacking trips.

Minor to moderate impacts to natural qualities were documented at several campsites along the South Fork of the Kern River and at Little Whitney Meadow. These campsites have expanded into riparian areas, had additional fire rings built, or contained large amounts of ash, foil, or non-burnable

garbage. These factors contributed to a lower rating for these sites, i.e. the natural qualities are impacted. The campsites with resource concerns are located at or near:

- Camps at Gomez Meadow, Big Dry Meadow and Summit Meadow and are in areas within 100 feet of seeps and springs;
- A camp Northeast of Groundhog meadow is within 100 feet of surface water;
- A camp at Old Tunnel airstrip is within 100 feet of water;
- Camps at Templeton Meadow are in an area with seeps and springs;
- Camps at Ramshaw and Strawberry Meadows and are in areas with sensitive plant species;
- The junction of South Fork or the Kern River and the unnamed creek outlet from McConnel Meadow is less than 100 feet from water. A campsite more than 100 feet from water is nearby;
- The camp at Little Whitney Meadow and is less than 100 feet from Golden Trout Creek. Several campsites more than 100 feet from water are located on the west side of Golden Trout Creek at the lower end of the meadow.

In addition, eight areas and the GTW and one area in the SS Wilderness have campsites that could affect cultural resources.

Campfires are allowed in most areas of the GT Wilderness and throughout the SS Wilderness. Chicken Spring Lake and Rocky Basin Lakes are the two high altitude areas near tree-line in the GT Wilderness where campfires have been prohibited since 2001. Although the closure in the two areas has been in place for several years, past impacts from campfires in these areas persist. The impacts include wood depletion, soil and vegetation loss, and the scarring of rocks. Outside the two closed areas, most camping locations are near forested areas where firewood is generally abundant and the use of campfires does not create significant resource concerns.

4) Existing Condition of California Golden Trout Populations in the Wilderness Areas. The California Golden Trout is native to the South Fork of the Kern River and Golden Trout Creek watersheds within the GT Wilderness. The fish is listed as a species of concern by the California Department of Fish and Game (DFG) and as a sensitive species by the Forest Service. The history of habitat degradation associated with livestock grazing along with the introduction of non-native fish species to the South Fork of the Kern during the early 1900s have had major adverse effects on both the untrammelled and natural qualities of wilderness character.

The Forest Service and DFG have implemented substantial riparian and instream habitat restoration efforts in the past 5-10 years to protect and restore golden trout populations. These management actions combined with the cancellation of the grazing permits for the Templeton and Whitney allotments have resulted in an upward trend in riparian conditions along these two streams, especially along the streambanks. See Wildlife Section 3.4.1 for a more detailed discussion of the status of the golden trout fishery and Vegetation Section 3.4.2.1 for a detailed discussion of trends in meadow conditions.

In addition to the habitat restoration efforts, fish barriers to prevent upstream migration of non-native species have been installed at Templeton and Ramshaw meadows. Although the barriers and

meadow restoration structures are required to protect and restore the golden trout, they represent human manipulation or trammeling of the wilderness resource.

5) Existing Trail Conditions in the Wilderness Areas. The existing trail system in the two wilderness areas and its condition are described in the Trails Section 3.2.3.5. Annually, approximately 350 pack stock accompany commercial trips in the GT/SS Wildernesses. Most of the pack stock use has been on the Cottonwood Pass and Cottonwood Lakes Trails out of Horseshoe Meadows. Both of these trails are designed and constructed to accommodate pack stock. With the exception of some widening of the Cottonwood Pass and Cottonwood Lakes Trails, the current level of pack stock use has had a negligible effect on trail conditions in the two wilderness areas. The granitic soils of the Kern Plateau can accommodate the use without noticeable damage.

Stock traveling through meadows or riparian areas, however, can affect the natural quality of wilderness character through hoof punching or stream bank trampling. A number of the system trail routes in the GT wilderness cross through meadows. The interdisciplinary team observed some widening of trails through meadows, but could not differentiate whether the widening was caused by livestock or pack stock.

6) Existing Visitor Use Conditions for the Wilderness Areas. In both the Golden Trout and South Sierra Wildernesses, the total amount of commercial pack stock outfitter and commercial outfitter/guide use is regulated through annual service day allocations. Service day were first used as a measure of commercial use in the mid 1980's. In both wildernesses, initial service day allocations authorized an amount of annual use equivalent to that which occurred at the time the respective management plans were adopted (1982 for the GTWMP, and 1991 for the SSWIP). Each wilderness area, however, employs different strategies to manage total visitor capacity, which is the sum of commercial pack stock outfitter, commercial outfitter/guide and non-commercial use. The strategies are different in part because of changes in the approach taken by federal agencies to manage visitor use from the early 1980s, when the GTWMP plan was adopted, to the 1990s, when the SSWIP was adopted. The strategies are also different because the Forest Service's major goal in the GT Wilderness has been to reacquire its wilderness character while the goal in the SS Wilderness has been to preserve a more intact wilderness character.

The GTWMP utilizes a travel zone capacity strategy that sets limits on the number of overnight visitors to geographic areas within the wilderness. If the number of overnight visitors exceeds an established capacity in a travel zone, then trailhead quotas would be implemented to keep overnight use below the threshold. Currently the only trailhead quotas determined to be necessary to stay within capacity limits is the Cottonwood Pass trail where the daily quota is 40 people a day.¹ Limiting the number of people can reduce some impacts of visitor use on the wilderness experience and, through probability, reduce resource impacts, particularly at popular destinations where use concentrates. The Cottonwood Pass trailhead quotas were designed to minimize impacts to the primary destination areas at Chicken Spring Lake and also limit the number of people entering SEKI

¹ Cottonwood Lakes is in the John Muir Wilderness yet the trailhead and first portion of the trail is within Golden Trout Wilderness. The destination, Cottonwood Lakes, is addressed in the 2005 AA/JM FEIS.

each day. Cottonwood Pass Trail does not have a commercial quota. Commercial pack stock use on this trail is only limited by the service day allocation.

The SSWIP utilizes a Limits of Acceptable Change (LAC) strategy in conjunction with an annual limit of 250 service days for commercial pack stock outfitters. The strategy identified four factors related to wilderness character and adopted indicators and standards for the factors. Table 3.2 summarizes the LAC strategy, which adopted two sets of standards, one for each opportunity class within the wilderness. The Forest Service will “Implement use limits only when use standards are reached or wilderness values are being degraded” (SSWIP pg. 19). The SSWIP also establishes a target for the percentage of total use by each of three major categories of users: 80 percent of total annual use by general public without stock; 15 percent of total annual use by commercial stock use plus non-commercial stock users; 5 percent for commercial outfitter guide use (no stock use).

Table 3.2. South Sierra Wilderness limits of acceptable change

Factor	Indicator	Standard	Wilderness Character Quality Protected
Campsite condition	Condition class	Opportunity Class 1 and “Wild”: all indexes in lower 10% of range. Opportunity Class 2 and “Wild1”: 95% of indexes in lower 25% of range	Natural
Visitor solitude	# people encountered per day	Opportunity Class 1 and “Wild”: zero, 90% of time Opportunity Class 2 and “Wild1”: less than 5, 90% of time “Scenic”: 15 people, 80% of time	Opportunities for solitude
Visitor solitude	Occupied campsites per acre	Opportunity Class 1 and “Wild”: zero, 90% of time Opportunity Class 2 and “Wild 1”: less than 3, 90% of time	Opportunities for solitude
Meadow/ riparian condition	Forest Plan standards	Upward or static trend	Natural Untrammeled

Data indicate that use levels are within the standards for the South Sierra Wilderness where capacity is measured through a standard on the number of encounters per day. The average annual visitation from 2001 through 2004 is 45 percent lower than the visitation during 1989. As for

commercial use, over the last four years commercial service day actual use has averaged 125 service days, half the 250 annual service day limit established for the SSWIP.

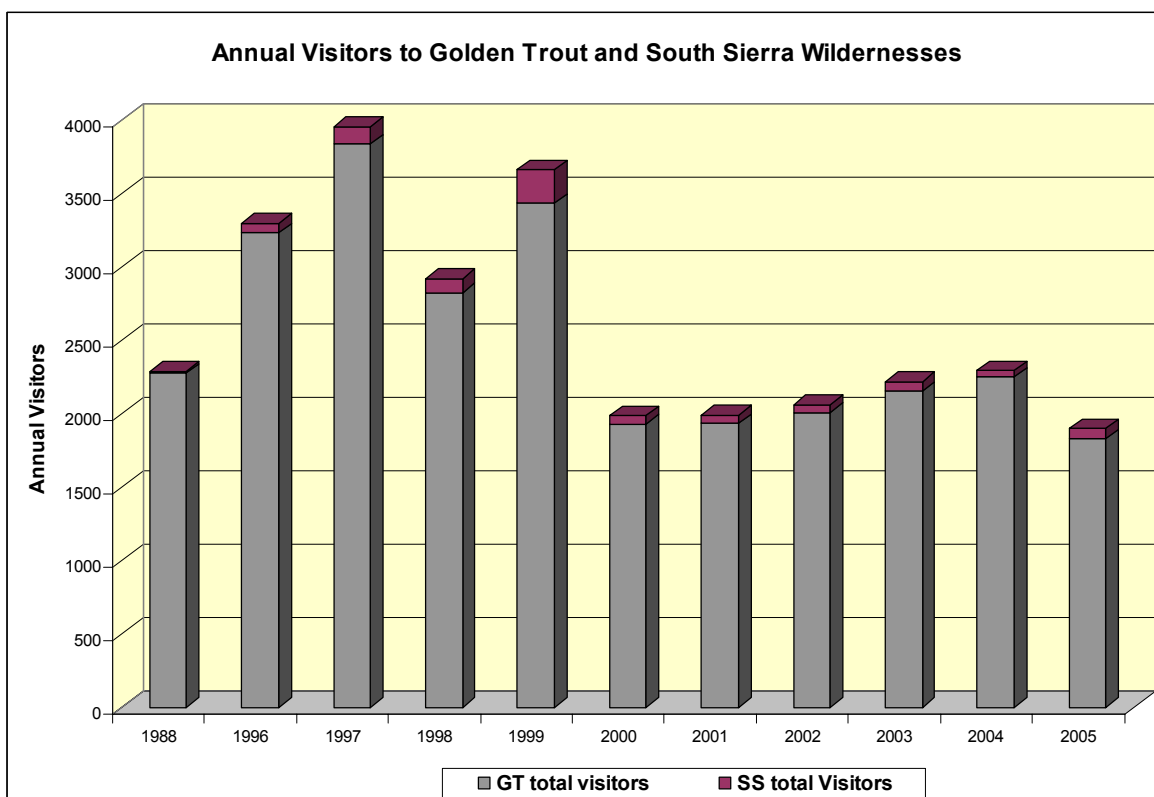
When the GTWMP was adopted in 1982, seven pack stock outfitters were listed as permitted operations. Three of these outfitters, Golden Trout Wilderness Pack Trains, Knowles Pack Outfit, and Mineral King Pack Trains, operated primarily on the Sequoia National Forest. Four outfitters, Cottonwood Pack Station, Mount Whitney Pack Trains, Kennedy Meadows Pack Station, and Tunnel Meadows Pack Station, operated primarily on the INF. The service day allocation process in the 1980s assigned use for the GT Wilderness as follows: Cottonwood Pack Station (750 service days allocated in 1992), Mount Whitney Pack Trains (500 service days allocated in 1989), and Kennedy Meadows Pack Station (570 service days allocated in 1989). Tunnel Meadows Pack Station had gone out of business by the mid-1980s, and was never assigned an allocation. The total of the three outfitter allocations was comparable to the peak use levels of 1,800 service days in the GT Wilderness during the early 1980s.

Outfitter use reports were not collected in a systematic fashion for the SS Wilderness during the 1980s. The SSWIP reported 120 annual service days of commercial use in the SS Wilderness at the time of the Plan's adoption in 1991 (SSWIP pg. 17).

There is little available data on non-commercial use during the early 1980s, in part because wilderness permits were not required at the time. The SSWIP estimated the total use during 1989 at 2,500 visitor days. Commercial use was estimated at 120 visitor days, therefore non-commercial use was about 2,380 visitor days, or 95 percent of total use.

Several factors combined to keep non-commercial use in the GT/SS Wildernesses at relatively low levels. First, the road access to the now popular Horseshoe Meadows Trailhead was a rough gravel road until 1984. Second, during the 1980s the Mount Whitney Trail did not have today's trailhead quota. Visitors did not have the incentive to avoid the Whitney Trail quota by starting their trips at the Horseshoe Meadows Trailhead in the GT Wilderness.

Figure 3.1. Annual visitors to the Golden Trout and South Sierra Wildernesses.



Total visitation to the Golden Trout and South Sierra Wildernesses. Figure 3.1 displays the total annual number of people that obtained wilderness permits from 1988 and from 1996 through 2004. The annual visitation number includes commercial pack stock outfitter staff and clients, commercial outfitter/guide staff and clients and non-commercial visitors that began their trip on the INF. The visitation data in the figure does not include Pacific Crest Trail through-hikers (approximately 300 hikers annually) or non-commercial day hikers.

The average GT Wilderness trip is five clients and four days in duration, or 20 service days per trip. The average GT Wilderness trip to the border with SEKI has been five clients and one day in duration, or five service days per trip. The average SS Wilderness trip has been five clients and two days in duration, or 10 service days per trip. The average number of pack stock is 14 for an all expense trip, eight for spot and dunnage trips, and nine pack stock per trip overall.

The summary of historic use and the information displayed in Figure 3.1 allow some observations on the visitation to the GT/SS Wildernesses:

- Annual visitation is low in comparison to other wilderness areas in the INF. The 2005 AA/JM FEIS data indicated an average of 46,866 annual visitors to the JM Wilderness between 1999 and 2004. The average for the GT/SS Wildernesses was 2,000 annual visitors, or four percent of the visitation to the JM Wilderness.

- Annual visitation has declined since the mid-1990s, and remains below visitation levels of the 1980s. The current average number of visitors to the GT Wilderness is 37 percent lower than the 1996-1999 average, and 8 percent lower than 1988 visitation. The current average number of annual visitors to the SS Wilderness is 65 percent lower than the 1996-1999 average, and 45 percent lower than 1989 visitation.
- An analysis of 2001-2004 wilderness permits indicates most of the recent visitors to the GT Wilderness travel over Cottonwood Pass Trail into SEKI. Seventy five percent of both commercial clients and non-commercial visitors were on trips with a destination inside the National Park. Many of these visitors choose this route in order to hike Mt. Whitney. In recent years, one has about a 60 percent chance of securing a reservation for the Mount Whitney Trail through the annual Whitney lottery. A growing number of hikers have found an alternative route to the mountain, and around the Whitney Trail quota, that begins at the Horseshoe Meadows Trailhead, crosses into SEKI via the Pacific Crest Trail, and leads to Mt. Whitney from the John Muir Trail.

Table 3.3 lists the annual use by commercial pack stock outfitters in the GT and SS Wildernesses for 2001-2004. Column B lists the total existing service day allocations for Cottonwood Pack Station and Mount Whitney Pack Trains, including day rides. Column C lists the total allocations established for the SS by the SSWIP. Column D lists the total of the annual service days authorized by the District Ranger on a case-by-case basis. Column E is equal to the sum of B+C+D. Columns F and G list the combined use in the SS and GT because outfitters have typically combined their use in both wilderness areas into one report of operations. Column G also includes day rides. Column H lists a percentage comparison of actual use to the total number of service days authorized.

Table 3.3 Annual commercial pack station use in the GT/SS Wildernesses, 2001-2005

A	B	C	D	E	F	G	H
Year	GT service day allocations	SS service day allocations	GT/SS case-by-case approvals	Total authorized use	GT/SS total clients	Total GT/SS service days	% of authorized use (G/E)
2001	1350	250	150	1750	225	278	16%
2002	1350	250	150	1750	263	391	22%
2003	1350	250	150	1750	285	546	31%
2004	1350	250	200	1800	234	532	30%
2005	1350	250	75	1675	332	682	41%
average					268	486	28%

Some observations on the current condition of commercial use in the GT/SS are as follows:

- Pack stock outfitters served an average of 268 total clients annually, with fewer than 25 of the annual clients visiting the SS Wilderness. Most of the annual use in these wilderness areas (averaging 1,750 visitors of 2,000), is either by commercial outfitter/guide clients or non-

commercial visitors. Both commercial and non-commercial trips have similar durations and use patterns.

- Current commercial pack stock use is approximately twenty seven percent of the level of use during the early 1980s, when annual use was approximately 1,800 service days.
- From 2001-2005, commercial pack stock outfitters utilized an average of twenty eight percent of their current authorized use. Authorized use in the GT Wilderness (including case-by-case approvals) is still less than the amount of actual use in the 1980s.
- Commercial pack stock outfitting is no longer the predominant use in the GT Wilderness. Since 1999, a shift in commercial use has occurred as a result of INF approval of up to seven incidental use permits for commercial outfitter/guides and an annual credited educational permit each year. The current distribution of use: (1) Commercial pack stock outfitters: 12 percent of total visitors; (2) Commercial outfitter/guides: 16 percent of total visitors; and (3) Non-commercial use: 72 percent of total visitors.

Since the mid-1980s, several factors have combined to reduce the level of commercial pack stock outfitter use in the GT Wilderness. First, there has been a general decline in the public's demand for pack stock trips. Second, outfitters were not able to replace the business lost by the 1978 closure of the airstrips that served several primitive resorts on the Kern Plateau. For example, Tunnel Pack Station, with a largely fly-in clientele, had gone out of business by the mid-1980s. Third, the Kennedy Meadows Pack Station went out of business after the closure of Jordon Hot Springs Resort in 1990. The pack station mainly had served the hot springs clientele. Even though a paved road to Horseshoe Meadow has provided access to wilderness since 1984, use levels in the wilderness remain low compared to the levels of the mid-1980s.

Current Day Ride Use. Commercial day rides are primarily provided by Cottonwood Pack Station, which has an annual allocation of 100 service days for day rides. In 2003 and 2004, Cottonwood Pack Station reported day ride use of 90 service days. Two primary routes have been reported. The first route takes the Cottonwood Lakes Trail into areas along the South Fork of Cottonwood Creek. The second route takes the Cottonwood Pass Trail to Chicken Springs Lake.

Bishop Pack Outfitters has been granted incidental use permits since 2003 to provide day ride services in the GT/SS Wildernesses. In the SS Wilderness, the outfitter has provided transportation to approximately 50 Native Americans participating in annual traditional trips from Sage Flat Trailhead to Monache Meadow. In the GT Wilderness, day rides are provided from Blackrock to Casa Vieja Meadows.

Finally, at Horseshoe Meadows, the Forest Service operates a campground with 10 sites designed for private stock owners. Day rides out of the campground are common, though precise use figures do not exist. From Horseshoe Meadows, three trailheads (Cottonwood Pass, Cottonwood Lakes, and Trail Pass) provide day riders with an opportunity for a route into the Golden Trout Wilderness on system trails. The Blackrock Saddle Campground and Trailhead also provide a staging area for non-commercial day rides into the Casa Vieja area in the southern portion of the wilderness.

Environmental Consequences

Introduction and Analysis Elements. This section evaluates the direct, indirect and cumulative effects of each alternative on the wilderness character of the GT/SS Wildernesses. Effects of the alternatives on the Ansel Adams/John Muir Wildernesses are summarized above in section 3.2.1.1.

The effects discussion is organized as follows. First, it also describes how each alternative responds to the three applicable significant issues introduced in Chapter 1:

- **Issue 1:** The number of commercial pack stock originating from the Inyo National Forest and traveling into Sequoia and Kings Canyon National Parks under the proposed action may create adverse effects in the Park. These effects are related to the grazing that may occur with this permitted use.
- **Issue 4:** Service days in the GT/SS Wildernesses may be a more effective and exact method to regulate commercial pack stock use levels compared to the proposed action's method of regulating the number of annual trips.
- **Issue 5:** The proposed action allows case-by-case approvals for additional pack stock outfitters to operate in the GT/SS Wildernesses, which may limit revenue opportunities for existing operators.

Second, four qualities of wilderness character were used to analyze the effects of the alternatives on wilderness. The four qualities are:

1. **Undeveloped:** Wilderness is essentially without permanent improvements or modern human occupation.
2. **Natural:** Wilderness ecological systems are substantially free from the effects of modern civilization. Native species composition, ecological system structures and functions are protected and allowed to function on their own.
3. **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
4. **Untrammeled:** Wilderness ecosystems are essentially unhindered and free from human control or manipulation.

These qualities represent the general concept and ideals of wilderness character, based on the Wilderness Act as described below.

The Wilderness Act and Wilderness Character. The Wilderness Act (Public Law 88-577) defines the concept of wilderness and the unique values wilderness areas should preserve. The Act states designated wilderness 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." (Sec. 2(a)). This section of the Wilderness Act defines two potentially competing objectives for the Forest

Service's management of wilderness: 1) providing for the public's use and enjoyment of wilderness; 2) the preservation of wilderness character.

The preservation of wilderness character is a responsibility mandated by the Act. The preservation of wilderness character has been a complex concept since passage of the Wilderness Act. Neither the Wilderness Act nor any subsequent legislation has clearly defined wilderness character (Landres et al., 2005). The Wilderness Act does, however, refer to the environmental and social qualities of wilderness character in defining "Wilderness" in Section 2(c):

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.

From this definition, Landres et al. (2005) selected four qualities (undeveloped, natural, opportunities for solitude or a primitive or unconfined type of recreation, and untrammeled) that represent the general concept and ideals of wilderness character. These four qualities were used to analyze the effects of the alternatives on the GT and SS wildernesses.

Methodology. Each alternative's proposed commercial pack stock use levels, travel management actions, and regulations on party size, campsites and campfires have been evaluated for their effects on the natural quality of wilderness character. Proposed use levels and party size regulations are also evaluated for their effect on opportunities for solitude or unconfined recreation. No alternative proposes new facilities or structures that would affect the undeveloped character of wilderness. No alternative proposes an action that would manipulate or control an aspect of an ecosystem, which would affect the untrammeled quality of wilderness. Each type of effect on wilderness character (undeveloped, opportunities for solitude and a primitive and unconfined type of recreation; natural qualities and untrammeled) will be described in terms of its intensity and duration. These terms will be used in this section as follows:

Type of effect

- 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.

Intensity

- 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 effect 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 of effect

- Short-term effects on visitors' wilderness experience would be temporary in duration, such as an encounter while traveling or camping.
- Short-term effects to wilderness character would last 1 to 2 years.
- Long-term effects would have lasting effects on the wilderness character, such as moderate or major ecological impacts, or the permanent closure of an area. Long-term physical effects to the wilderness character would last 10 to 20 years.

Cumulative Effects Analysis Area and Timeframe. The area considered for cumulative effects is the entire GT/SS Wilderness, the AA/JM Wilderness, plus the adjacent SEKI National Park. This area is considered because these are the areas where commercial pack stock on the Inyo National Forest travel, and therefore could contribute cumulative effects to wilderness character. Also, these are areas where changes in commercial pack stock use could affect the GT/SS Wilderness conditions, either through moving use away from or to the GT/SS.

In assessing cumulative effects for wilderness qualities, impacts of past actions were included for actions implemented since the late 1800's. Before this time Euro-Americans had not yet developed the area to the level that is today considered to affect wilderness qualities. Some past actions, such as construction of facilities in the late 1800's, continue to affect wilderness qualities today, and therefore they are considered here. However, this cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. There are several reasons for not taking an action-by-action approach. First, current conditions of wilderness character have been impacted by innumerable actions over the last 100 years (and beyond). Effects of known human actions or natural events are discussed specifically when possible, but trying to isolate all individual actions that continue to have residual impacts would be nearly impossible.

Second, providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the proposed action or alternatives. In fact, focusing on individual actions would be less accurate than looking at existing conditions, because there is limited information available on the impacts of individual past actions, and one cannot reasonably identify each and every past action that has contributed to current conditions. By focusing on current conditions, we are sure to capture the residual effects of all past actions and natural events, regardless of which particular action or event contributed those effects.

The analysis of potential future effects is focused on reasonably foreseeable future actions that are planned, likely, or anticipated during the term of the special use authorizations. Although the special use authorizations would likely be in effect for up to 20 years, possible future actions or events that

are speculative or remote are not considered in the analysis. This same extent in time and space will be used for the cumulative effects analyses for all alternatives.

Alternative 1 – Direct and Indirect Effects

How the Alternative Responds to Significant Issues. Alternative 1 would eliminate the permitting of commercial pack stock outfitters in the GT/SS Wildernesses. If pack stock outfitters are no longer permitted to operate in the two wilderness areas, significant issue numbers one, four and five would become non-significant because without commercial pack stock use the issues would no longer be applicable.

Effects on the Undeveloped Quality of Wilderness Character: There would be no effects to the undeveloped quality of wilderness character if Alternative 1 is selected; no existing facilities would be added or removed from the GT/SS Wildernesses by Alternative 1.

Effects on the Natural Quality of Wilderness Character: There would be minor beneficial effects of long-term duration on the natural quality of wilderness character if Alternative 1 is selected. These effects would be primarily at campsites, or the local scale.

With no commercial pack stock use in the two wilderness areas, there would be some reduction in current impacts to riparian areas around campsites. Non-commercial stock owners, outfitter guide trips and non-commercial backpackers prefer to visit the same destinations and sites as the commercial pack stock outfitters. The Forest Service would have to rehabilitate or contain these campsites so natural processes would allow some recovery of the riparian areas towards natural conditions.

There are a number of outfitter-requested campsites located some distance away from the major rivers and creeks that are used intermittently by commercial pack stock outfitters, and rarely by other visitors. At these sites, there would be minor beneficial effects of long-term duration from the elimination of commercial pack stock use. Absent this use, natural processes would gradually restore these sites to natural conditions.

Overall, the current level of pack stock use has had a negligible effect on trail conditions in the two wilderness areas. The granitic soils of the Kern Plateau can accommodate the use without noticeable damage, so removal of commercial stock under Alternative 1 would result in no change from current trail conditions in that area. A number of the system trail routes in the GT wilderness cross through meadows. The interdisciplinary team observed some widening of trails through meadows, but could not differentiate whether the widening was caused by livestock or pack stock. If commercial stock were no longer in the wilderness, there would be minor beneficial effects on the condition of the trail, and therefore the natural quality of wilderness because there would be no potential for travel across meadows before range readiness and no grazing would occur.

Any beneficial effects of no longer allowing commercial pack stock use are tempered, however, because non-commercial pack stock use would still occur throughout the wilderness and livestock

grazing would occur on the Monache and Mulkey allotments. In 2003, for example, overnight trips by non-commercial visitors included 179 pack stock, or about one-third the total pack stock use. In addition, there are frequent non-commercial day riders out of Horseshoe Meadows. Due to the continued presence of stock in the wilderness, the absence of commercial pack stock would result in only a minor beneficial effect on the natural quality of wilderness character at the wilderness-wide context.

Effects on the Opportunities for Solitude and Primitive/Unconfined Recreation: If Alternative 1 were selected, commercial pack stock use would no longer be permitted, and total annual use in the GT/SS Wildernesses would decrease by approximately 12% in the short-term. This is because approximately 12% of the visitation is through commercial pack stock operators. The reduced visitation to the wilderness would create minor beneficial effects of long-term duration on the opportunities for solitude at the wilderness wide context. With fewer pack stock on system trails, there would also be minor beneficial effects to the primitive and unconfined recreation experience by the proportion of non-stock visitors that dislike encounters with pack stock trips. Conversely though, without commercial pack stock outfitters, there would be a major direct/indirect effect: a segment of the public that desires or depends on outfitters would lose opportunities to access the wilderness areas using this type of primitive and unconfined recreation. This minor to moderate adverse effect would be of long-term duration on the sector of the public that desires or depends on outfitters to access these wilderness areas.

Alternative 1 is in conflict with one of the GTWMP goals, which recognized the historic nature of pack stock use in this wilderness. The Plan included elements such as the system of public pastures and corrals designed to encourage continued pack stock use in this wilderness. An historic aspect of these wilderness areas would be eliminated if commercial pack stock outfitters were no longer permitted to operate there. Wilderness and wilderness values are largely rooted in the early recreation use in the mountains where travel was primarily by pack stock. The 1964 Wilderness Act recognized and supported the values of primitive and unconfined recreation use, including riding and pack stock use. With the absence of commercial pack stock use, the Wild and Scenic River Management Plan goals of limited use and outstanding opportunities for solitude would be enhanced. The South Sierra Wilderness Implementation Plan expressed similar resource protection goals, but this alternative would be in conflict with the provision for use levels that maintain quality recreation experiences because the segment of the public needing commercial services would be denied the wilderness experience.

Without pack stock outfitters, 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 lands without the support of commercial pack stock.

Visitors to most destinations within the two wilderness areas currently experience outstanding opportunities for solitude. Outfitters have tended to concentrate their use on the Cottonwood Pass

Trail into SEKI: 75% of their annual use has been on this trail. The SEKI destination would certainly show increases in solitude but given that a large amount of non commercial use will occur there (75% of all other visitors to the GT Wilderness also use the Cottonwood Pass Trail) the local effects will be minor compared to a wilderness-wide context or at other destinations in the wildernesses. Even if pack stock outfitter trips no longer occurred, there would continue to be frequent encounters between backpackers, day hikers, and private stock owners on this trail.

The Limits of Acceptable Change visitor solitude standards would continue to be met for the “Wild” section of the South Fork of the Kern River in the Golden Trout Wilderness. Encounters between visitors may become more infrequent in the interior areas of the GT wilderness south of Trail Peak and along the South Fork of the Kern River. Less than 200 non-commercial visitors and 200 outfitter guide clients visit the interior areas on overnight trips annually. Since the opportunity for solitude is already high, the absence of commercial pack stock use in these areas would result in only a minor beneficial effect to this aspect of wilderness character. Alternative 1 would have negligible effects on the performance of the Limits of Acceptable Change visitor solitude indicator for the South Sierra Wilderness because the existing commercial use is low (an average of 25 service days annually) or, in some years, nonexistent.

The maximum party size regulation of 15 persons and 25 stock would continue to apply to both non-commercial visitors and commercial outfitter guides offering backpacking trips. Without commercial pack stock trips in these two wilderness areas, visitors would experience even fewer encounters with stock parties, and the encounters would generally be with smaller-sized parties than the average commercial stock party of 5.7 persons. The average non-commercial party size in the GT/SS Wildernesses is approximately four persons. The 2005 AA/JM FEIS discussed the experiential impacts of large groups (pg. III-30). The document cited research that supported the benefits of group size limits on protecting wilderness experiences. Group size, however, tends to rank lower in the list of perceived problems amongst wilderness visitors (Monz et al 2001). Since the Wild and Scenic River portion of the GT Wilderness and the entire SS Wilderness have visitor solitude standards (see Table 3.2), the absence of commercial pack stock trips plus the continued application of party size regulations is therefore expected to have a minor beneficial effect on the solitude quality of wilderness character at the wilderness wide context.

Effects on the Untrammeled Quality of Wilderness Character: The absence of commercial pack stock use would have no effect on the untrammeled quality of wilderness character. Pack stock outfitting does not include activities that manipulate or control ecosystems.

Alternative 1 – Cumulative Effects

This section describes the consequences, in the context of past/present/future actions, to the four qualities of wilderness character that would occur if commercial pack stock were no longer allowed in the GT/SS Wildernesses.

Cumulative Effects on Undeveloped Quality: Between the early 1900s and wilderness designation in 1978, a number of facilities were built in the Kern Plateau to support production livestock operations and commercial pack stock outfitters. Permanent improvements such as resorts and cabins and human occupation of the area have had major long-term adverse effects on the undeveloped character at the wilderness-wide scale. These effects are described in the 1982 GTWMP and the 2001 Templeton and Whitney Grazing Allotment Environmental Assessment. Past actions taken by the Forest Service to implement the GTWMP and comply with Congressional grazing guidelines included removal of some commercial recreation facilities, maintenance of livestock operation campsites, and maintenance of non-commercial pastures and fences. To realize the GTWMP goals of retaining the pack stock experience and managing livestock production to improve meadow conditions, the Forest Service has allowed a number of structures to remain within the wilderness. The structures associated with production livestock grazing are expected to remain in the wilderness for the foreseeable future and will continue to have a moderate adverse affect on the undeveloped quality of wilderness character. The selection of Alternative 1 would have no additive contribution to the cumulative effect on the undeveloped quality of wilderness; no facilities would be added or removed from the GT/SS Wildernesses by Alternative 1.

Cumulative Effects Related to Natural Quality: Prior to wilderness designation, a number of water diversion and retention structures were constructed to enhance grazing on the Kern Plateau. These structures and the amount of grazing adversely affected the natural character of wilderness by altering meadow ecosystems. The GTWMP identified a substantial portion of the total meadow area in the wilderness in a declining condition in the early 1980s. The declining conditions in turn affected the natural processes and ecosystems that support the golden trout. Although the condition of some meadows improved over the next ten years through implementation of Forest Plan grazing utilization standards, the 2001 Record of Decision on the Templeton and Whitney Allotments suspended livestock production grazing on those allotments for approximately 10 years. The decision was based on the conclusion that the suspension was required to initiate in the quickest manner to produce positive impacts to the condition of the watershed, golden trout habitat, riparian areas and water quality. Monitoring by the Forest Service since 2001 has indicated a substantial recovery of riparian vegetation and an improvement in stream channel functions in Strawberry, Templeton and Ramshaw meadows. The action taken by the 2001 Record of Decision on the Templeton and Whitney Allotments has reduced adverse cumulative effects and allowed improvement to stream morphology. Discontinuation of commercial pack stock would have additive beneficial cumulative effect on the meadow conditions, but since current use is minor and has negligible effects, the cumulative beneficial effects would also be negligible, yet long term.

Reasonably foreseeable actions include management and restoration activities for the Conservation and Assessment Strategy for California Golden Trout (2004) and the expected update to the SEKI Wilderness Management Plan (the planning process has begun with completion of the update expected in 2011).

The California Department of Fish and Game would undertake potential fishery restoration activities. Activities such as fish barriers may have an effect on the untrammeled qualities of wilderness character by manipulating the ecosystem and wilderness environment to meet the objective of preserving the fish species. Such manipulations that are designed to improve golden trout habitat and restore golden trout populations, and protect the genetic integrity of this endemic species would have beneficial effects to the natural quality of wilderness character. These actions may also have unintended long-term effects on wilderness character that are unknown at this time. The selection of Alternative 1 would not have an incremental affect on the golden trout population.

Meadow systems within Sequoia/Kings Canyon National Park have likely had moderate adverse impacts caused by the amount of grazing on the meadows by pack stock and from the creation of use trails by hikers that had obtained spot or dunnage services into the Miter Basin area. This is attributed to commercial pack stock trips traveling over Cottonwood Pass from the Inyo NF where the use was regulated primarily by the Forest Service. Without commercial pack stock trips, this source of meadow impacts would not occur. Natural recovery processes would allow minor to moderate beneficial effects over the long term to the natural quality of wilderness in the upper sections of the Kern River watershed in the SEKI. The selection of Alternative 1, in the context of the past, present and reasonably foreseeable future actions, could lead to a minor to moderate beneficial cumulative effect on the natural quality of the GT/SS Wildernesses and, at the regional scale, Sequoia and Kings Canyon National Park.

Cumulative Effects on Opportunities for Solitude: With no commercial pack stock trips from Cottonwood Pass into SEKI possible, there would be fewer visitors to the park via this pass. The selection of Alternative 1 would create a minor beneficial effect to the opportunities for solitude in the SEKI region west of Mount Whitney.

Cumulative Effects on Untrammeled Quality: Historic fish stocking and fire suppression activities have had a persistent and lasting adverse effect on both the natural and untrammeled qualities of wilderness character. Fish stocking has introduced new species to the wilderness environment and threatened the continued existence of the native golden trout, currently listed as a sensitive species by the Forest Service. Fish stocking has had major adverse effects on the natural quality of wilderness because of its effects on native fish species composition and the untrammeled qualities of wilderness because stocking is human manipulation of an ecosystem. The suppression of fire both inside and outside of the wilderness does not allow fire to play its natural role in the ecosystem, which is a manipulation of the ecosystem and inhibits natural processes. The selection of Alternative 1 would have no additive contribution to cumulative effects on wilderness-wide natural processes and ecosystems.

Alternative 2 — Direct and Indirect Effects

How the Alternative Responds to Significant Issues:

Issue 1: The current SEKI management plan does not include actions to regulate commercial use entering the park from the INF. The park allows all commercial use authorized by the INF to enter the park from the Golden Trout and John Muir Wildernesses. SEKI Park managers expressed concern in its scoping comments that the number of commercial trips allowed into the park's upper Kern River watershed by Alternative 2 and the 2005 AA/JM FEIS may adversely affect meadow resources in the National Park. This alternative responds to issue number 1 by establishing limits on trips the pack can take to the boundary of the National Park. Since the Forest does not have the authority to regulate use, including grazing activities, in the Park, the INF will be able to regulate only the activities of permittees that occur on the National Forest System lands. Park managers would determine whether or not to allow (through the Park's permit issuance process) pack stock outfitters permitted by the INF to enter the Park. The analysis of the cumulative effects of Alternative 2 will discuss the potential effects of pack stock use on meadows in SEKI.

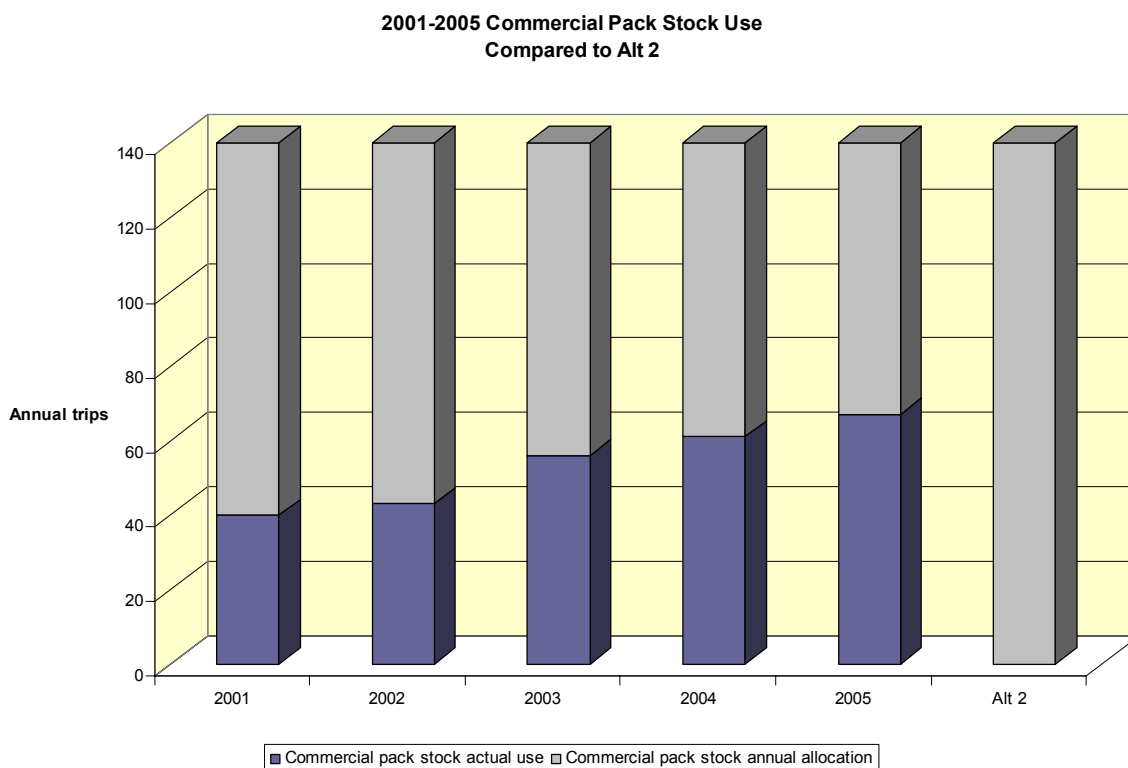
Issue 4: Parties that raised this issue requested the Forest Service to analyze whether service days are a more effective and exact method to regulate commercial pack stock use levels than the proposed action's method of regulating annual trips. The proposed annual number of trips has been designed to equal the total amount of service days authorized by the current system. The comment suggests the potential exists for an increase in overall use to a level greater than the current 1,750 service days.

Alternative 2 would apply controls on the frequency of trips through limits to the number of annual trips. Controls on the intensity of use would be applied through the limits to party size and number of stock per trip. Controls on the location of use would be applied on several levels. The first level of location control is the three broad destination areas: the Golden Trout Wilderness; the South Sierra Wilderness; and Golden Trout to SEKI boundary trips. The destination quota mechanism is similar to the quota system now in place in the Ansel Adams/John Muir Wildernesses for commercial pack stock. This alternative action provides controls on the number of trips to the boundary with SEKI, where the demand for commercial services is highest. The second level is the areas where camping will be restricted to designated sites in nine areas (see Appendix J, Operations Maps Tile 11). There would be indirect controls on the timing of use through the controls on the total herd size. Lastly, there would be consistency with the management approach adopted by the 2005 AA/JM FEIS. Outfitters operating in the GT/SS Wildernesses and the AA/JM Wildernesses would not have to contend with two different reporting mechanisms.

Issue 5: The concern was raised that case-by-case approvals for additional pack stock outfitters may limit revenue opportunities for existing operators. The Forest Service's intent for the case-by-case approvals is to allow outfitters that regularly operate in other areas on the INF the opportunity to conduct early season trips (typically in the last half of June) in the GT/SS Wildernesses during years with above normal snow pack. The snow pack in these two wildernesses typically melts before the snow pack in the Ansel Adams and John Muir Wildernesses. Alternative 2 would allow the case-by-

case approval of ten annual trips into the GT Wilderness, five annual trips to the boundary with SEKI, and five annual trips into the SS Wilderness. Case-by-case approvals would allow only limited use by other outfitters (regulations limit case-by-case approvals to less than 50 service days annually or two trips annually for each outfitter).

Figure 3.2 Comparison of Commercial Pack Stock use currently and under Alternative 2



The figure illustrates if Alternative 2 were selected, the authorized number of annual trips would be equivalent to the current authorized annual service day allocations. The current management plan, however, does not have any mechanism to direct increases in commercial use towards or away from a particular destination. The result has been the majority of trips in recent years have started at the Cottonwood Pass Trailhead and traveled into SEKI. The effect on wilderness character has been diminished opportunities for solitude along the Cottonwood Pass trail because the commercial use levels on this trail in addition to non-commercial use place it in the “very high” use category.

The separate trip limits to the boundary of SEKI and the interior of the GT Wilderness would allow most of the growth in use above the current use levels to occur in GT Wilderness. The alternative’s annual limit of 60 trips is 75% higher than the current average of 14 trips annually. The sixty trips would likely be diffused over the 192,000 acres of the Inyo NF portion of the GT Wilderness.

Effects on Undeveloped Quality of Wilderness Character: The direct and indirect effects on the undeveloped quality of wilderness character are identical to the effects of Alternative 1. No actions taken by Alternative 2 would have direct adverse effects on the undeveloped quality of wilderness character. Pack stock outfitters would not be allowed to construct, maintain or use any structures or developments in wilderness. This alternative contains actions to prohibit outfitters from using existing commercial livestock facilities and Forest Service administrative pastures/corrals.

Effects on the Natural Quality of Wilderness Character: Alternative 2 would create minor adverse effects at the local scale on the natural quality of wilderness character.

Although Alternative 2 would allow more commercial trips than currently occur, the number of annual trips would not reach a level that impairs wilderness character. Limits on party size, maximum herd size, range readiness and grazing prohibitions, and limiting the locations where operators can camp will prevent stock impacts to natural conditions from occurring in meadows, riparian areas, and campsite areas. The monitoring and adaptive management strategy (Appendix I) provides the Forest Service with the ability to implement actions in the future to prevent any major adverse effects to the wilderness resource.

The all-expense trip—with the use of more stock, longer duration trips, larger campsites, more intensive use of campsites, and use of grazing resources—is generally considered to have a greater potential to impact wilderness character than spot and dunnage trips. If the present use pattern of predominantly spot and dunnage trips continue, the site specific impacts are expected to be less than impacts from a mostly all expense use pattern. The trends in commercial use indicate that the prevalence of spot and dunnage trips will continue; approximately 45 percent of trips are spot trips, 40% are dunnage trips, and 15% are all-expense (traveling) trips. Most spot and dunnage trips enter and leave the Golden Trout Wilderness in one day. Relatively few stock will stay in camps and graze overnight each year.

The Inyo NF use data suggests less than 30% (18 trips annually) of outfitter trips in the GT/SS Wildernesses would include more than 10 people or 15 stock. Due to the past history of motorized use and livestock grazing in the Kern Plateau, it is difficult to attribute specific impacts to large parties. Recent research by Monz et al found there was not a direct association between large parties and resource impacts: “Where use and pre-existing impact levels are high, even large differences in the amount of use have little effect on amount of impact” (Monz et al., 2000). This suggests that the party size limit will not have any adverse effects on natural conditions. At most there may be some minor localized effects to natural conditions at campsites where large parties may increase the total area of a site.

Currently, Cottonwood Pack Station (CPS) is authorized to operate 100 service days of day rides annually. Alternative 2 would continue to authorize day rides by the pack station, but there would be no allocation limiting the number of rides. Instead, herd size would regulate this use. The number of day ride customers over a season may increase from current levels, but herd size and stock at one time restrictions are expected to limit the potential increase to 20 percent over the 100 annual service days currently authorized.

The Affected Environment section describes the current day ride routes, which are mostly along the Cottonwood Lakes and Cottonwood Pass Trails. On the trail segments currently used for day rides, there would be minor adverse effects on natural qualities at the local scale, particularly if the number of day rides grows above the current level of use. Trail widening has occurred along the first mile of these trails, as the route goes through open meadows and widely spaced trees. There could be additional trail widening from the increased number of day rides; the turnarounds may experience vegetation loss and minor tree damage from holding stock for short periods. A route would also be authorized through the Horseshoe Meadows area and would follow a segment of the Little Cottonwood Creek Trail that is currently not built to stock standards and has not been regularly maintained in recent years. The route would follow the Horseshoe Meadows road east from the pack station, go up the Little Cottonwood Creek Trail, and return to the pack station on the Cottonwood Lakes Trail. This has the potential to lead to some minor to moderate adverse effects in localized areas to natural qualities along the Horseshoe Meadow trail that has previously not been used for day rides.

Potential trail widening impacts will be mitigated by placing native materials along the trail in order to bring the trail width back within design standards. The Little Cottonwood Creek trail, particularly the creek crossing, would have to be maintained to stock standards. With these actions to maintain trail integrity and protect water quality, the local impacts to the natural quality from day rides would be insignificant.

The interdisciplinary team evaluated meadows both for their ability to sustain commercial pack stock travel, sustain grazing, and for the presence of sensitive fens, springs, and seeps. Cross-country (off-trail) travel through wet meadows and riparian areas could cause bank trampling and chiseling, damage that would be a moderate adverse effect on the natural quality of wilderness character. The field evaluation did not indicate impacts that could be attributed to commercial pack stock trips. The low number of annual trips proposed by this alternative in combination with the following management actions would prevent these types of impacts from occurring.

- Alternative 2, (Section 2.3.3.5.D). would allow cross-country travel in the GT/SS Wildernesses, except through meadows and riparian areas prior to the Range Readiness date. This action would minimize stock damage to these areas during the time of year when much of the use, particularly case-by-case approvals, is expected to occur. As some system trails cross through meadows, minor site specific impacts to meadows from hoof-punching could occur if stock cross meadows that were still wet.
- Alternative 2, (Section 2.3.3.5.E) would mitigate adverse effects by prohibiting incidental grazing in meadows with resource concerns. The travel and grazing restrictions would prevent travel-related impacts from becoming more than minor adverse impacts of short-term duration on the natural quality of wilderness character.

Effects on meadow condition attributable to pack stock trips are difficult to distinguish from livestock effects. From the field evaluation, the team concluded that alternative 2's proposed levels of use could

be accommodated with little risk to wilderness character by designating campsites away from sensitive areas and adopting mitigation measures to address potential impacts from travel and camping activities. The campsites would be signed and designated to concentrate use to protect resources. The campsites selected for designation are well-established stock camps, where some minor physical and biological impacts to the wilderness resource have already taken place. As described in section 2.3.3.5C of Chapter 2, designated sites will meet Forest Service standards for distance from water, absence of archeological sites, and conformance with stream bank trampling standards. This alternative would have the effect of concentrating stock-related campsite impacts to a limited number of locations. These design criteria would maintain or improve natural conditions at campsites used by commercial pack stock and are expected to mitigate adverse effects on natural quality associated with current campsite locations.

Designated campsites would be signed. Any signs would be consistent with Forest Service Manual 2324.33f, which allows the minimum placement of signs to protect the wilderness resource. Any signs would also be consistent with the GTWMP and Forest sign standards, which allow the Forest Service to install signs as necessary to provide for progressive travel. Signing of designated campsites allows outfitter employees to readily identify suitable sites, and through preventing use of other sites, enhances the protection of the wilderness resource.

Although there will be benefits to the overall wilderness character by confining outfitters to designated sites in these nine areas, stock-related impacts at individual campsites such as expansion of the site, soil compaction, and vegetation loss are expected to occur. These impacts would be mitigated at the start of project implementation by containing campsites, designating access routes to camps, and designating the stock holding areas. The actions would confine the effects to minor and short-term in duration. Continued monitoring and management will be required to ensure the sites' natural qualities are not affected by more frequent occupancy than in past years.

Many wilderness visitors perceive campfires as something that generally enhances their wilderness experience. The use of campfires, however, may lead to local adverse effects including campsite expansion, wood depletion, and scarring of rocks. Fire rings can also fill with ash, foil, and other non-burnable garbage. These adverse effects diminish other visitors' wilderness experience. Existing regulations and special use permit conditions would limit adverse effects from campfires to minor effects of short-term duration in localized areas. Minor site specific effects can be mitigated by wilderness rangers during routine backcountry patrols. If adverse effects can be attributed to outfitters, adaptive management actions include relocating the outfitter camp. Wood depletion in areas other than Chicken Spring Lake and Rock Basin Lakes is not expected to be a serious concern due to the low number of visitors to an area that is largely forested.

Effects on Opportunities for Solitude or Primitive and Unconfined Recreation: The discussion on solitude is divided into two geographic areas. The first area includes the portions of the GT Wilderness that can be reached via the Cottonwood Pass and Cottonwood Lakes Trails out of

Horseshoe Meadow. The second area encompasses the remainder of the GT/SS Wildernesses. Both discussions assume non-commercial and outfitter/guide use will continue at current amounts.

Cottonwood Pass Trail provides access to both the GT Wilderness and SEKI. With 1,600 annual visitors, use on Cottonwood Pass is “very high” and it is among the ten most visited trails on the INF. Relatively less growth in the number of trips traveling over Cottonwood Pass Trail to the SEKI boundary would be allowed to occur; the alternative’s annual limit of 55 trips is 35% higher than the current average of 35 trips annually.

Current levels of use on the Cottonwood Pass Trail creates minor to moderate adverse effects of short-term duration on the solitude quality of wilderness character. These effects occur primarily during the peak visitation months of July through September, when visitors’ experience of solitude and unconfined recreation may be diminished from the continued presence of other visitors, including commercial pack stock trips. Alternative 2 could allow the number of commercial trips on the Cottonwood Pass trail to increase by 20 trips per year over the current average actual use but is not inconsistent with current authorizations. Day rides by Cottonwood Pack Station would also add use to the Cottonwood Pass and Cottonwood Lakes Trails. The additional trips and day rides would not create a marked increase in the total number of people on the trail (approximately a seven to ten percent increase in annual use above the current 1,600 visitors); total annual use would remain in the “very high” category. The increased use would allow the current minor to moderate short-term adverse effects on solitude to persist on this trail.

In the remainder of the GT/SS Wildernesses, outstanding opportunities of solitude currently exist. The current levels of use depicted in Figure 3.1 above are well below the visitor capacity thresholds established in the GTWMP and SSWIP. The alternative would allow an increase of 36 trips per year in the Golden Trout, from the current average actual use of 14 trips annually to the maximum authorized use of 60 trips annually. Ten trips of the potential 36 trip increase would be through case-by-case approvals. These trips would likely take place during the early summer months, when visitation by other user groups is lower. The remaining potential 26 annual trip increase is not expected to affect the visitor capacity thresholds for the majority of the Golden Trout Wilderness. Most visitors to the Golden Trout fish the golden trout streams as one of their primary purposes for a trip. Favored destinations will continue to be the South Fork of the Kern River, Volcano Creek and Golden Trout Creek.

Along the South Fork of the Kern River, however, the increased use may create minor adverse effects of short-term duration on the opportunities for solitude compared to current conditions.

Alternative 2 would allow an increase in the annual trips in the South Sierra Wilderness from the current average of less than five trips to 25 trips annually. Here as well there could be minor adverse effects of short-term duration to the opportunities for solitude.

The current regulation that limits the maximum party size to 15 persons and 25 stock would not be changed by this alternative. Inyo NF Use Data suggests less than 30% (18 trips annually) of outfitter trips in the GT/SS Wildernesses would include more than 10 people or 15 stock. Most visitors would continue to have few encounters with large groups. Since all areas of the GT/SS

Wildernesses except for the trails out of Horseshoe Meadow receive low levels of use (approximately 500 total visitors per year), the adverse effects on solitude in the context of the number of commercial trips and average party size would be of short-term duration and minor intensity.

Effects on the Untrammeled Quality of Wilderness Character: The proposed action would not create any effects on the untrammeled quality of wilderness character. None of the actions in this alternative would, directly or indirectly, manipulate or control any aspect of an ecosystem.

Alternative 2 – Cumulative Effects

This section describes the consequences, in the context of past/present/future actions, to the four qualities of wilderness character that would occur if commercial pack stock use is approved at the level proposed by Alternative 2. See Alternative 1 Cumulative Effects section for a discussion of past, present and reasonably foreseeable actions.

Cumulative Effects on Undeveloped Quality: The selection of Alternative 2 would have no additive contribution to the cumulative effect on the undeveloped quality of wilderness; no facilities would be added or removed from the GT/SS Wildernesses by Alternative 2.

Cumulative Effects on Natural Quality of Wilderness Character: The Alternative 1 discussion of past actions indicated there has been degradation of meadow, riparian and fishery resources by historic livestock grazing. Through the 2004 field observations, the interdisciplinary team concluded that past and current livestock grazing would continue to degrade meadows and riparian areas in the Monache and Mulkey Allotments. In contrast, there have been moderate to major beneficial effects to the natural qualities of wilderness in the Templeton and Whitney Allotments as a result of the 2001 Record of Decision to suspend grazing on these allotments. Continuing commercial pack stock use at the levels and effects of the use levels described above would not contribute to cumulative effects on the natural quality of wilderness because the use is currently low, with minor effects occurring in localized areas, few of which are the same as livestock grazing and fish restoration. In terms of disturbing natural qualities of a landscape, there may be minor long term adverse cumulative effects with this alternative.

The potential effects on the natural qualities on SEKI's wilderness may be a cumulative effect at the regional scale. Field studies conducted by the Park indicate the meadow ecological systems within the park in the Rock Creek, Crabtree Creek and Whitney Creek watersheds have been impacted in recent years. The adverse impacts have been caused by both the amount of grazing on the meadows by stock and from the creation of use trails by hikers that had obtained spot or dunnage services into the Miter Basin. SEKI managers have indicated that the meadows in the three watersheds can sustain the grazing stock nights from 37 commercial trips annually and still meet the desired conditions for the meadows. This action, combined with actions and activities occurring by the Park, including visitation by private stock parties, administrative pack stock use, could contribute

towards moderate adverse effects of long-term duration on the natural qualities of wilderness in SEKI until such time as the park managers further regulate use and conditions in the park.

Cumulative Effects on Opportunities for Solitude: There would likely be negligible cumulative effects to this quality of wilderness character in the majority of the Golden Trout and South Sierra Wilderness. However, if current trends continue and visitation to the Cottonwood Pass area continues to increase, there may be a minor to moderate cumulative effect of selecting this alternative on solitude in the Cottonwood Pass and SEKI wilderness.

Cumulative Effects on Untrammelled Quality: The past, present and reasonably foreseeable actions that have an effect on the untrammelled quality of wilderness character were discussed in the Alternative 1 cumulative effects section. The selection of Alternative 2 would have no additive contribution to the cumulative effects on wilderness-wide natural processes and ecosystems.

No other reasonably foreseeable actions have been identified by the Forest Service, other than the ones proposed by this action

Alternative 3 – Direct and Indirect Effects on Wilderness Character

How the Alternative Responds to the Significant Issues

Issue 1: This alternative responds to Park managers' concerns by limiting the number of annual trips to the boundary of SEKI. The analysis of the cumulative effects of Alternative 3 will discuss the potential effects to meadows in SEKI.

Issue 4: Parties that raised this issue requested the Forest Service to investigate whether service days are a more effective and exact method to regulate commercial pack stock use levels than the proposed action's method of regulating annual trips. The alternative responds to significant issue number five by retaining the current management system's approach that regulates commercial use through service days.

Selection of Alternative 3 would result in a number of consistency issues within the Forest Service permit administration system and for outfitters as well. First, there would not be consistency with the management approach adopted by the 2005 AA/JM FEIS. Outfitters operating on the GT/SS Wildernesses and the AA/JM Wildernesses would have to contend with two different management and reporting mechanisms.

Alternative 3 is similar to Alternative 2 in its ability to regulate the timing, frequency, intensity, and location of use. There are limits to the use in three broad destinations: the Golden Trout Wilderness, the South Sierra Wilderness, and Golden Trout to SEKI boundary trips. These destinations parallel, to the extent required by the resources, the destination quota system of the 2005 AA/JM FEIS. There are controls on the frequency of trips through the annual service day allocations for the three destinations. There are controls on intensity of use through the limits to party size and number of stock per trip. There are controls on the location of use through the three destination areas and the areas where camping will not be allowed (see map Tile 11). There are indirect controls on the

timing of use (stock at one time in the wilderness) through the 2005 AA/JM FEIS controls on the total herd size and stock at one time in the AA/JM Wildernesses.

By regulating the annual service day allocations to the three destinations, the alternative provides controls on the number of trips to the boundary with SEKI, where the demand for commercial services is highest.

Issue 5: This issue examines whether case-by-case approvals for additional pack stock outfitters to operate in the GT Wilderness may limit revenue opportunities for existing operators. The alternative responds to significant issue number five by authorizing use in the GT Wilderness only for the two outfitters listed in the 1982 GTWMP still in operation today: Cottonwood Pack Station and Mount Whitney Pack Trains. No case-by-case authorizations would be permitted (including no authorizations for trips into SEKI) if this alternative is selected.

Alternative 3 proposes to manage the commercial use of the wilderness through regulating the annual number of service days, which is the existing regulatory system. The current total authorized use for Cottonwood Pack Station and Mount Whitney Pack Trains in the Golden Trout Wilderness is 1,250 service days. Alternative 3 proposes to reduce their total authorized use by 15 percent to 1,085 service days. Within each outfitter's authorization, service day limits have been set for trips into SEKI that respond to significant issue number 1:

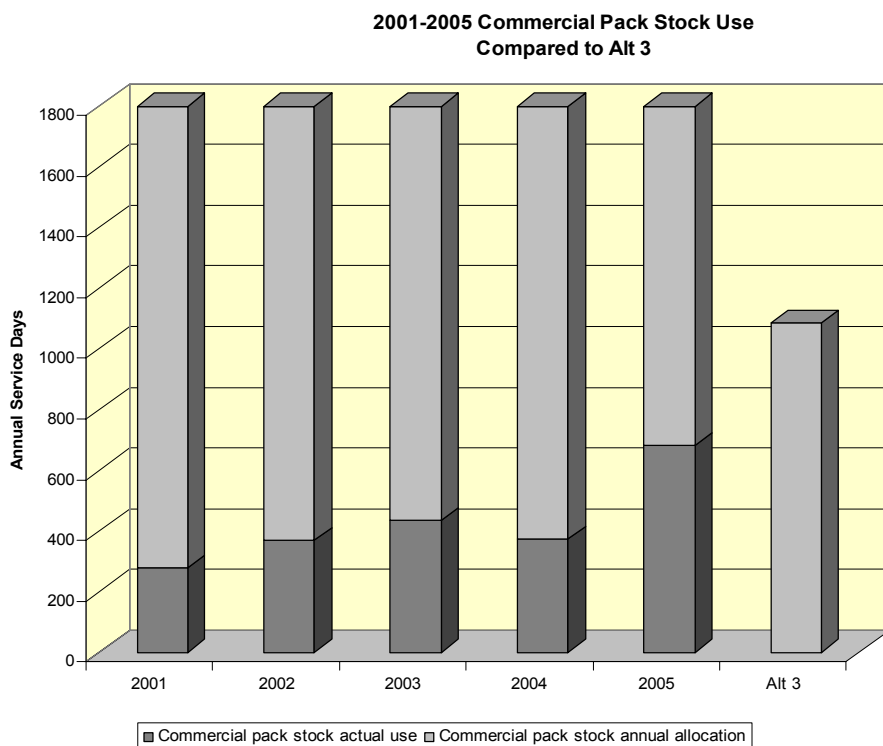
- Cottonwood Pack Station's authorized use would be reduced from 750 total service days to 650 total service days: 500 service days for trips within the GT Wilderness (approximately 25 trips) and 150 service days for trips to the boundary with SEKI (approximately 30 trips).
- Mount Whitney Pack Trains' authorized use would be reduced from 500 total service days to 435 total service days: 400 service days for trips within the GT Wilderness (approximately 20 trips) and 35 service days for trips with a destination inside SEKI (approximately seven trips).

Based on the current average trip size and duration, Alternative 3 would authorize the two outfitters to operate 82 trips per year. Alternative 3 would maintain the current total service day authorizations in the SS Wilderness at the SSWIP level of 250 annual service days. Service days would be allocated to the outfitters that currently operate in the wilderness.

The discussion below will examine the levels of use authorized by Alternative 3 in the three geographic areas, but will focus on aggregate commercial use to describe the potential effects. Although the levels of authorized use in Alternative 3 would be less than either current authorizations or the levels in Alternative 2, Alternative 3 would still allow both outfitters the opportunity to increase their use of the wilderness over current levels.

Figure 3.3 displays the 2001-2005 annual number of service days for commercial pack stock trips in the GT/SS Wildernesses, the annual number of authorized service days for 2001-2004, and the annual number of service days that would be authorized by Alternative 3.

Figure 3.3. 2001-2005 commercial use and Alternative 3 total service days in the Golden Trout and South Sierra Wildernesses



The figure illustrates if Alternative 3 were selected, the authorized number of annual trips would be less than the current annual service day allocations. Similar to Alternative 2, the separate trip limits to the boundary of SEKI and the interior of the GT Wilderness would allow most of the growth in use above the current use levels to occur on trips with a destination in the interior of the GT Wilderness. What differentiates this alternative from Alternative 2 is the cap on the number of service days to the boundary of SEKI and the lack of case-by-case approvals.

Effects on Undeveloped Quality of Wilderness Character: The direct and indirect effects of Alternative 3 on the undeveloped quality of wilderness character would be the same as the effects of Alternative 1 and Alternative 2. No actions taken within Alternative 3 would have adverse effects on the undeveloped quality of wilderness character because pack stock outfitters would not be allowed to construct, maintain or use any structures or developments in wilderness.

Effects on Natural Quality of Wilderness Character: Alternative 3 would create minor adverse effects of long-term duration on the natural quality of wilderness character. The types of adverse effects would be similar to those described in Alternative 2: campsite impacts, potential bank trampling and chiseling of meadows and riparian areas from cross-country travel; and trail impacts in day ride areas. The intensity of effects, however, is expected to be less than those created by Alternative 2.

Alternative 3 would allow more commercial use than currently occurs in the GT/SS Wildernesses. The total annual allocation for trips to the boundary with SEKI, however, would be set at a level lower than the recent use levels. Alternative 3 generally avoids impairment to the natural quality of wilderness character through three means: 1) the relatively low amounts of annual use authorized in the context of the size of the wildernesses; 2) the proscription against further case-by-case approvals; and 3) similar to Alternative 2, a set of regulatory actions, design criteria, and an adaptive management strategy to preserve natural qualities. .

To protect wilderness character, Alternative 3 constrains the four factors below in a manner similar to Alternative 2:

- *Frequency of use:* Alternative 3 proposes limits to the service day allocations to three separate destinations: the Golden Trout Wilderness, the South Sierra Wilderness, and trips to the SEKI boundary. Alternative 3's limits for trips with a destination in the Golden Trout Wilderness or in SEKI are lower than the limits proposed by Alternative 2.
- *Intensity of use:* As in Alternative 2, the limits to party size are 15 people and 25 pack stock. The research by Monz at el. discussed above indicates that use by parties within the regulated size limits of 15 people and 25 pack stock would not create significant new adverse effects on natural resources within the GT/SS Wildernesses.
- *Timing:* As in Alternative 2, the maximum herd size for each pack station and limits to stock at one time in the AA/JM Wilderness will limit the number of trips an outfitter can operate in the GT/SS Wildernesses at one time.
- *Location of use:* As in Alternative 2, this alternative proposes travel restrictions prior to range readiness and restrictions that prohibit camping in areas with resource concerns. Grazing incidental to trips would be prohibited in a number of meadows. These actions and design criteria will prevent stock impacts to natural conditions from occurring in meadows, riparian areas, and campsite areas.

With these elements, commercial pack stock outfitting at the levels allowed by Alternative 3 would not affect natural ecological processes at the wilderness scale. The regulations, resource protection standards, and adaptive management actions would protect the natural qualities of wilderness character from moderate or major adverse effects.

The trends in the percentage of trips that are spot, dunnage or all expense that were discussed in Alternative 2 would also apply to Alternative 3. The predominance of demand for spot and dunnage trips is expected to continue (eighty-five percent of trips are spot or dunnage trips). With this use pattern, the site specific impacts are expected to be less than impacts from a mostly all expense use pattern. The Golden Trout Wilderness would be visited by about seven all expense trips per year with 14 stock per trip (15 percent of 900 service days is 135 service days; the average all expense trip is 20 service days; seven trips and 20 service days equals 135 service days).

The campsite, campfire, and travel management analysis found in Alternative 2 would be the same as Alternative 3. One difference is the Alternative 3 provision for not authorizing case-by-case approvals may indirectly provide an additional measure of protection for meadows and riparian areas.

As most case-by-case requests would be for early season trips, without this type of commercial use there would likely be fewer trips occurring before range readiness.

Currently, Cottonwood Pack Station is authorized to operate 100 service days of day rides annually. Alternative 3 would authorize the same amount of service days for day rides. CPS would continue to offer day rides on the Cottonwood Pass and Cottonwood Lakes Trails. In addition, the day ride loop on the Cottonwood Creek Trail described in the Alternative 2 would also be authorized. On the trail segments used for day rides, other visitors will continue to encounter manure and riders on stock. The first mile of trail has been widened beyond design standards from the combination of foot and stock traffic on loose, granitic soils. Turnarounds may experience vegetation loss and minor tree damage from holding stock for short periods. These minor adverse effects on the natural quality would be of long-term duration. The effects may be slightly less than those of Alternative 2 because the latter does not include annual limits on day rides.

The above impacts will be mitigated by placing native materials along the trail in order to bring the trail width back within design standards. The Little Cottonwood Creek trail, particularly the creek crossing, would have to be maintained to stock standards. With these actions to maintain trail integrity and protect water quality, the local impacts to the natural quality from day rides would be insignificant.

Effects on Solitude or Primitive/Unconfined Recreation: This discussion is separated into two geographic areas. Current levels of use into SEKI and the AA/JM Wilderness from the Cottonwood Pass and Cottonwood Lakes Trails creates minor to moderate adverse effects of short-term duration on the solitude quality of wilderness character. Current commercial use on Cottonwood Pass trail places it the “high” use category described in the Current Visitor Use section above. Alternative 3 proposes to establish an annual use limit on the Cottonwood Pass trail that is slightly lower than the current use level, and 30 percent lower than the use levels proposed by Alternative 2. Compared to current use, Alternative 3 would have a minor beneficial effect on solitude for visitors along the Cottonwood Pass Trail.

Throughout the remainder of the GT/SS Wildernesses, Alternative 3 would have similar effects to Alternative 2 on the opportunities for solitude. This alternative would allow an increase of about 31 trips per year over the current average number, which is comparable to the 36 trip increase that would be allowed Alternative 2. This proposed increase is not expected to affect the visitor capacity thresholds for the Golden Trout Wilderness. Along the South Fork of the Kern River, however, the increased use may create minor adverse effects of short-term duration on the opportunities for solitude compared to current use.

As in Alternative 2, this alternative would allow an increase in use in the South Sierra Wilderness. The increase from current use could be from an average of less than 25 service days to 250 service days annually. Here as well there could be minor adverse effects to the opportunities for solitude. Compared to Alternative 2, overall this alternative would create fewer short-term adverse effects on

the opportunities for solitude and create a minor beneficial effect on the opportunities for solitude on the Cottonwood Pass Trail.

Effects on the Untrammeled Quality of Wilderness Character: Alternative 3 would not create any additional effects on the untrammeled quality of wilderness character. None of the actions in this alternative would, directly or indirectly, manipulate or control any aspect of an ecosystem.

Alternative 3 – Cumulative Effects

This section describes the consequences, in the context of past/present/future actions, to the four qualities of wilderness character that would occur if Alternative 3 were selected. See the Alternative 1 Cumulative Effects section for a discussion of past/present/reasonable foreseeable future actions.

Cumulative Effects on Undeveloped Qualities: The selection of Alternative 3 would have no effect on the undeveloped quality of wilderness; no facilities would be added or removed from the GT/SS Wildernesses by Alternative 3.

Cumulative Effects on Natural Qualities: The Alternative 1 discussion of past actions indicated there has been major degradation of meadow, riparian and fishery resources by historic livestock grazing. Through the 2004 field observations, the interdisciplinary team concluded that past and current livestock grazing would continue to degrade meadows and riparian areas in the Monache and Mulkey Allotments. In contrast, there have been moderate to major beneficial effects to the natural qualities of wilderness in the Templeton and Whitney Allotments as a result of the 2001 Record of Decision for these allotments.

Alternative 3 would allow commercial use to increase to an annual level greater than current use levels. Alternative 3 would allow a total of 1,085 service days in the GT/SS Wildernesses, while the highest recent reported use was about 650 annual service days, in 2005 (Figure 3.3). The Alternative includes a set of actions to minimize any risk to wilderness character from potential increases in commercial use. Minor adverse effects on natural qualities, however, would be expected at these campsites. Adverse effects in areas of the wilderness outside of campsites would be mitigated to minor, short-term effects in local areas by elements of Alternative 3.

Comments received from SEKI park managers on the August 5, 2005, Scoping Document for the Proposed Action resulted in the identification of significant issue number one: the increased levels of commercial pack stock use in the park may create adverse effects to the Park meadow ecological systems. The potential effects on the natural qualities of wilderness in the park would be a cumulative effect at the regional scale. Park managers have indicated the meadow ecological systems within the park in the Rock Creek, Crabtree Creek and Whitney Creek watersheds have been impacted in recent years. The adverse impacts have been caused by both the amount of grazing on the meadows by stock and from the creation of use trails by hikers that had obtained spot or dunnage services into the Miter Basin. Park managers are concerned that the number of commercial trips allowed over the Cottonwood Pass Trail and into the upper Kern River watershed plus the commercial trips over passes

from the John Muir Wilderness into SEKI allowed by the 2005 AA/JM FEIS would adversely affect meadow resources in the National Park. The Park managers' analysis has concluded that 37 annual trips is the maximum sustainable use of the meadow ecosystems in the Rock Creek, Crabtree Creek and Whitney Creek watersheds in the Park.

Alternative 3 responds to this significant issue number one by placing a limit of 185 service days on trips from the GT Wilderness to the SEKI boundary. The service day limit is designed to allow no more than 37 trips per year to travel into SEKI from the GT Wilderness. It is important to note the Forest Service does not have the legal authority to regulate grazing activities in the National Park. An INF permit does not authorize the pack stock outfitters to enter the Park. Park managers issue permits to allow pack stock outfitters permitted by the INF to enter the Park. Park managers have indicated that SEKI will undertake a Wilderness Management Plan revision process which could limit the number of commercial trips permitted annually. An updated plan is expected to be completed in five years. Alternative 3 is expected to have a negligible cumulative effect on the natural qualities of wilderness in SEKI. These impacts could be further reduced in the future if the Park limits access to sensitive areas in the Park by issuing fewer permits for commercial trips.

Cumulative Effects on Opportunities for Solitude: Similar to Alternative 2, the cumulative effects of Alternative 3 with the management actions in the John Muir Wilderness may create adverse impacts of short-term duration to visitors' opportunities for solitude. The adverse effects under Alternative 3 would be minor due to the annual cap on day rides.

Cumulative Effects on Untrammeled Quality: The past, present and reasonably foreseeable actions that have an effect on the untrammeled quality of wilderness character were discussed in the Alternative 1 cumulative effects section. The selection of Alternative 3 would have no additive contribution to the cumulative effects on wilderness-wide natural processes and ecosystems.

No other reasonably foreseeable actions have been identified by the Forest Service, other than the ones proposed by this action.

3.2.2 Recreation

Introduction

Background

Mountain recreation had its inception in the 1870s and 1880s after the settlement of the valleys of the eastern Sierra Nevada by Euro-Americans with the first ascent of Mount Whitney (Farquhar 1925, 1965), and when families and other groups from local communities explored and camped in the high country with horses and mules (Farquhar 1925, 1965). The fish-barren streams of the Sierra Nevada were planted with trout in the latter part of the nineteenth century to supplement the diet of miners, sheepmen, and cattlemen, and later became a draw for recreational fisherman. Lone Pine became the trailhead for mountaineers, hunters, fishermen, explorers, and recreationists taking commercial pack trains into the high Sierra via the Dennison, Jordan and Hockett trails and Cottonwood and Kearsarge Passes.

After the Los Angeles aqueduct was completed in 1913 the diversion of water diminished the Owens Valley wetlands and eliminated most of the ranches that depended on the water supply, forcing people out of the valley or into other occupations and reoriented the local economy from a production base to a recreation and tourist base.

The scenic beauty of the eastern Sierra Nevada attracted recreation-minded people from the cities and stimulated the economy. The largest expansion in recreation occurred during the 1920s with the increase in automobile tourism and development of good roads. Summer home leases were granted and new campgrounds were established. Commercial recreational packing, which had its inception in the late nineteenth century, became a profitable business with 15 large pack outfits operating in the eastern Sierra Nevada. With the Great Depression and the New Deal more public campgrounds and a variety of recreational complexes were constructed in order to accommodate the demands for stimulating the economy and providing jobs and outdoor recreation opportunities (Williams 2000). Public interest in mountain recreation burgeoned after World War II along with a shift in mountain travel from horses and mule trains to an emphasis on backpacking. Strongly assisted by the ski resort on Mammoth Mountain in 1955, recreation has been the primary economic fuel to the eastern Sierra Nevada to the present day (Butler 2004, Woolfenden 2006).

Stock packing evolved from being nearly the only means to access the wilderness to becoming part of a larger, more complex recreational system on the Inyo National Forest. It used to be an extension of horse, mule and wagon transportation; now it is an adjunct to motorized and pedestrian transportation. Stock packing is now only one of many ways to access remote areas, and packers have diversified their operations to include front country horseback riding, horse drives and cattle roundups, wagon rides and wild horse viewing. Stock drives in the valleys were the method to move animals from their winter range to the mountain corrals until the 1950s, before stock trailers were used. Like other recreational opportunities provided by pack stations, stock drives were a historical necessity now made into a recreational activity.

Methodology

The following methodology will be used to describe the affected environment and assess the effects or environmental consequences to the recreation resource.

Analysis Element: Analysis elements, or indicators used to assess the effects to the recreation resource are:

- **Recreational Use** – this element addresses use levels (the quantity of recreation use) and the range of activities and opportunities. This also addresses recreation use patterns - the distribution of recreation use on the landscape.
- **Quality of the recreation experience** – this element addresses the effects on all recreation visitors including customers of pack stations. The experience of a visitor is affected by attitudes, beliefs and behaviors which are not predictable and therefore not addressed as a part of this element. Effects that are describable and predictable and will be used for the purposes of this analysis element are those that result from use conflicts, activities that may not be compatible for the same area, capacity and visitor density issues as they relate to a visitors experience as opposed to a measure of use, and the experiential setting for the visitor, including amenities available to the recreationist.

Context of Effect:

- Local effects would occur at site-specific locations at recreation sites.
- Forest-wide effects would occur over the entire forest.
- Regional effects would occur on adjacent lands, other Forests, and other public or private lands.

Intensity of Effect:

- Negligible effects are considered hardly detectable therefore expected to have no discernible outcome.
- Minor effects are slightly detectable, though not expected to have an overbearing effect recreation experience or use.
- Moderate effects would be clearly detectable to the visitor and could have an appreciable effect on the recreation experience or use.
- Major effects would have a substantial, highly noticeable influence on the recreation experience or use.

Duration of effect:

- Short-term effects would be temporary in duration, such as an encounter while traveling. Camping or a visit to a recreation site that is less than 4 hours.
- Moderate-term effects would last 1 to 2 years.
- Long-term effects would effects lasting at least 20 years.

The analysis areas used in this section include a broader scale discussion of the Forest, under the section General Forest Areas. This section describes effects that occur in the non wilderness portions

of the Forest and are not specific to any one pack station. Areas such as the Glass Mountains and Montgomery Wild Horse Territory are covered in this section.

To provide site specific analysis to the pack stations whose use is being analyzed for permit re-issuance, there is a specific discussion related to each location where a pack station operates. Since most of the use occurs at and from these pack station locations, the analysis will focus on the recreation resources at these locations.

3.2.2.1 Non-Wilderness and Montgomery Pass Wild Horse Viewing Area Analysis Units

Affected Environment

Overview

Recreation is a highly utilized resource on the Inyo National Forest (INF). The diverse all-season recreation opportunities and superb scenic qualities of the eastern Sierra Nevada bring over 3 million visitors to the forest and surrounding communities each year. The income derived from recreation contributes to the local economy which has only a small primary production base. Non-wilderness recreation makes use of the numerous streams, lakes, meadows, a generous winter snow pack and the spectacular eastern escarpment of the mountains. Recreational opportunities during the summer include camping, picnicking, hiking, horseback riding, bicycling, rock climbing, kayaking and boating, golf and off-highway vehicle use among others. For winter recreation, two ski resorts offer alpine skiing, snowboarding and groomed cross country ski trails and much of the northern portion of the forest provides trails and open country for snowmobiling, cross-country skiing, sledding, commercial dog sledding, ice climbing, snowshoeing, ice skating and snow play.

The pack station facilities are located in high density recreation areas (HDRA), as defined for purposes of this analysis only, which are near major streams and large lakes in and emanating from the canyons of the eastern escarpment of the Sierra Nevada. HDRAs are listed from north to south in Table 3.5. The class "Hotel/Lodge /Resort" listed in table 3.5 includes pack stations. Their acreages, which range from 15,062 to 594, are plotted in Figure 3.4.

Table 3.4. Number of developed sites in the non-wilderness analysis unit

Site Type	Number in 2006
Campground	61
CUA Trailhead *	38
Hotel/Lodge/Resort ** (private facilities)	38
Picnic Site	25
Trailhead	22
Recreation Residence Tract	22
Group Campground	13
Interpretive Site	9
Observation Site	6
National Park Trailhead	6
Information Site	5
Boating Site	5
CUA Camping Area	5
Organization Site (private)	4
Alpine Ski Area	2
Horse Camp	2
CUA Day Use Area	1
CUA Interpretive/ Information Site	1
Fire Lookouts (overnight)	1
Fishing Site	1
Swimming Site	1
Total	269

*Forest Service facilities in concentrated use area (CUA,)

**Private facilities Changed to private facilities

HDRAs have a high concentration of complimentary recreation activities. In some cases there are competing activities, such as in the Mammoth Lakes Basin where multiple activities can be in conflict with each other, such as mountain biking and hiking or riding. It is noted here that there is a difference between high-density (or intensive use) and crowding. Crowding is a perception based on visitor preferences and their expectations of a desirable recreation experience. High-density use is an objective measurement of the number of people and variety of recreation activities. The best measure of the density of visitors is the number of encounters between people, although such a study has not yet been done on the forest. Assessment of density has been done by personal observation and based on number of recreation visits.

Table 3.5. High density recreation areas (HDRA) and pack station locations

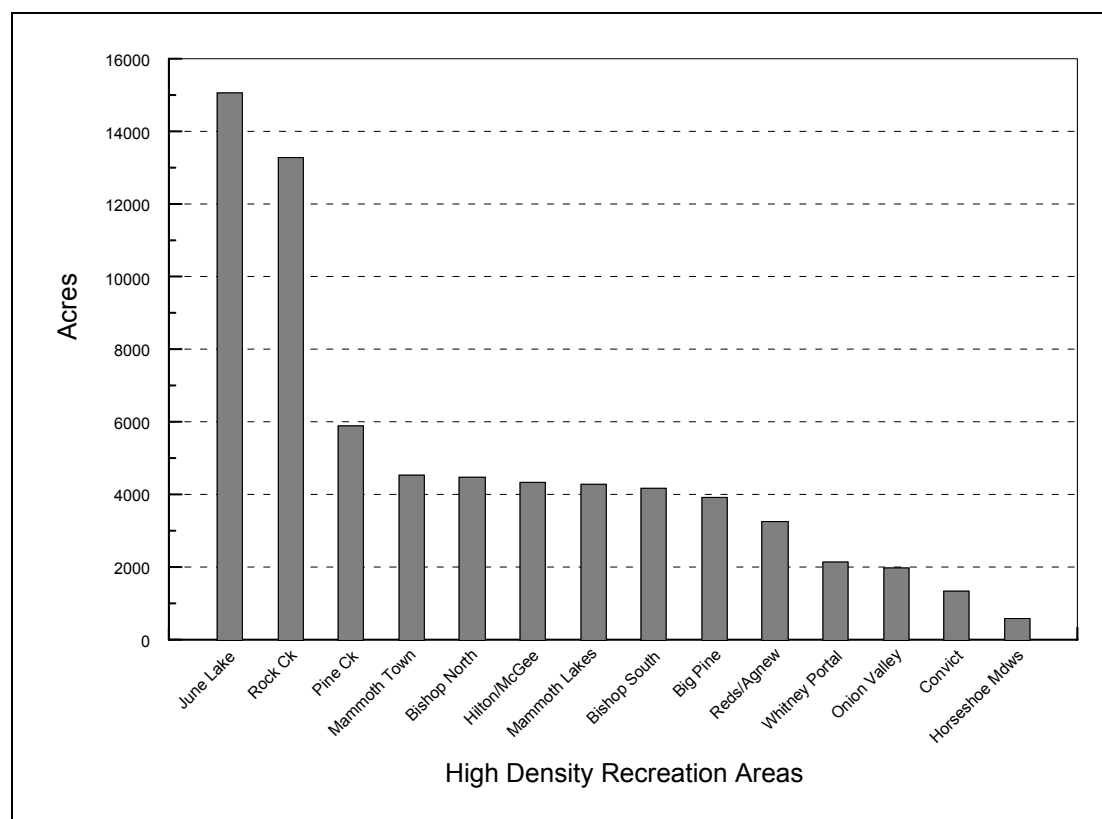
HDRA	Pack Station
June Lake	Frontier Pack Train
Reds/ Agnew	Agnew Meadows & Reds Meadow Pack Train
Mammoth Lakes Basin	Mammoth Lakes Pack Outfit
Town of Mammoth Lakes	--
Hilton/ McGee	McGee Creek Pack Station
Rock Creek	Rock Creek Pack Station
Pine Creek	Pine Creek Pack Station
Bishop North	Bishop Pack Outfitters, Rainbow Pack Outfitters
Bishop South	--
Big Pine	Glacier Pack Train
Onion Valley	Sequoia Kings Pack Trains
Whitney Portal	--
Horseshoe Meadows	Cottonwood Pack Station

Dispersed recreation activities include all recreation uses that occur outside of developed sites within the roaded and unroaded General Forest Areas (GFA)². The 17 GFAs relevant to the analysis are given in Table 3.6³ along with the HDRAs that are contained within them (note that activities are not correlated with the number of users and apply only to the larger GFAs, which is why Mammoth Lakes is ranked lower although is it the most heavily used HDRA). Hiking, fishing, hunting, off-highway driving, mountain biking, horseback riding, bouldering and rock climbing, primitive camping, sightseeing, ice climbing, snowmobiling, snowboarding and cross-country skiing are among the activities. Many of these activities also occur in HDRAs. Horseback rides include commercial day rides offered by most of the pack stations. Visitor use of dispersed recreation areas is low compared to developed areas and yet many of the dispersed activities are associated with developed overnight accommodations. People prefer the developed sites to primitive camping, which is participated in by only 3% of recreationists. Popular roaded areas for dispersed recreation are the conifer forests northeast of Mammoth Lakes, the Buttermilk country in the Bishop Creek drainage and the upper Owens River basin east of Crowley Lake. Unroaded areas are not as heavily used. The basic measure of GFA use is the Recreation Visitor Day (RVD) which is an aggregate of 12 visitor-hours, for example 1 person for 12 hours or 12 visitors for 1 hour.

² The *General Forest Area* is defined as “all lands in National Forest System ownership and/or under Forest Service administrative jurisdiction located outside of developed sites which are generally devoid of site modification and facilities other than those normally established by users” (USDA Forest Service 1997).

³ The complete activity data are included in a spreadsheet that is in the project file.

Figure 3.4. High density recreation areas acres



Recreation Use

A nationwide systematic monitoring program (National Visitor Use Monitoring or NVUM) was established in 2000 for acquiring better information on the recreational use of National Forest System lands, including use levels, importance and user satisfaction. A four-year cycle of data collection was scheduled. The Inyo National Forest was sampled during the period from October 2001 through September 2002. A second monitoring period has just ended (October 2005 to September 2006) and results from that data are not yet known.

According to the 2002 monitoring results the INF is the fifth-ranked forest in the number of site visits but only the ninth-ranked in the number of total forest visits (USDA Forest Service 2005b). Total visitor use estimates are⁴: Site visits: 5,761,000 and Forest visits: 3,862,000.

⁴ In the NVUM system a national *forest visit* is defined as “the entry of one person upon a national forest to participate in recreation activities for an unspecified period of time”. A *site visit* is defined as the entry of one person onto a national forest site or area to participate in recreation activities for an unspecified period of time” (Kocis *et al.* 2005). These data are based on five categories of recreation sites and areas called *site types* (English *et al.* 2001). The categories are Day Use Developed Sites (DUDS), Overnight Use Developed Sites (OUDS), Wilderness (WILD), General Forest Area (GFA) and on-forest View Corridors (VC). Wilderness is not considered here. *On-forest viewing corridors* is a category defined to capture the popular recreation activity of viewing mountain scenery along a major travel corridor such as Highway 395. Because this type of visitation does not meet the criteria of a recreation visit where users physically access the forest, estimates of the number of people traveling through are recorded separately.

Table 3.6. Recreational uses on the Inyo National Forest. GFAs, associated HDRAs, the number of recreation activities, and the percentages of a total of 25 activities (data from Inyo National Forest 2000)

GFA Area	HDRAs Within GFAs	Activity Number	Percent
Bishop Creek	Bishop North & South	17	8.67
June Lake Loop	June Lake, Bloody Cyn & Rush Creek	16	8.16
Upper Rock Creek	Rock Creek	15	7.65
Big Pine Creek	Big Pine	13	6.63
Mammoth South	Mammoth Lakes, Town of Mammoth Lakes & Convict	12	6.12
McGee/ Rock Creek	Hilton/ McGee & Rock Creek	12	6.12
Coyote	Bishop South	12	6.12
Whitney Front Country	Onion Valley, Whitney Portal, Horseshoe Meadows	12	6.12
Deadman	Glass Ck- Deadman Ck.	11	5.61
Pine/Buttermilk	Pine Creek & Bishop North	11	5.61
Monache	Monache	11	5.61
Scenic Loop	Town of Mammoth Lakes	10	5.10
Reds Meadow	Reds/ Agnew	10	5.10
Casa Diablo	--	10	5.10
Hot Creek	--	9	4.59
Glass Mountain	--	8	4.08
Pizona	--	7	3.57

For 91% of visitors to the Inyo National Forest who visited multiple forests on their trip, the Inyo National Forest was their primary destination. Only 1% of the interviewees had visited only the Inyo National Forest and no other national forest.

Forest visitors are predominately white males. Overall, male visitors are 62.8% compared to 37.2% female, and both genders are 91% “white.” The self-categorized proportions of other ethnic groups visiting the forest are 4.2% Spanish, Hispanic or Latino; 1.7% Asian; and 0.2% black or African American. The remaining 3% is categorized “other.” Foreign visitors are 1.7% of the total. As expected a relatively high proportion of visitors are local. A little over 9% live in the Mammoth Lakes, Bishop and Ridgecrest zip code areas. People from Mammoth Lakes have the highest frequency of use (87%) and Bishop residents have the second highest frequency of 37%. Almost 50% of visitors are between the ages of 31 and 50, and over 58% are above the age of 40.

Table 3.7. Inyo National Forest activity participation and primary activity (modified from Kocis, et al. 2003)

Activity (NVUM)	Percent participation	Percent who said it was their primary activity*
Viewing natural features such as scenery, flowers, etc on National Forest System lands	51.9	6.5
General/other- relaxing, hanging out, escaping noise and heat, etc,	41.8	7..5
Hiking or walking	35.1	9.9
Downhill skiing or snowboarding	32.8	30.5
**Viewing wildlife, birds, fish, etc on National Forest System lands	31.8	1.7
Driving for pleasure on roads	23.8	1.7
Cross-country skiing, snow shoeing	21.5	20.9
Fishing- all types	18.6	12.0
Visiting a nature center, nature trail or visitor information services	14.2	1.6
Camping in developed sites (family or group)	11.3	1.5
Picnicking and family day gatherings in developed sites (family or group)	10.8	0.3
Nature Study	10.0	0.7
Other non-motorized activities (swimming, games and sports)	8.3	1.9
Visiting historic and prehistoric sites/area	7.1	0.2
Resorts, cabins and other accommodations on Forest Service managed lands (private or Forest Service run)	6.8	0.5
Bicycling, including mountain bikes	5.0	2.1
Off-highway vehicle travel (4-wheelers, dirt bikes, etc)	3.9	0.5
Backpacking, camping in unroaded areas	3.5	1.4
Motorized water travel (boats, ski sleds, etc)	3.3	0.1
Snowmobile travel	3.0	0.3
Primitive camping	3.0	0.3
Non-motorized water travel (canoe, raft, etc.)	2.2	0.1
Gathering mushrooms, berries, firewood, or other natural products	1.5	0.3
Horseback riding	1.4	0.5
Other motorized land/air activities (plane, other)	1.0	0.3
Hunting - all types	0.4	0.3

*This column totals over 100% because some visitors selected more than one activity.

Regarding commercial packers, horseback riding ranks near the bottom at 24 out of 26 activities at 1.4% participation, and only 3.4% of wilderness visitors used the services of some type of commercial guide. Fishing and hunting used to be the most popular mountain sports in the early twentieth century.

Apparently, visitors are specific as to what site they visit rather than visiting several sites. The average person went to less than 2 sites with an average of 1.4 sites. Overnight use at developed sites (OUDS) had the most use at 82 hours of visitation, whereas day use developed sites received only 3.4 hours of visitation and 16.1 hours were spent in the general forest area. The activities and the percentage of visitors who experienced those activities are shown below in table 3.8.

Table 3.8. Percentage use of facilities and specially designated areas on Inyo National Forest (modified from Kocis, et al. 2003).

Facility/Area Type (NVUM)	Percent who said they used (national forest visits)
Downhill ski area	39.9
Hiking, biking, or horseback trails	24.0
Other forest roads	23.2
Scenic byway	18.9
Nordic ski area	18.5
Visitor center, museum	13.3
Picnic area	12.0
Developed campground	11.0
Designated Wilderness	8.1
Interpretive site	7.8
Lodges/Resorts on National Forest System land	7.1
Developed fishing site/ dock	5.6
Boat launch	3.8
Swimming area	3.5
Designated snowmobile area	2.9
Forest Service office or other information site	1.3
Motorized developed trails	1.1
Designated Off Road Vehicle area	1.0
Recreation residences	0.8
Fire Lookouts/Cabins Forest Service owned	0.1
Designated snow play area	0.1
Organization camp	0.0

The Montgomery Pass Wild Horse Territory (MPWHT) encompasses the Mineral County (NV) section of the Pizona General Forest Area (GFA) and the southern part of the Mono County section of the Pizona GFA. Recreation is of a very low intensity, dispersed nature. The Pizona GFA lists only 7 of a possible 25 recreation activities in the area (Table 3.6, supra). There are no developed recreation sites but primitive camping occurs. Several four wheel drive roads provide access for OHV and mountain bike users, horseback riders and hikers. Deer hunting is a minor activity because of the low population of deer in the area. The primary recreation activity is wild horse viewing by private visitors and commercial packer-guide operations in the so-called Mustang Viewing Areas, where the wild horses are concentrated. Frontier Pack Train has a mustang viewing camp with a separate tent area and corral near Truman Meadows, and Rock Creek Pack Station operates a mustang viewer camp near Pizona Springs consisting of a tent area, kitchen and corrals.

Pack station stock drives occur in various locations on the forest and multiple operators utilize the in the Glass Mountains and vicinity of Hot Creek. The authorized routes transverse the north and east

slopes of Glass Mountain Ridge, go through the Jeffrey pine forest southeast of Mono Craters and through the Little Antelope Valley and Hot Creek drainage basin. GFA recreation activities are medium to low in the areas. The numbers of other recreation activities are relatively low and consist of fishing along the Owens River and hunting, hiking, mountain biking, off highway vehicle driving, cross-country skiing, primitive camping and soaking in hot springs.

Quality of the Recreation Experience

Recreation Setting

An inclusive land classification that encompasses all recreation facilities and uses is the Recreation Opportunity Spectrum (ROS). This planning tool was borrowed from Canada and used by United States land management Agencies since late 1970s. The basic idea behind ROS is that forest visitors should be provided a range of recreation opportunities potentially available on the Inyo National Forest in order to accommodate visitor preferences. It is based on the size, distance from roads and ease of access, and the degree of development of any recreation area. Definitions of the seven ROS classes that were used on the Inyo National Forest are:

- Urban (U): Paved roads; highly modified natural environments; convenient recreation facilities; many non-recreational developments; facilities such as parking lots for intensive motor vehicle use extensive management; large numbers of visitors. Not typically suitable for recreation use.
- Rural (R): Less development than urban but still heavily built up; paved or gravel all-weather roads; extensive management; modern facilities such as developed campgrounds; moderate amount of natural vegetation; moderate to high numbers of visitors.
- Roaded Natural (RN): Paved or gravel all-weather roads with limited development; moderate management presence, moderate to high level of naturalness; rustic facilities such as developed campgrounds; moderate number of visitors.
- Roaded Modified (RM): Paved or gravel all-weather roads with moderate development; moderate management presence, moderate to high level of naturalness; rustic facilities such as developed campgrounds; moderate number of visitors.
- Semi-Primitive Motorized (SPM): gravel or dirt roads and trails; subtle and limited management presence; undeveloped campgrounds; predominately natural environments; low number of visitors; infrequent evidence of human activity. Most use in this class by local residents.
- Semi-Primitive Non-Motorized (SPNM): trail access only; subtle and limited management presence; scattered undeveloped campgrounds; predominately natural environments; low number of people; infrequent evidence of human activity.
- Primitive (P): cross-country or trail access; low to no management presence and maintenance of primitive attributes free of human improvements; unmodified natural environment; minimal numbers of visitors; usually in designated wilderness or areas with low capacity for recreation because of rough terrain, lack of water and absence of facilities.

The original six ROS classes were modified by splitting the Roaded Modified class from the Roaded Natural class. Little has been done to update the acres and use by ROS class on the forest and some classified lands may no longer be relevant because of shifts toward development. Most of the forest lands with developed recreation facilities, including lands classified as HDRA's are Roaded Modified and Rural and approximately 46% of the forest is classified as Primitive.

All of the pack station facilities are in HDRAs.

Table 3.9 gives only acreages, which have changed much since they were first classified by the Inyo National Forest (USDA Forest Service, 1988). Other statistics such as capacity and use are derived from methods replaced by the National Visitor Use Monitoring System (see below).

Table 3.9 Acres of ROS classes (Inyo National Forest 1988)

ROS Class	Developed Recreation Acres	Dispersed Recreation Acres
P	3	872,6000
SPNM	0	392,000
SPM	2	189,200
RN	110	383,600
RM	870	35,100
R	3730	11,600
U	15	2000
Total	4730	1,886,700

Conflicts, Capacity and Visitor Experience

The NVUM data (2004) indicates that the most important elements of satisfaction for visitors to the Inyo National Forest were scenery, tied with the condition of the natural environment, helpfulness of employees and the condition of forest trails. On all these elements, visitors' response indicates high satisfaction, particularly for scenery (96%), helpfulness of employees (89%), and condition of the natural environment (78%). Condition of trails rated slightly lower in the very good satisfaction column.

Visitors also rated their perception of how crowded the recreation site or area felt to them. On a scale of 1 – 10, 10 being a feeling of overcrowded, 1 being a feeling of hardly anyone was there, for the general forest areas, 49% rated it a 1, 2 or 3. 75% rated it 5 or below. This is compared to overnight developed sites, where 46% rated it as 5 or below. Although conclusion are hard to make with such a crude measurement as this general survey, it can probably be assumed that crowding is not an issue for most visitors on the Inyo National Forest and that they are generally satisfied with the recreation experience they have on the Forest.

Recreation use in the summer season, when pack stations operate, is heavily concentrated on weekends, holidays, and the month of August. While use levels are moderately high all summer, definite peak periods occur. It is during these peak periods when conflicts between recreationists are more probable, and when a visitor's sense of crowding is more likely.

Anecdotal information addresses minor conflicts between visitors who pursue different recreational activities. For example, some cross-country skiers have voiced concern about snowmobile drivers destroying ski tracks along roads. Another conflict is resentment against commercial stock users on the part of hikers/backpackers who have voiced concern over such things as horse feces and urine on trails. Both packers and hikers have reported disrespectful behavior on the part of the other group. Conflicts also exist between mountain bikers and horse on some trails, and between motorized activities and horse on roads and along roads where day rides cross roadways. While user conflicts may be inevitable in some high use areas of the forest, it is desirable to minimize these negative interactions between users groups.

Environmental Consequences – General Forest Areas

Alternative 1 – Direct and Indirect Effects

Recreation Use: There would be a minor to moderate, forest wide effect over the long term on recreation use with the removal of commercial pack stock operations on the Forest. It is trending towards minor since overall, commercial pack stock use accounts for only 1.4% of all recreation use on the Forest. The discontinuation of pack operations would end commercial wild horse viewing as an activity and reduce the total amount of recreation use in the MPWHT, which is minimal at present, by 4%.

Although the amount of use is minor, there is a major, forest wide, long term effect on one segment of the range of recreation opportunities available on the Forest. The sector of the recreating public who desire or depend (senior citizens, young, physically limited and disabled) on pack stock assisted transportation into the mountains would not have these services available to them on this Forest. Very little use occurs with private stock, and very few visitors have the capability of utilizing private stock on a forest visit. So visitors seeking a horseback riding or pack trip experience will no longer have this opportunity available to them.

Overall, between amount of recreation use and the range of opportunities and activities available to the public, there would be a minor to moderate adverse effect to recreation use, forest-wide over the long term.

Quality of the Recreation Experience: There will be both beneficial and adverse effects to a visitors experience in the No Action Alternative. The effect will again be long term and forest wide, since an entire segment of a recreation opportunity is being eliminated. Impact on other recreation activities by packing operations, such as conflicts between user groups and competition for customers, would cease with no commercial pack stock use permitted. This may decrease competing recreation activities. Other recreation providers, such as outfitter guides, would not be able to offer riding or pack stock supported experiences for their clients or customers; lodges and resorts would not have riding or pack stock supported activities to compliment their services.

In the MPWHT there would be a moderate to major adverse effect locally over the long term on the quality of the recreation experience because these operations provide recreationists a unique opportunity to view the wild horse and provide interpretation to the experience.

The elimination of commercial pack stock use will decrease the quality of recreation experience currently enjoyed by horse back enthusiasts; yet at the same time increase the quality of recreational experience for those who use the same trails and find the presence of pack stock, their occasional encounters, and associated impacts such as feces and urine to be negatively affecting their experience. In addition under Alternative 1, the potential for occasional user conflicts between commercial pack stock and other users both motorized and non-motorized would be eliminated.

Areas where congestion occurs at trailheads, creating a sense of crowding for visitors, would be reduced in this alternative. The effect will be minor to moderate forest wide, but may be more beneficial in localized areas.

Alternative 1 – Cumulative Effects

The cumulative effects for recreation will include a land area encompassing the Inyo National Forest. The area of cumulative effects was bounded in this manner because the Forest is managed as a unit, and management decisions in one portion of the forest can often have cumulative effects to other portions of the Forest. It is assumed that direct and indirect effects of this project on recreation will not have cumulative effects off-forest (or vice versa) because so many types of recreation and different areas for each type of recreation on this almost 2 million acre forest can absorb any changes. The Inyo National forest is a discrete recreation unit, and people desiring a recreational experience with the Inyo's landscape and recreational opportunities would have a difficult time finding the same access in any other local area. Therefore, the recreational landscape encompasses the Inyo National Forest. For wilderness areas, effects to adjacent areas were discussed in the 2005 AA/JM FEIS.

In assessing cumulative effects for recreation, impacts of past actions were included for actions implemented since the 1950's. Recreation has changed so much since the 1950's that actions before that time are irrelevant in today's recreational management. Since then, recreational facilities such as roads and campgrounds, and the increase in cars has created a recreational landscape similar to today. Some of the actions since the 1950's, such as campground and road construction, still affect recreational patterns today. Similarly, impacts of reasonably foreseeable future actions were not included beyond about 2027, or 20 years after project implementation. This is because the maximum length of the permits considered here is likely 20 years, and because beyond that time, effects on recreation cannot be accurately predicted. These spatial and temporal bounds are used for cumulative effects analyses for all alternatives.

This action is likely to have negligible adverse cumulative effects to recreation use or the quality of the recreation experience. That is because the uses and services associated with the operations will be discontinued and these effects will be mostly subtractive, not additive. This action, when added to past actions, present or future will reduce the range of a recreation services, amenities and opportunities that have gradually been expanding over the last 20-30 years.

Pack stations generally occupy recreation lands where multiple recreation facilities exist and activities occur. Past actions, such as the development of campgrounds, trails and authorizing what could be competing uses have had an effect, over time, on the amount, type, and distribution of use over the landscape. Removing pack station operations, when added to past actions of diversifying the recreational opportunities and recreational use increases will have only a minor effect on overall recreation use on the Forest.

Developed sites have increased slightly as the INF has acquired lands with developed campsites from Southern California Edison in Lee Vining Canyon. Removal of pack stations would reduce the overall heavy recreation use and crowding in most of these locations.

The discontinuation of commercial pack stock operations could reduce congestion at already crowded HDRAs, such as Mammoth Lakes and June Lake, and trailheads. Year-round demand for developed sites is expected to continue to grow, as was identified in the LRMP in 1988.

Recreation use is expected to continue to grow in the Pizona and Truman Meadows area, especially as the Sierra Nevada front country becomes more populated and many visitors seek solitude and open country in the less used areas of the Forest. With use by off highway vehicle drivers, hikers, mountain bikers, horseback riders, campers, and picnickers, there could be a proliferation of roads and primitive campsites and effect the quality of recreation experience by increasing overall use and especially motorized use. But this action will not contribute to that potential future effect.

Alternative 2 – General Forest Area

Direct and Indirect Effects

Recreation Use: There would be a minor to moderate increase in commercial pack stock use in Alternative 2, which would have minor effects to overall recreation use, forest wide over the long term. Under Alternative 2 there is the potential to increase use in all HDRAs. The impact of this is different depending on which HDRA is being discussed. The differences are overall fairly minor but could be significant in some heavily used HDRAs. At these local levels recreation use may have different effects, and they will be described below, at the analysis unit scale.

The range of opportunities and activities may increase, slightly, as some operators may expand day ride business in areas outside wilderness. This would occur as a result of 5 operators authorized an increase in herd size (relative to currently used levels) combined with the elimination of a service day limit. It is possible that use patterns could change as a result of no longer using service days as a measure for use. This is because they are currently authorized service days for activities (i.e. specific day ride allocations) and now they will have more flexibility to use their herd size for the various activities for which they are authorized. They could use their herd for more day rides than they are currently authorized. Table 3.10 shows the differences in herd size between current authorizations and what is proposed in Alternatives 2 and 3.

Table 3.10 Authorized numbers of stock for each pack operation

Pack Operation	Herd Size Current Permit	Herd Size Alternative 2	Herd Size Alternative 3
Mammoth Lakes Pack Outfit	120	120	120
Reds/ Agnew Meadows Pack Station	125	125	125
Frontier Pack Train	110	110	110
Rock Creek Pack Station	110	110	110
McGee Creek Pack Station	73	85	73
Cottonwood Pack Station	80	80	80
Bishop Pack Outfitters	60	75	60
Pine Creek Pack Station	65	65	65
Sequoia Kings Pack Trains	65	65	65
Mt. Whitney Pack Trains	--	60	40
Rainbow Pack Outfitters	40	55	40
Glacier Pack Train	30	45	30
Three Corner Round Pack outfit	--	*25	25

*burros

Alternative 2 limits the number of overnight pack trip to Glass Mountain Ridge to four each conducted by Mammoth Lakes Pack Outfit and McGee Pack Station. This new use will lead to a minor increase in recreation use locally, and if utilized, over the long term. In addition, the allocation of stock drives, if utilized, could lead to a minor to moderate increase in recreation use locally. The numbers of recreation activities and users are relatively low and consist of fishing along the Owens River and hunting, hiking, mountain biking, off highway vehicle driving, cross-country skiing, primitive camping and hot tubing. Therefore the proposed activities of stock drives and overnight trips would have the potential for a minor increase in recreation use in the Glass Mountains that would be long in duration depending on demand for these services.

Stock drives across the Forest have the potential to expand beyond current stock drive levels. Still, the proposal of 4 drives (2 in the spring and 2 in the fall) for each operator is not a large amount of use. It is possible that this activity will have more demand over time, but at present it does not seem likely that the entire allocation will be utilized.

Quality of the Recreation Experience: Under Alternative 2 there may be minor to moderate effects to user conflicts due the opportunity to increase day rides in high density recreation areas, and if each operator utilized the four stock drives each that are authorized (two in spring and two in fall). However the quality of the recreational experience would continue to be high for all users, since again, overall commercial pack stock use is only 1.4 % of total recreation use. It is not likely that the increases would be noticeable to other recreation visitors who may have conflicts with riding or pack stock use. The quality of the recreational experience for customers would remain high and largely unchanged. Density of recreation use and visitor capacity issues may emerge over time in some areas with this continued use, but they will likely be local, moderate effects of short duration.

The use of roads and trails for pack trips and stock drives in the Glass Mountains would likely have a minimal, if any, effect on other recreation experiences by other visitors. There would continue

to be occasional minor to moderate user conflicts between commercial pack stock users and vehicular (motorcycles, quads and cars) users along all authorized routes for stock drives, but these would be localized and short in duration. The quality of recreational experience for commercial pack stock users would remain high due to the other recreation use being low with lack of crowding and low visitor density in these areas.

Under Alternative 2 where cross-country travel is allowed outside of HDRAs it is consistent with primitive or semi-primitive non-motorized setting. So, although there may be potential for increase in use conflicts, with current low density use even substantial increases in any type of use would not have a negative effect on the recreational setting.

Continued wild horse viewing trips in MPWHT at historical levels (1000 service days) will continue to have minor effects on the recreation experience, mainly the effects of these commercial operations on other recreationists. User conflicts between commercial pack stock users and other recreationists will remain infrequent due to low recreational use and infrequent encounters with other user groups. The commercial activities only occur in spring and early summer season, so the effects would be short in duration.

Cumulative Effects

There would be minor cumulative effects at the forest wide scale to both recreation use and the quality of the recreation experience from this action when added to past present and future actions because the proposed use is so light and short in duration. The authorization of this commercial use would likely not have substantial additive effect to future recreation visitation growth.

Past activities that have had the most impact to the commercial pack stock experience include the development of Forest Service campgrounds and resorts in most of the drainages occupied by pack stations, the development of trails, trailheads and road systems on Inyo National Forest land in response to the growing demand. By responding to this increased demand the recreational use in these drainages changed to a more urban and less primitive experience. In addition, it has contributed to both the existing opportunity for user conflicts, crowding and congestion. The continuation of the commercial pack stock use will have a minor cumulative effect to recreation use, when added to the past actions of facilitating increases recreation use and a broader range of recreation opportunities that has occurred over time, since this proposed use is light and continues to complement the range of opportunities available to the visitors.

The continuation of pack stock operations, when added to the reasonably foreseeable action of continuing recreation residence special use permits has a negligible cumulative effect forest-wide in that it contributes to congestion and crowding that occurs in the same areas as many of the recreation residence tracts. This effect would be for long term duration and the intensity of the effect will vary by location since some pack stations are located adjacent to tracts and others are not.

It is expected that the high density recreation areas such as the Mammoth Lakes Basin, June Lake, Rock Creek and Bishop Creek will become more congested and will place a higher demand on existing facilities. There will also likely be a continued diversification of types of recreation,

especially an increase in motorized recreation, mountain biking and snow sports. This will adversely affect the environmental quality of the area and degrade the experience of many visitors; user conflicts and social stress will likely increase. The pressure of expanding visitor use may overflow onto less developed areas in the canyons south of Bishop Creek and the less attractive dispersed areas of the GFAs, which will become more developed. There will be upward bounds on growth since it cannot continue indefinitely. These bounds are probably the capacity of available recreation facilities to meet the overnight and day use requirements of visitors, limitation of available sites for building more facilities, capacity of trails and roads to handle the traffic and the capacity of the land to absorb increasing numbers of people without degrading the full spectrum of recreation experiences. Growth will slow as those bounds are reached. Continuation of pack station operations at current or slightly increased levels of operations from the proposed action will not have a significant additive effect. The authorized increase of 10% use days for Mammoth Lakes Pack Outfit will allow that pack station to meet the likely growing demand for riding opportunities in non-wilderness areas rather than enhancing that demand. Similarly, the authorized increase in herd size by 16% to 50% for four other pack stations (McGee, Bishop, Rainbow and Glacier) will also provide capability for them to meet the demand for front country recreation use. The allowed increase for Mt. Whitney Pack Trains has the potential to affect only GT/SS and AA/JM use, because those are the areas where Mt. Whitney Pack Trains operates. Horseback riding, however, is a low-ranked recreation activity and future demand is not expected to grow by much. Demand for the services of pack stations during the next twenty years is expected to grow at a much slower rate than overall demand for other recreational opportunities, even if the pack stations were allowed more growth than authorized by the proposed action.

In summary, continuation of commercial pack stock operations with allowances for minor to moderate growth (which varies throughout the project area) will not have any additive negative consequence to recreation use or the quality of the recreation experience because this use is, relative to other recreation use, not growing at the same rate nor has the potential to grow, and the projected growth by other visitors and activities will have more of an effect at some point in time than this commercial pack stock use.

Alternative 3— General Forest Area

Direct and Indirect Effects

Recreation Use: In Alternative 3 there will be a minor to moderate increase in commercial pack stock use which will translate to a minor effect to recreation use levels localized throughout the Forest, potentially for the long term depending on the success and demand of the market. This increase in use will be less than that in Alternative 2 because in this alternative there are no service days, like Alternative 2, but their herd sizes are the same as current use. There is one exception to this Glacier Pack Trains whose herd size does increase in Alternative 3, so for this pack operation the effects will likely be the same as Alternative 2. Even with no change in herd size, there could be an increase in use and change in use patterns as a result of eliminating the service day controller on overall use

levels. The effects on recreation use would be moderately less than Alternative 2, but there could be more use than presently with service days.

There would be negligible increase in recreation use in the Glass Mountains, which may be long in duration depending on demand for these services over time. This would be the same effects as those described for Alternative 2.

Alternative 3 differs from Alternative 2 in that it requires that the wild horse viewing campsites at both Pizona and Truman Meadows to be relocated to arid and hot dry sites in open sagebrush shrub and pinyon woodland. This will diminish the quality of both the environmental setting and quality of recreational camping experience for commercial customers who use the camps. Otherwise, there is no difference in effect from Alternative 2 because there is no other difference in actions for the MPHWT.

Quality of the Recreation Experience: The restriction of pack stations to designated routes in all areas of the forest in Alternative 3 will help reduce potential conflict with other users in cross country areas. This would have a negligible effect in the short term but may have a more substantial effect (moderate to major) in the long term if other uses increase in the cross country areas.

Other than this effect the effects to the quality of the recreation experience will be the same as Alternative 2 forest wide. There may be some differences at the local, site specific level that will be described in the analysis unit scale of this analysis.

Cumulative Effects

Alternative 3 effects are the same as those described for Alternative 2 with a lesser intensity as it relates to the additive effect of the growth of these operations. The growth will not be as great, so the intensity will be less than described.

Specific recreation areas at Pack Stations – Affected Environment and Environmental Consequences

June Lake Area (Frontier Pack Station)

Affected Environment

The heavily developed and visited June Lake HDRA is within a GFA having a wide variety of recreation activities. The Rural, Roaded Natural and Semi-Primitive Non-Motorized ROS classes reflect its character; most of the rural class follows the June Lake Loop Road. The town of June Lake and four lakes (June Lake, Gull Lake Silver Lake and Grant Lake) are arrayed along the road and the canyons of Reversed and Rush Creeks. June Mountain Ski Area is located on the northwest slope of June Mountain. The area is a very popular destination for summer recreationists who camp at seven developed campsites and a private trailer park, stay at local resorts and hotels on Forest land and in the town of June Lake, and use two picnic sites, three boat ramps and a swimming area at June Lake beach. Fishing, hiking, camping, and day rides along Rush Creek and to Parker Bench offered by the

pack station are the main features. The spectacular fall colors of the many aspen groves in the lake basins and on the canyon slopes bring many visitors to view and photograph them.

Permanent and seasonal residents add to the heavily settled character. Besides the town and private residences to the southwest in Rush Creek Canyon, and the east side of Silver Lake and at the mouth of Alger Creek, there are three recreation residence tracts comprised of 36 cabins along the south shore of June Lake, 15 cabins on the north and southeast shores of Gull Lake and 27 cabins on the east side of Silver Lake.

Frontier Pack Train is located by Silver Lake in Rush Creek Canyon across the road from a large campground of mostly trailers and RVs and adjacent to the Silver Lake Resort. It was established in 1935, before the rapid growth of June Lake, and has remained an integral part of the developing recreational and cultural landscape. The presence of the pack station is fitting in the mountain valley environment on the north edge of the settled area.

As with some other pack operations, over time Frontier expanded its services to include day rides, hay rides and horseback riding instruction in order to diversify its business. These activities utilize trails within the HDRA. A stock route from the pastures follows a road on the north side of the Town of June Lake, turns off on a side road and then follows June Lake Loop Road (State Route 158). Stock contributes to the vehicle traffic only temporarily. System trails from the pack station traverse the Rush Creek Canyon walls into the Ansel Adams Wilderness and a day ride trail loops around the canyon floor north of Silver Lake. The wilderness trails are also used by backpackers and all trails are used by day hikers. Frontier Pack Train has served between 2500 and 3000 clients a year (2001-2004) with most of the use being day rides in the front country.

Environmental Consequences

Alternative 1 – June Lake Area

Direct and Indirect Effects

Removal of this pack station will have the same general effects that have been described for the Alternative 1, General Forest Area.

Recreation Use: Specifically in the June Lake loop, there will be the loss of one entire sector of the recreation spectrum of activities and opportunities. Over 2000 visitors who otherwise would participate in a recreational riding activity would not have that opportunity. The effects on overall recreation use in the June Lake area will probably not be significantly changed, however the opportunity for day rides in the Silver Lake vicinity and Parker Bench and pack trips into the surrounding wilderness, will be discontinued and this will have moderate long term localized effects to the recreational use levels, and moderate adverse effects to recreational opportunities and activities in the June Lake vicinity that will occur with the discontinuation of an activity that has for a long time been associated with the June Lake tourism and cultural landscape.

Quality of the Recreational Experience: With the discontinuation of commercial riding and pack stock on the forest trail in the Silver Lake area, there would be a minor to moderate reduction in use

conflicts between forest visitors. It is likely that some conflicts would continue between mountain bikes and hikers on trails in the vicinity of Silver Lake and the pack station, but that one use type that could contribute to conflict would be removed so the effects would be diminished. Conflicts in this area are not known to be a concern so this beneficial effect is minimal.

Cumulative Effects

Discontinuing Frontier's pack station operations, when added to past actions of diversifying the recreational opportunities and increasing recreational use will have a minor to moderate effect on reducing overall recreation use in the June Lake area. Frontier offers the only riding and pack trip services between Mono Lake and the high density recreation occurring in Lee Vining Canyon, down to Mammoth. Removing this use would have no additive beneficial effect to overall recreation use levels compared to past and present actions that increased use, such as the development of campground and development and expansion of the Silver Lake Resort. No other adverse cumulative effects can be foreseen with this action.

Alternative 2 – June Lake Area

Direct and Indirect Effects

Recreation Use: Herd size for Frontier's operation remains the same as the current authorization though eliminating service days as a control mechanism will cause a minor to moderate increase on recreation use locally for the long term if demand meets expectations for need. A small increase in use on trails north of Silver Lake, along the Parker Bench trail and with day rides in the vicinity of the pack station; and along stock drive routes in the Glass Mountains with increase allocations for this activity. Current use for Frontier's stock drives have been averaging 3 drives a year, so increases to 4 drives a year would not be a substantial change. No new trails are proposed for use so use patterns are not expected to change from current, other than the possibility described generally that more use could be allocated to day ride activities and away from other sectors of Frontier's operation (such as wilderness use), if the operator chose to do that. The range of activities will also stay the same with no new uses being proposed.

Quality of the Recreational Experience: There will likely continue to be some minor adverse effects for a short duration as a result of use conflicts between riding and pack stock, hikers, non motorized and motorized uses on forest trails north of Silver Lake. There would be a negligible to minor effect on the capacity of the area, as more use would contribute to visitors' sense of crowding, but it would be localized and short in duration. If visitors were not utilizing the services of pack station (for day rides, horse boarding and riding lessons) they would likely be in the vicinity hiking or enjoying the recreation resource with other activities.

Cumulative Effects of Alternative 2– June Lake Area

Cumulative effects would be the same as those describe for the General Forest Area. Specifically, there may be a minor cumulative effect of continuing the pack station operation when added to the

continuation of the 27 recreation residence cabins in the Silver Lake tract. There would be an added long term effect (up to 20 years) to crowding and capacity but it would be minor and localized.

Visitors so inclined will take advantage of what the pack station offers in front country recreation, but compared with the expansion of developed recreation sites and newer kinds of recreation activities, along with visitor use, the packing operation will not significantly add to an intensification of recreation density. Therefore, the continued operation of Frontier Pack Train, with no change in numbers of stock (see Table 3.9) and operating at current levels, will likely have negligible cumulative effect on recreation use and experience in the June Lake HDRA.

Alternative 3 – June Lake Area

The direct, indirect and cumulative effects in this alternative are the same as those described for Alternative 2 because herd size does not change for Frontier in this alternative with a lesser intensity for the effects related to stock drives, since only 2 drives a year would be authorized. These effects were minor in Alternative 2 and so would likely be negligible in this alternative.

Mammoth Lakes Basin and the Town of Mammoth Lakes (Mammoth Lakes Pack Outfit)

Affected Environment

The Mammoth Lakes Basin HDRA has the highest visitor use and highest concentration of competing recreation activities on the INF. Recreation activities in the surrounding Mammoth Lakes South GFA are also high. This corresponds to the Rural ROS classes attributed to most of the lakes basin. The ridges and Lake George are classified Semi-Primitive Motorized and the southern part of the HDRA is classified Primitive Non-Motorized. The HDRA is a very popular destination for summer recreationists who camp at five developed campsites and use a picnic site, Lake Mary Marina, and stay at four private lodges by the lakes. Eleven lakes in a forested mountain setting are the major attraction to a beautiful but crowded area where fishing, hiking, camping, bicycling, boating, and day rides and walk and lead rides offered by the pack station are the summer activities. Winter sports are primarily cross-country skiing and backcountry ski access. Mammoth Consolidated Mine is a well-visited historic site and a destination for day rides from the pack station. The seasonal population is enhanced by four recreation residence tracts comprised of 14 cabins near Mill City, 22 cabins along Twin Lakes, 22 cabins between Twin Lakes and Lake Mamie, cabins at Lake Mary and 10 cabins at Lake George.

The presence of Mammoth Lakes Pack Outfit (MLPO), located northeast of Lake Mary on the west side of Lake Mary Road is an appropriate facility in the congested mountain lakes basin environment and is in a forest that partly hides the buildings. The area began to be settled in 1878 after gold and silver strikes were made and the mining camps of Pine City, Mammoth City and Mill City were founded. After the precious metals were depleted and the Mammoth Mining Company

closed its mill in 1880, people soon discovered the recreational value of the area. A town was established in Mammoth Meadows and resorts were built in the lakes basin in the early 1920s to accommodate the increasing recreational traffic. Commercial packing started in the new town of Old Mammoth and soon pack camps were built in the lakes basin. MLPO was established in 1925 on its present site. The pack station has been embellished with new buildings over the years and the operations diversified to meet public demand. The pack station was thus part of early recreational development and benefited from the growth of the area as developed recreation sites were added by the Forest Service and newer kinds of recreation activities, along with visitor use, greatly expanded.

Designated pack trails from the pack station pass into the John Muir Wilderness and several day rides loop around the lakes basin to the lakes, Panorama Dome and historic mine sites. Walk and lead rides loop within the permit area. The wilderness trails are also used by backpackers and all trails are used by day hikers. MLPO currently serves 7,000-8000 visitors a year primarily with day rides (88% of their use) outside of the wilderness (average 2001-2004).

The 4,539 acre Mammoth Town HDRA, located east of the town of Mammoth Lakes, is a congested, settled, urban interface area. State Route 203 and other paved roads run through it

The Mammoth Ranger Station and Visitor Center is located there along with four campgrounds in Shady Rest, and a campground and picnic area on Sherwin Creek. A single cabin recreation residence tract is also near Sherwin Creek. The HDRA is within both Scenic Loop and Mammoth Lakes South GFAs with high recreation activity levels. MLPO holds cattle drives in the area three times a year. The MLPO stock drive uses Mammoth Rock Trail, a portion of Sherwin Creek Road just south of Sherwin Campground, and a dirt road toward the east and across 395.

Environmental Consequences

Alternative 1 – Mammoth Lakes Area

Direct and Indirect Effects

Removal of this pack station will have the same general effects that have been described for the Alternative 1, General Forest Area.

Recreation Use: Removal of the pack station and discontinuation of the services provided in the Mammoth Lakes Basin would have a moderate to major effect on recreation use locally for the long term. Although forest wide horse riding and packing is a very light use, here in the lakes basin day rides has a larger presence. With nearly 7000 day rides occurring in the vicinity of the pack station north east of Lake Mary, total discontinuation would lead to a moderate reduction in use in the basin. It would also eliminate horse riding in the basin, although day riding would be available at Sierra Meadows at the southern edge of the Town of Mammoth Lakes. So although this activity type would be eliminated, it would still be available. Nonetheless, it would greatly reduce the range of activities available in the basin.

Quality of the Recreational Experience: Elimination of pack stock from the Mammoth Lakes Basin would improve the quality of recreational experience for visitors who use the same trails and find the presence of pack stock, their occasional encounters, and associated impacts such as feces and urine to be negatively affecting their experience. Alternative 1 would eliminate the potential for conflicts between commercial pack stock and other users, such as hikers and mountain bikers. Despite the heavy use the area receives, however, conflicts between users appear to be relatively infrequent. A review of records turned up only one written conflict complaint filed since 2004 (a woman was thrown from a horse startled by a mountain biker). Day rides do cause some delays and congestion for bicyclists, hikers, and mountain bikers where they cross roads. Most of the trails are segregated by user over much of their length. This alternative would relieve congestion associated with day rides, resulting in minor beneficial effects for other recreationists using and crossing the roadways.

Cumulative Effects of Alternative 1 – Mammoth Lakes Area

Discontinuation of the Mammoth Lakes Pack Outfit services will have negligible cumulative effects when added to past actions such as the steady increase in permitted recreation facilities and amenities and the continued growth and development of the Town of Mammoth Lakes. This is because it is subtractive in its effect on recreation use.

There will also be no additive effect when combined with the continuation of recreation residence. This is because the residence tract will continue and in and of themselves will contribute to congestion and crowding concerns in the basin, but the pack stations action will lessen the effect.

Alternative 2 – Mammoth Lakes Area

Direct and Indirect Effects

Recreation Use: An authorized 10% increase in the current service days for day rides as identified in Alt. 2 may contribute to the ongoing growth in general recreational use in Mammoth Lakes Basin. This effect would be minor to moderate, because use for both the pack stations and other recreationists is very high in this area. The effect would be long term (up to 20 years, the term of the permit) and local as it would only affect the lakes basin. Since the basin is very congested at present, a small addition to growth such as the increase in day rides from 7,000 to 7,700 service days may result in a comparatively larger effect than found in other HDRAs. Also contributing to increase use is the increase allowed for stock drives, which, combined with day ride increases and increases of overnight trips to the Glass Mountains could be of moderate intensity. Current use for stock drives by MLPO averages 2 trips a year, so there would be a moderate increase in this use, but less than most other operators who are authorized four trips a year and have little or no record of this type of use.

The range of activities available will increase with the addition of overnight trips into the Glass Mountains, see discussion in General Forest Area for the effects of this new activity.

Use patterns will be similar than the patterns today, as use will be contained on existing trail in high density recreation areas, such as Mammoth Lakes Basin. Herd size stays the same as current authorization but the effect of eliminating service days may cause some changes in use patterns or at

least fluctuation in use patterns from one activity to another as business and markets dictate. So the distribution of use in the basin will be concentrated, and the effect of this is that there will be high recreation use locally.

Quality of the Recreational Experience: Contacts with other types of recreationists will remain relatively high because of the popularity of the Basin for a wide variety of activities. The increase in use authorized by this alternative could lead to more contact between recreationists if the pack stations increase the number of trips above current levels. This could diminish the recreational experience for some visitors by increasing their sense of crowding. Increasing the number of pack stock trips would also diminish the quality of recreational experience for visitors opposed to presence of pack stock, their occasional encounters, and associated impacts such as feces and urine.

There will continue to be occasional conflicts between commercial pack stock users and other recreationists. However, a review of records turned up only one written conflict complaint filed since 2004 (a woman was thrown from a horse startled by a mountain biker). The increase in use levels authorized by this alternative could lead to more contact between recreationists, thereby increasing the potential for conflicts. Because incidences of user conflicts currently appear to be relatively infrequent, however, these effects are expected to be minor and infrequent. When conflicts occur, the experiences of other visitors will be affected but these effects are generally short in duration and of minor intensity.

Alternative 2 would authorize four stock drives a year in the Mammoth Lakes area, as compared to three drives per year in the existing condition. The stock route passes just south of Sherwin Campground, so it may disturb some campers, but enhance the recreational experience of others. The stock drives are held early and late in the season, rather than during the peak season, so fewer campers are likely to be adversely impacted. Trail and road use conflicts between hikers and mountain bikers would increase slightly over current levels but such conflicting use will be short in duration and minor in intensity.

Cumulative Effects of Alternative 2

With the continuation of the pack stock operations at slightly higher levels than occur today as is predicted with this alternative, there could be an additive effect, when combined with growth and development of the Town of Mammoth Lakes for increase capacity and visitor density issues locally in Mammoth Lakes Basin. At some point measures may need to be taken to restrict or otherwise manage use more carefully, but this action is not likely to be the use that triggers that effect.

When added to the continuation of the recreation residence tracts in the basin, there will be an additive affect to congestion and visitor density and overall recreation use. As this use continues to draw visitors in on a daily basis it will contribute to the overall traffic and conflicts as day ride routes cross roads and multiple users are on the trails.

Alternative 3 – Mammoth Lakes Area

Direct and indirect effects

Recreation Use: The effects on recreation use will be similar but of a lesser intensity than the effects described in Alternative 2. This is because day rides will be capped at current authorizations, which are being utilized to their fullest extent currently. The effects of use in the Glass Mountains will remain the same as the effects described in Alternative 2 and the use associated with stock drives will be less than in Alternative 2 by 50%. Therefore there will be a negligible effect on recreation use with this alternative.

Use levels in the basin will stay the same as they are currently, as no growth is being allowed for MLPO with this Alternative.

Quality of the Recreational Experience: Because the basin is popular for a wide variety of activities, contact between different types of recreationists will remain relatively high. Encounters between pack stock and other trail users will continue, especially in areas used most heavily by the outfitters. This could diminish the recreational experience for visitors opposed to the presence of pack stock, their occasional encounters, and associated impacts such as feces and urine.

Conflicts between users are expected to remain near current low levels because this alternative would restrict pack operations to designated routes in the. Restricting pack stock to designated routes will be a beneficial effect in that traffic congestion and potential conflicts with hikers and bikers will be slightly reduced. When conflicts occur, the experiences of other visitors will be affected but these effects are expected to be short in duration and of minor intensity. Concerns regarding reaching the capacity of the area and visitor density concerns will persist.

Alternative 3 would authorize two stock drives per year in the Mammoth Lakes area. The stock route passes just south of Sherwin Campground, so it may disturb some campers, but enhance the recreational experience of others. The stock drives will be held early and late in the season, rather than during the peak season, so fewer campers are likely to be adversely impacted. The effect is minor in intensity and of a short duration because the stock drives are held infrequently and impacts are transitory.

Cumulative Effects of Alternative 3 – Mammoth Lakes Area

The cumulative effects in this alternative are the same as those described for Alternative 2 since the scope of activities authorized are similar enough not to change the analysis of cumulative effects. These effects will be slightly less intense than describe for Alternative 2 because the day rides and stock drives will be less by a small amount, but everything else is the same.

Red's and Agnew Meadows (Red's Meadow Pack Station)

Affected Environment

The Reds/Agnew HDRA and the equivalent-sized Reds Meadow Area GFA receive very high visitor use. The ROS classes for the HDRA are appropriately Roaded Modified in the valley and Semi-

Primitive Non-Motorized in the surrounding area. The HDRA is a very popular destination for summer recreationists who camp at seven developed campsites, a picnic area at Sotcher Lake and visit the popular attractions of Devils Postpile formation and Rainbow Falls located within Devils Postpile National Monument. Fishing, hiking, camping, picnicking, mountain biking, hunting, and wagon rides offered by the pack stations are the summer activities. Winter use is low, consisting of cross-country skiing and snowshoeing.

Reds Meadow Resort / Pack Station and Agnew Meadows Pack Station are situated west of Mammoth Mountain in the Middle Fork San Joaquin Canyon. A pack camp was established at Agnew Meadows in 1926 after a road was constructed from Minaret Summit to the meadows. The pack camp at Reds Meadow was established in 1932. Both of these pack stations, then, were part of the early recreational development and, like Mammoth Lakes Pack Outfit, benefited from the growth of the area as developed campgrounds were added.

Both pack stations suit the mountainous river valley environment. The lodgepole pine and fir forests partly hides Reds Meadow Pack Station, and both pack stations no more distract from the forest and meadows setting than the nearby campgrounds and trailhead parking lot. Designated pack trails from Agnew Meadows Pack Station include the Pacific Crest Trail and other trails accessing the Ansel Adams Wilderness. Those from Reds Meadow Pack Station include the Pacific Crest Trail, other trails into the John Muir and Ansel Adams Wildernesses and a wagon trail. The wilderness trails are also used by backpackers and day hikers, which adds to the overall non-motorized traffic congestion in the HDRA. Reds Meadow Pack Station serves over 2000 visitors a year seeking pack stock or riding opportunities, with the primary activity of day rides outside wilderness (average 2001-2004). Thousands more visit the store, café and grounds of Red Meadow Resort.

Environmental Consequences

Alternative 1 – Red's and Agnew Meadows

Direct and Indirect Effects

Recreation Use: Removal of the pack station and discontinuation of the services provided by Reds and Agnew Meadows Pack Station would have a moderate to major effect on recreation use locally for the long term. Unlike many of the other pack stations, the Red Meadow pack station operation includes a more extensive array of services going far beyond an assortment of riding opportunities. The store and café offers services and activities for recreationists in the Reds Meadow valley that are camping or day visiting or traveling through on long backpacking trips along the John Muir and Pacific Crest Trails. Reds has offered an important service to all these types of visitors. The removal of all these services would eliminate a significant portion of the range of recreation opportunities in the valley. So locally the effect would be moderate to major.

Quality of the Recreational Experience: There would likely be a minor to moderate reduction in use conflicts with this alternative. This would be a long term beneficial effect to a sector of the recreating public not choosing to engage in horse riding. Currently the conflicts are not of any great intensity,

except maybe along the trail into Devils Postpile National Monument and Rainbow Falls where visitor use density is very high. So discontinuing the day rides would not likely cause any noticeable improvement for conflicts, density or visitor capacity concerns except on the Rainbow Falls Trail. The location of Red's services, being somewhat isolated and at the end of the road, have led to a situation where conflicts and capacity have not yet been an issue.

Cumulative Effects

The discontinuation of this pack stock operation when combined with past actions such as the use restrictions on the Reds Meadow road will have an additive adverse effect on recreation opportunities in the Reds Meadow Valley. When added to the present and future trends in development and growth in the Mammoth Lakes area, the discontinuation would have a subtractive effect on recreation use levels.

Alternative 2 – Red's and Agnew Meadows

Direct and Indirect Effects

Recreation Use: In alternative 2 there would be no increase in use for day rides on the Rainbow Falls trail, but otherwise the operation may see only negligible increase in use to other locations since the herd size will not be increased as it is for some other operators. This would have a negligible increase in recreation use in the vicinity of the pack station for the long term. Reds also conduct stock drives, but the effect on recreation use will be minor in intensity (low use) and short duration. Current use for stock drives by Reds Pack Station averages 2 trips a year, so there would be a moderate increase in this use, but less than most other operators who are authorized four trips a year and have little or no record of this type of use.

The range of activities will not change from current but will be, obviously, greater than the range in the No Action Alternative.

Use patterns will be similar than the patterns today, as use will be contained on existing trail in high density recreation areas, So the distribution of use in the valley will be concentrated on system trails that are used currently, and the effect of this is that there will be high recreation use locally.

Quality of the Recreational Experience: The quality of the recreation experience will be unchanged with this alternative from the current situation. Reds Meadow Valley experiences a high volume of traffic and capacity issues have driven management towards controls on entry into the valley. Red's Meadow is only one of many draws, and continued use at existing levels will likely not in and of itself have any effect on capacity or visitor density. It is more common that the activities provided by the Red's operation encourage visitors to the valley to stay longer and may in fact alleviate the traffic as it provides activities other than driving from one location in the valley to another. There will however, be continued concerns with capacity and visitor use density with continuation of the Red's operation. The uses are compatible with other uses in the area and serve to compliment the other activities and visitor services.

It is not expected to have any effect on visitor capacity or visitor density (crowding) issues, since those are not issues with current use except on the trail accessing Devils Postpile National Monument (discussed below under cumulative effects). Additional stock drives authorized in this alternative may lead to some minor increase in recreation use.

Since all commercial pack stock day rides use occurs within a HDRA and in this alternative, use is restricted to authorized routes in HDRAs, the effect will be to eliminate use conflicts in cross country travel areas.

Cumulative Effects

Since the Red's Meadow Valley is very congested at present, a small addition to growth such as is proposed in this alternative may result in a comparatively larger effect than in less congested areas. The pack station use will affect other recreational uses on shared trails and roads. Similar to Mammoth Lakes Basin, there will continue to be occasional conflicts between commercial pack stock users and other recreationists.

Use in the adjacent Devils Postpile National Monument will stay the same as current authorizations. Although congestion and visitor density issues have been concerns from the Monument, any further restrictions would come from park regulations and authorization decisions, not in this decision. However it is recognized that this authorization has an effect on the adjacent land management agency until such time as their analysis indicates a need for change.

This action will continue to contribute to congestion along the Reds Meadow road. However, it should be noted that past actions to regulate road use have had an effect on all recreation use in the valley. Capacity of the recreation sites (trails and facilities) is not as much the issue as the access and road itself being the limiting factor for recreation use in the valley. The management of the road, more than these authorization decisions, may have an effect on recreation use for the pack station operation.

Alternative 3- Red's and Agnew Meadows

The direct, indirect and cumulative effects on recreation use, quality of the recreation experience are identical to Alternative 2 since there is no change for Reds Meadow pack operation. The same regulations and use levels are prescribed in both alternatives with the exception of 2 less stock drives being authorized in Alternative 3. This will not have any measurable change in effects from Alternative 2.

McGee Canyon and Lower Hilton (McGee Pack Station)

Affected Environment

Recreation activities in the Hilton / McGee HDRA and the encompassing McGee/ Rock Creek GFA are moderate but with a low visitor use and are suitably classed Roaded Modified in the canyon and Semi-Primitive Non-Motorized in the GFA.

Although the HDRA is not heavily used, it is near the popular fishing lake of Lake Crowley and the community of Crowley Lake was named after Father Crowley. Only a single developed Forest Service campground is in the canyon and a BLM campground is located further down canyon. Summer recreation activities include fishing, hunting, horseback riding and hiking; cross country skiing and snowmobiling are favorite winter sports. Designated trails from the pack station enter the John Muir Wilderness up McGee and Hilton Creeks. Day rides loop around Hilton and McGee Creek watersheds outside the wilderness.

The pack station, which is situated on the floor of McGee Creek canyon at the southwest end of a wet meadow, was established between 1926 and 1933 in McGee Creek and moved to the present location after 1944. Commercial skiing had a small boom after World War II when Dave McCoy set up two rope tows on McGee Mountain, but the primary recreation activity was still fishing at Lake Crowley. The pack station provides riding and pack stock services to just over 1000 visitors a year (average 2001-2004).

Alternative 1 – McGee Canyon and Lower Hilton

Direct and Indirect Effects

Removal of this pack station will have similar general effects that have been described for the Alternative 1, General Forest Area.

Recreation Use: Specifically, for McGee Creek pack station, the discontinuation of activities and services will eliminate opportunities for riding and pack trips in the McGee canyon and towards Hilton Lakes. Unlike the three pack operations discussed above, there are fewer other recreation opportunities or amenities offered in this vicinity. There is only one campground. Hiking, mountain biking, fishing and winter recreation will still occur and day riding opportunities would at least be available a short drive from McGee in Mammoth Lakes. Elimination of this activity would cause a moderate reduction in use locally, and for the long term.

Quality of the Recreational Experience: With the removal of the pack station and its associated activities and services, there would be a minor to moderate reduction in user conflicts, specifically between hikers and stock in lower McGee Canyon. On other day ride trails, such as toward Hilton Lakes, not as many people recreate and so the conflicts which are currently non-existent would see no change. There would be no affect to visitor capacity or density concerns, as currently none exist in the canyon.

Cumulative Effects

The cumulative effects are the same as are described under General Forest Area. There are no recreation residence tracts in McGee Canyon or unique past, present or future actions that would modify that analysis.

Alternative 2 – McGee Canyon and Lower Hilton

Direct and Indirect Effects

Recreation Use: The authorized increase in herd size from 73 to 85 in Alternative 2 will allow for some increases in use for day ride opportunities. This effect would be minor to moderate. The effect would be long term (up to 20 years, the term of the permit) and local as it would only affect McGee Creek drainage.

The range of activities available will increase with the addition of overnight trips into the Glass Mountains, see discussion in General Forest Area for the effects of this new activity. The potential for 4 stock drives a year could if the trips were utilized lead to a minor increase in recreation use along the various routes that are approved.

Use patterns will be similar than the patterns today, as use will be contained on existing trail in high density recreation areas. The distribution of use in the basin will be concentrated, and the effect of this is that there will be high recreation use locally. Use can be dispersed cross country outside HDRAs and McGee use could grow in areas of cross country travel. This would not be inconsistent with the ROS class and would provide opportunities for recreation in new areas.

Quality of the Recreational Experience: It is not likely that the limited growth opportunities provide in this alternative will amount to any substantial increase in user conflicts, visitor capacity or density concerns. Although situated in an area where a moderate level of recreation use occurs, the concerns are few compared to Mammoth Lakes Basin, Reds Meadow or Rock Creek.

Use conflicts with stock drives exist with this alternative. A potential to increase stock drives may lead to use conflicts with motorized and non motorized recreationists along corridors where the drives take place. McGee pack stations conducts their stock drives on routes where other operators are also conducting stock drives (this varies by route, but overlap exists between McGee and Pine Creek, Mammoth Lakes Pack Outfit, and Rock Creek). This occurs most likely because of McGee's geographic location. The effects of stock drives on user conflicts would be minor to moderate in intensity and short in duration.

Cumulative Effects

The cumulative effects are the same as are described under General Forest Area. There are no recreation residence tracts in McGee Canyon or unique past, present or future actions that would modify that analysis.

Alternative 3 – McGee Canyon and Lower Hilton

Direct and indirect effects

The effects for Alternative 3 are the same as those described in Alternative 2 with some minor differences.

Recreation Use: Alternative 3 proposes 2 fewer stock drives and though this is 50% less has very little consequence since the use is so low to begin with. So the intensity of the impact on recreation use would be negligible compared to minor in Alternative 2.

Quality of the Recreational Experience: Similarly, the effect of stock drives on use conflicts would be less than that described in Alternative 2, with 2 fewer trips authorized. Use conflicts in this alternative would be negligible to minor intensity for a short duration.

Cumulative Effects

The cumulative effects are the same as are described under General Forest Area. There are no recreation residence tracts in McGee Canyon or unique past, present or future actions that would modify that analysis.

Rock Creek Area (Rock Creek Pack Station)

Affected Environment

The Rock Creek HDRA and the equivalent-sized Upper Rock Creek GFA is a very popular area for a wide variety of recreation activities including hiking, camping, fishing, boating, swimming, mountain biking, road bicycling, rock climbing and mountaineering in the summer, and cross country skiing and ice skating in the winter. The canyon is appropriately classed Roaded Modified and is surrounded by Semi-Primitive Non-Motorized ROS class. There are 13 campsites and a picnic area along Rock Creek and lodging and food available at permitted resorts, Rock Creek Lodge and Rock Creek Lakes Resort. Two recreation residence tracts are in the vicinity, the Rock Creek recreation residence tract, consisting of 12 cabins, is located on the southern end of Rock Creek Lake and the Palisade tract below East Fork campground.

Rock Creek Pack Station has two locations in upper Rock Creek Canyon; the main facility is on a bench on the east side of the canyon and a smaller facility, Lower Corral, is situated on the floor of the canyon. Rock Creek has been a tourist destination since 1919 and the pack station existed at least by 1922. The pack station offers day rides from the Lower Corral and designated trails from the pack station enter the John Muir Wilderness. Over 1200 visitors a year uses the services of the pack station for their recreation experience (average 2001-2004).

Environmental Consequences

Alternative 1 – Rock Creek Area

Direct and Indirect Effects

Removal of this pack station will have similar general effects that have been described for the Alternative 1, General Forest Area.

Recreation Use: Specifically in Rock Creek Canyon, there will be the loss of one sector of the recreation spectrum of activities and opportunities, horse riding and packing services. The effects on overall recreation use in the Rock Creek area will be minor to moderate and long term. There is a

considerable amount of use associated with this operation that adds to the overall use, but the popularity and attractiveness of this recreation area continues to grow and other recreationists, day hikers, anglers, mountain bikers, cyclists, scenic drivers will all fill any vacuum of users created by the discontinuation of this operation.

Quality of the Recreational Experience: It is likely that there will be moderate reductions in use conflicts for the long term as a result of the discontinuation of this operation. These will be noticeable on the Sand Canyon road regarding vehicle/horse/mountain bike conflicts.

Cumulative Effects

Discontinuation of the Rock Creek pack stock services will have negligible cumulative effects on recreation use, and the quality of the recreation experience when added to past actions such as other permitted recreation facilities and amenities such as Rock Creek Lodge, Rock Creek Lake Resort, and numerous campgrounds in the canyon. The effect reverses the trend of increases in recreation use and the range of opportunities available.

There will also be no additive effect when combined with the continuation of recreation residence tract at Rock Creek Lake and Palisade. This is because the residence tract will continue and in and of themselves will contribute to congestion and crowding concerns in the basin, but the pack stations action will lessen the effect.

Alternative 2 – Rock Creek Area

Direct and Indirect Effects

Recreation Use: In this alternative, Rock Creek's herd size does not differ from current authorized herd size, 110. With the elimination of service days as a measure, but no increasing herd size, there will likely be only minor increases in recreation use resulting from this alternative. Stock drives could increase in this alternative. Current use indicates on average Rock Creek runs one stock drive trip in the spring and one in the fall, each with 25-35 clients. Under this alternative up to two more trips in each season could occur, so recreation use levels could increase by a moderate amount, though the use would be of a short duration.

Under Alternative 2 these trails would continue to be authorized and pack station operations in the HDRA will be limited to them. Recreation use levels and patterns will remain largely unchanged from current use so there will be negligible increase with fluctuations in locations (patterns) and amount of use in the long term dependent on market demand, weather, and snow pack.

Quality of the Recreational Experience: There will continue to be occasional conflicts between commercial pack stock users and other recreationists that will be minor in intensity and short in duration. Contacts with other types of recreationists will remain relatively high, adding to as sense of visitor density and capacity concerns in some locations in the canyon, such as Tamarack Bench, Sand Canyon Road and the non wilderness portions of the Hilton Lakes Trail.

The restriction of Rock Creek Pack Station to designated routes under Alternative 2 will ensure no change from current levels of use and will have no new potential conflict with other users. The

quality of the recreational experience will remain largely unchanged and continue to meet customer's expectations.

The joint use of the Sand Canyon/ Wheeler Crest Trail and other trails originating in the valley by the pack station and hikers, mountain bikers and vehicles may create temporary congestion on the trail and an effect on visitor density that would be short in duration. The Rock Creek stock drive follows the Sand Canyon Road above Rock Creek and down Sand Canyon where it affects recreation activities only for the few mountain bikers and off highway drivers who happen to be on the road during the drive. Increasing the number of stock drives could have the potential to increase user conflicts on the Sand Canyon road. This effect could be of moderate intensity, for short durations. The authorization of continued grazing in the upper and lower pastures will also ensure that grazing will be contained and not occur in the other several meadows in the canyon that are popular with recreationists.

Cumulative Effects

The popularity and recreation use in Rock Creek Canyon has grown substantially through the years. Forest Service development of campgrounds, permitted activities including two popular resorts, outfitter guides offering climbing (Iris Slab; Patricia Bowl) have facilitated more use as well as a general attraction of the canyon for many different types of activities. Continuing the pack stock services at Rock Creek will have an additive effect on recreation use, increasing use and contributing to some minor cumulative effects on the area, primarily by the service continuing to be a draw and adding to the use and congestion, as well as potential for conflicts as use continues to grow.

There will also be a minor additive effect when combined with the continuation of recreation residence tract at Rock Creek Lake and Palisade. This is because the residence tract will continue and in and of themselves will contribute to congestion and crowding concerns in the basin, and the pack stations action will contribute to this in a similar way thereby having a minor cumulative effect to levels of use and crowding and congestion that is presently being experienced on most week ends and holidays.

Alternative 3 – Rock Creek Area

The effects on recreation use and quality of the recreation experience will not be different than the direct/indirect and cumulative effects of Alternative 2. This is because the herd size remains the same, the trail use does not change and no additional uses or reductions of use occur in this alternative. The effect described in Alternative 2 for stock drives will be less intense in this alternative, resulting in only a minor increase in use and potential for use conflicts.

Pine Creek Canyon (Pine Creek Pack Station)

Affected Environment

The Pine Creek HDRA and the encompassing Pine/ Buttermilk GFA have a moderate number of recreation activities. The canyon is classed Roaded Natural because of the paved road along Pine

Creek, and the Morgan Creek Canyon segment of the HDRA is Semi-Primitive Motorized. Both canyons are surrounded by a Semi-Primitive Non-Motorized ROS class. Pine Creek HDRA has low summer use for hiking, fishing and horseback riding in the summer and little winter use. There are no developed campgrounds. The only congested area is the parking lot for both the pack station and wilderness trailhead.

The Pine Creek Pack Station (then called Pine Creek Pack Outfit) was established along the upper reach of Pine Creek in 1934 by George Brown, a Paiute born in Round Valley. Besides packing over Pine Creek Pass, Brown hauled equipment and supplies for the Tungstar Mine which was opened in 1916. The mining facilities (which were sold in 2001), tailing ponds and mining roads dominate the canyon and give a developed feel to the area. The small pack station blends into the conifer forest and cottonwood riparian woodland and so does not detract from the canyon environment. The pack station serves just over 200 people a year seeking riding and pack stock opportunities (average 2001-2004). The pack station offers day rides on the roads of the tailing ponds, Aspen Day Loop, up Pine Creek to the wilderness boundary and on Morgan Mine Road. The joint use of the day ride trails and the trails over Pine Creek Pass and up Morgan Canyon by the pack station, private horseback riders, hikers and backpackers is low and so do not create trail congestion or present a conflict between users. There has been some conflict reported with hikers because the trail passes through the pack station. Mountain biking has increased over the last year or two also.

Environmental Consequences

Alternative 1 – Pine Creek Canyon

Direct and Indirect Effects

Removal of this pack station will have similar general effects that have been described for the Alternative 1, General Forest Area.

Recreation Use: The removal of the pack station and discontinuation of services in Pine Creek Canyon will likely have a noticeable affect on recreation use. This is because unlike most of the other pack stations Pine Creek Canyon has no other recreation amenities. Without this operation, recreation use would decrease in minor to moderate amounts and it is not likely that other types of recreational activities will fill the capacity that is created. The range of recreation opportunities would be limited in a moderate way since it is a feature of this canyon.

Quality of the Recreational Experience: The primary conflict that exists with this operation is in accessing the Pine Creek trail through the pack station facility. With the discontinuation of the pack station and removal of the facility this conflict would be eliminated. This would be a moderate intensity, long term beneficial effect to hikers accessing the wilderness.

Cumulative Effects of Alternative 1

Only negligible cumulative effects on recreation would occur as a result of the no action alternative. This is because the use would be eliminated. Although other activities in the vicinity that have changed and been eliminated recently (mining), none of these affect recreation use. The mine has

ceased operation and is in the rehabilitation stage. There may be considered a cumulative beneficial effect of removing another pack station facility, in addition to the rehabilitation of the mine site on a recreationist experience, as the canyon would return to a very primitive, undeveloped setting which some visitors may find desirable. The development of the Tungstar Hydroelectric facility may affect the visitor's experience with additional noise and traffic. The new trailhead development as a FERC mitigation will reroute hikers farther from the facility.

Alternative 2 – Pine Creek Canyon

Direct and Indirect Effects

Recreation Use: Restriction of pack operations to developed routes and authorization of herd size at current levels by Alternative 2 will not likely increase recreation use so there would be a negligible effect on recreation use. Use patterns will likely not change, even with allowances for cross country travel since very few locations exist in the vicinity of the Pine Creek Pack Station where this opportunity could be realized. Authorizations for up to 4 stock drives a year, if utilized, would be a moderate increase in recreation use along the stock drive route. There has been no stock drive use in the last five years by Pine Creek.

Quality of the Recreational Experience: There would be the continuation of the conflict at the trailhead and pack station for visitor accessing the Pine Creek trail. This would be a minor to moderate intensity use conflict but the conflict would be of short duration. Very few other conflicts exist in the area as the operation would be authorized 4 stock drives, which may have some minor conflicts with other users, but the operation does not conduct many day rides outside wilderness, so this conflict would be negligible. Visitors would still be able to obtain a horse riding or pack trip experience in the canyon for the long term.

Cumulative Effects

A reasonably future action is the Tungstar hydroelectric project. As a part of the project a mitigation measure is to relocate a portion of the trail and possibly the trailhead. The potential for user conflicts will be slightly diminished when the Tungstar hydroelectric project is finished when a portion of the trail and possibly the trailhead are relocated so that hiker access to the Pine Creek Pass trail is not directly through the pack station facilities.

There are no recreation residences, so the continued pack station use would not add any conflict, congestion or otherwise add to recreation use or experience in a cumulative way.

Alternative 3 – Pine Creek Canyon

There is no difference in direct/indirect or cumulative effects to recreation use or quality of the recreation experience than those described for Alternative 2. One minor exception is that there would only be 2 stock drives a year instead of 4, so the intensity of the effect of stock drives described in Alternative 2 would be substantially less in this alternative.

Bishop Creek (Bishop and Rainbow Pack Outfitters)

Affected Environment

The Bishop North and Bishop South HDRAs are in the North, Middle and South Forks Bishop Creek which are very heavily used recreation areas. The canyons are surrounded by the Pine/Buttermilk, Bishop Creek and Coyote GFAs which, along with the HDRAs, have a high number of recreation activities. The developed character of the HDRA and several roads throughout the canyon area warrant it to be classed Roaded Modified while the less developed and more natural environment outside the HDRA are successively classed Roaded Natural, Semi-Primitive Motorized and Semi-Primitive Non-Motorized ROS.

The forks of Bishop Creek are favored areas for a wide variety of recreation activities including hiking, camping, picnicking, fishing, boating, swimming, mountain biking, horseback riding, hunting, off highway driving, rock climbing and mountaineering in the summer and fall; and cross country skiing, other snow sports and ice skating in the winter. The particular attractions of the area are Lake Sabrina, North and South Lakes, the creek itself in a spectacular mountain setting, and access to the John Muir Wilderness from the main roads. Developed recreation facilities include twelve campgrounds, two picnic areas, two boat ramps (Sabrina and South Lake) and Parcher's Resort. Bishop Creek is well settled with three recreation residence tracts, the town of Aspendell and other private residence tracts.

Two pack stations are in the HDRA. Bishop Pack Outfitters with two facilities, one at North Lake and the other adjacent to Aspendell, was first established at the Cardinal Mine in 1932 (then called Tobe Ray Pack Station). Rainbow Pack Outfitters was started at Parcher's Resort in 1922 (then called Sanford Brothers Pack Station). Two other nearby pack stations were shut down by the Forest Service about 1925. Both pack operations offer day rides, and Rainbow runs overnight trips to lakes located outside the wilderness. Bishop Pack Outfit serves over 1000 visitors a year while Rainbow serves over 600 visitors a year seeking riding and pack stock services (average 2001-2004). Since the routes designated for these operations by Alternative 2 have been used for several years without numerous reported conflicts, there would continue to be few conflicts with vehicular traffic on roads or with hikers on trails and with campers where campgrounds are near the routes. The Rainbow stock drive uses dirt roads and trails through the Semi-Primitive Motorized, Semi-Primitive Non-Motorized and Primitive Non-Motorized ROS classes of the Coyote GFA where recreation is moderate.

Environmental Consequences

Alternative 1 – Bishop Creek

Direct and Indirect Effects

Removal of the pack stations at North Lake and South Lake will have similar general effects that have been described for the Alternative 1, General Forest Area.

Recreation Use: With a substantial range of recreational activities, opportunities and amenities available in the Bishop Creek drainage (campgrounds, resorts, motorized and non motorized trails,

fishing) the loss of commercially available riding and pack will have a minor effect on overall recreation use. This is because most people come to the area to camp and often engage in horseback riding as one of the activities during their visit. Consequently, even if the loss of the pack stations does not contribute to much of an impact on overall use levels, it does have a more moderate adverse effect on the range of activities available.

Quality of the Recreational Experience: With the discontinuation of the pack stations there would likely be fewer conflicts on the trails and roadways between horses, cars, bicycles and hikers. Location where these effects might be discernable would be along stock drive routes on the Bishop Creek road, the North Lake road when stock is going from the pack station to Sabrina Basin, trail and roadway crossings to Tyee and along the trail to Green Lake, southeast of Rainbow pack station. The intensity of these conflicts is minor to moderate and of short duration, but with the discontinuation the relief from minor conflicts would be a long term effect.

Cumulative Effects

Discontinuation of pack stock services in the Bishop Creek drainage will have negligible cumulative effects on recreation use, and the quality of the recreation experience when added to past actions such as other permitted recreation facilities and amenities such as Parcher's Resort and boat ramp, and numerous campgrounds in the canyon. The effect reverses the trend of increases in recreation use and the range of opportunities available.

There will also be no additive effect when combined with the continuation of the three recreation residence tracts near Aspendell below Cardinal Lodge, below South Lake, and above Bishop Creek Lodge. This is because the residence tract will continue and in and of themselves will contribute to congestion and crowding concerns in the basin, but the pack stations action will lessen the effect.

Alternative 2 – Bishop Creek

Direct and Indirect Effects

Recreation Use: Herd sizes for Bishop Pack Outfitters and Rainbow Pack Outfitters are authorized an increase from 60 to 75 and 40 to 55, respectively. This could contribute to ongoing increasing of overall recreation use. There will continue to be stock on heavily used trails, particularly wilderness access trails. The pack stations will contribute to a full range of activities and opportunities available in the Bishop Creek drainage. There would be the potential for stock drives to increase under this alternative. No reported use by either of these operations for stock drives the past five years, use in this alternative could increase at a minor to moderate intensity. The range of recreation opportunities would also increase with the added stock drives, if they were utilized.

Quality of the Recreational Experience: The presence of Rainbow Pack Outfitters in Bishop South HDRA is equivalent to the other HDRAs in terms of one pack station for about 4000 acres, but the two facilities of Bishop Pack Outfitters in Bishop North HDRA amount to one per 2240 acres. This seems very ample in a congested area and probably contributes to the congestion. However, since the two pack stations have been an established feature in the area for over 70 years, permit renewal will

not have a major increased effect on recreation. Stock will continue to travel through the North Lake Campground and this will cause minor to moderate conflicts with other recreation visitors along the road that would be short in duration.

Contacts with other types of recreationists will remain relatively high. The restriction of commercial pack stock to designated routes by Alternative 2 will ensure no change from current levels of use and will have no potential conflict with off-trail users. Stock drives however could lead to some increase user conflicts; these would be minor considering they occur at times of the year when recreation use is not at its peak. The conflicts, if they occur, would be of a short duration. The quality of the recreational experience will remain largely unchanged and continue to meet customer expectations, with an allowable increase in use to provide increased recreational experiences.

Authorization of pastures will ensure that grazing will not occur in other meadows that are used by visitors and the removal of Big Meadow for grazing purposes by Rainbow Pack Outfitters will lessen any current effects on the area.

Cumulative Effects

Recreation use in the Bishop Creek drainage has been, is, and will likely continue to be very high and diverse in types of activities and settings that a visitor seeks for mountain recreation. Forest Service development of campgrounds, permitted activities including resorts, outfitter guides, trails, water impoundments that are now used for boating and fishing opportunities, has facilitated use.

Continuing the pack stock services at two pack stations will have an additive effect on recreation use, increasing use and contributing to some minor cumulative effects in the area, primarily by the service continuing to be a draw and adding to use and some minor congestion in the vicinity of the pack station facilities.

There will also been negligible additive effect when combined with the continuation of recreation residence tract near Aspendell below Cardinal Lodge, below South Lake, and above Bishop Creek Lodge. This is because the residence tract will continue but is a small use relative to other tracts in recreation sites.

Alternative 3 – Bishop Creek

Direct and Indirect Effects

Recreation Use: In this alternative, herd sizes would be at current levels, 60 for Bishop Pack Outfitters and 45 for Rainbow. This, coupled with the discontinuation of service days as a measure of use would likely still allow for some increases in recreation use unless the herd is utilized exclusively for their wilderness operation, but not as much as what would occur with Alternative 2, where herd sizes increase. So increase in use would be less than what is expected in Alternative 2, but more than what can occur under their current management regime of service days.

With 2 fewer stock drives, recreation use would be less than Alternative 2, but more than what has been occurring the last several years. This is a minor effect on recreation use levels, and no

change for the range of activities available since the opportunity will still be there and will likely meet demand at least for the foreseeable short term.

Quality of the Recreational Experience: The quality of the recreation experience will be similar to that in Alternative 2, but with fewer stock associated with both these operations due to herd size differences, there is the probability that conflicts between users would be less than that described in Alternative 2.

Cumulative Effects

There is no difference in the cumulative effects to recreation use or quality of the recreation experience than those described for Alternative 2. Although the direct and indirect effects show some differences with Alternative 2, mostly regarding herd size and stock drives, the cumulative effects, which were negligible in Alternative 2 would be less than that in Alternative 3.

Big Pine Creek (Glacier Pack Trains)

Affected Environment

Recreation activities in the Big Pine HDRA and in the Big Pine Creek GFA along the Sierra Nevada escarpment, of which it is a part, are comparatively high. The canyon is classed Roaded Modified because of the paved road along its length except for the area around the confluence of North and South Forks Big Pine Creek which is Semi-Primitive Motorized.

Big Pine HDRA and the GFA are used for hiking, camping, picnicking, fishing, road cycling, mountain biking, horseback riding, hunting, off highway driving, rock climbing and mountaineering in the summer and fall; and cross country skiing and snow play in the winter. In Big Pine Creek canyon visitors can stay in six developed campgrounds and at Glacier Lodge. Big Pine recreation residence tract, consisting of five cabins, is near the lodge. The pack station, which has been in existence since 1925, offers day rides in both forks of the non-wilderness part of Big Pine Creek canyon. Over 400 visitors a year use the services of Glacier Pack Trains for riding and pack stock opportunities (average 2001-2004).

Environmental Consequences

Alternative 1 – Big Pine Creek

Direct and Indirect Effects

Removal of this pack station will have similar general effects that have been described for the Alternative 1, General Forest Area.

Recreation Use: Specifically for Glacier Pack Train, the discontinuation of the services and removal of the facilities would decrease overall recreation use and would result in a loss in the range of opportunities available as well. This would most likely be more noticeable in this location than Bishop Creek to the north, since Big Pine Canyon is a smaller canyon offering fewer other recreation services even though just as many activities occur. More visitors most likely come into Big Pine

Canyon for horse riding opportunities specifically, not just as another activity they participate in while there up in that area already. As with the other locations, there would be one less activity in an otherwise diverse range of activities and opportunity available to the recreation visitor.

Quality of the Recreational Experience: Few conflicts between commercial pack stock activities and visitors are known in Big Pine Canyon. Discontinuation would not likely have beneficial effects for reducing conflicts. It may reduce visitor density issues which may contribute to occasional sense of crowding for some visitors during their recreation visitors to the canyon. This effect would likely be of negligible intensity, hardly discernable to visitors.

Cumulative Effects

Discontinuation of pack stock services in Big Pine canyon will have negligible cumulative effects on recreation use, and the quality of the recreation experience when added to past actions such as other permitted recreation facilities such as Glacier Lodge and several campgrounds in the canyon. The effect reverses the trend of increases in recreation use and the range of opportunities available.

There will also be no additive effect when combined with the continuation of recreation residence tract. This is because the residence tract will continue and in and of themselves will contribute to congestion and crowding concerns in the basin, but the pack stations action will lessen the effect.

A future action that will occur in the canyon is the re-development of the Glacier Lodge. This will bring in more visitation to the canyon, and will provide a more urban amenity with a backcountry setting. Discontinuing the pack station services will take away one type of activity while at the same time the Forest is moving towards increasing its diversity of opportunities with the development of this lodge.

Alternative 2 – Big Pine Creek

Direct and Indirect Effects

Recreation Use: The herd size for Glacier Pack Trains is 45 in this Alternative. This is the lowest herd size of all pack station operations. Although use is concentrated on only a few trails with the Glacier operation, it is predicted that a herd size of 45 will have only a minor effect on recreation use levels. It is an increase from current operation, and this combined with the discontinuation of service days, could likely lead to some small increases in short duration day rides in Big Pine Canyon, but limited increases in overall recreation use. There would be the same range of recreation activities and opportunities available in this alternative.

Quality of the Recreational Experience: The joint use of the trails by the pack station, hikers and backpackers in Big Pine Canyon may present temporary conflicts with encounters. Few conflicts have been reported in this area, and since no new trails are authorized over present levels and the pack station is restricted to authorized routes in the HDRA, the minor effects would continue. The Glacier stock drive uses dirt roads in the Little Pine and Birch Creeks drainage basins of the dispersed recreation area of Big Pine Creek GFA where recreation activities are low and effects are minimal

during the drives. Even with up to 2 drives in spring and 2 in fall, the conflicts would be minor to moderate and short in duration.

Cumulative Effects

Continuation of pack stock services in Big Pine canyon will have negligible to minor cumulative effects on recreation use (increasing), and the quality of the recreation experience when added to past actions such as other permitted recreation facilities such as Glacier Resort and the several campgrounds in the canyon. Continue pack stock services will bring in visitors and can add to the overall use levels, but it is more likely that the use will not be more than what has occurred in the past and so not add to any additional effects not already described above.

There will also be no additive effect when combined with the continuation of recreation residence tract. This is because the residence tract will continue and in and of themselves will contribute to congestion and crowding concerns in the canyon, but it will take place further up the road from the pack station and the uses are relatively well separated.

A future action that will occur in the canyon is the re-development of the Glacier Lodge. This will bring in more visitation to the canyon, and will provide a more urban amenity with a backcountry setting. Continuing the pack station services when added to this redevelopment and the anticipated increases in use will have negligible cumulative effect as it will contribute to the ranges of opportunities and to increasing use.

Alternative 3 – Big Pine Creek

There is only a small difference in direct/indirect or cumulative effects to recreation use or quality of the recreation experience than those described for Alternative 2. With 2 stock drives a year instead of 4, the effects would be lesser than those described in Alternative 2. Since the effects of these stock drives is minor due to low use on the routes where the drives occur, the effects would be negligible in Alternative 3, compared to minor in Alternative 2.

Monache (Mt. Whitney Pack Trains, Cottonwood Pack Station, Glacier Pack Trains)

Affected Environment

The Monache GFA is classified as Semi-Primitive Motorized because of the dirt roads in the area, and is classified Semi-Primitive Non-Motorized along the unroaded northeast boundary outside the Kern River Wild and Scenic River corridor. It is used for fishing, hiking, hunting, off-highway driving, camping, and horseback riding in the summer, and cross-country skiing and snowmobiling in winter.

Environmental Consequences

Alternative 1 – Monache Area

Direct and Indirect Effects

Recreation Use: Recreation use in this area would not experience any noticeable change from the current situation since use by pack stations is very limited. There would be a negligible effect on the

range of recreational activities available, but those participating in commercial pack operations usually come to this area explicitly for a pack trip and are not recreating in the area otherwise. This is in contrast to areas where visitors seek multiple activities during their visit, such as Reds Meadow Valley or Bishop Creek. There are no day rides, so that service will not be discontinued as it is in all other areas described.

Quality of the Recreational Experience: No noticeable change from the current situation would be detectable since commercial pack stock use is very low currently. There may be a negligible to minor difference in crowding with a lessening of any effect that results from one more activity occurring in an area where multiple activities are occurring.

Cumulative Effects

Only negligible cumulative effects on recreation would occur as a result of the no action alternative. This is because the use would be eliminated. Other uses of the area, primarily off highway vehicle use, disperse type camping and private equestrian use have increased in the past ten years. Actions have been taken to contain use to roadways, and mitigate resources concerns on the rough 2 and 4 wheel drive roads in Monache. No additive effect would occur by discontinuing commercial pack stock use.

Alternative 2 – Monache Area

Direct and Indirect Effects

Recreation Use: Continuation of commercial pack stock use in Monache will not have a significant effect on recreation, because commercial pack stock use in the Monache area will remain very low and infrequent. The range of activities will also be no different than what is currently occurring in Monache.

Quality of the Recreational Experience: Cross-country riding which is authorized for Mt. Whitney Pack Trails by Alternative 2 will disperse horseback riding activity and minimize encounters with motorized recreation visitors in the Monache meadows area. These activities will not change the experiential setting or lead to any increases in conflicts with other uses because the levels will be the same, and the use is low and infrequent.

Cumulative Effects

Only negligible cumulative effects on recreation would occur as a result of this alternative. Other uses of the area, primarily off highway vehicle use, disperse type camping and private equestrian use have increased in the past ten years. Actions have been taken to contain use to roadways, and mitigate resources concerns on the rough 2 and 4 wheel drive roads in Monache. No additive effect would occur by continuing commercial pack stock use at the same intensity and frequency that is currently occurring. No actions are foreseeable in the Monache area that would have any related effects to the recreation resource.

Alternative 3 – Monache Area

There is no difference in direct/indirect or cumulative effects to recreation use or quality of the recreation experience than those described for Alternative 2. This is because there is no substantial difference in actions between the alternatives for activities in Monache Meadows.

Onion Valley (Sequoia Kings Pack Trains)

Affected Environment

Onion Valley HDRA is part of the Whitney Front Country GFA that ranges from Spook Canyon Creek on the north to Cottonwood Creek on the south, and includes the Oak Creek CRA, Whitney Portal HDRA and Horseshoe Meadows HDRA. As usual in the canyons of the Sierra Nevada escarpment that are accessed by paved roads, the HDRA is classified Roaded Modified while the Whitney Front Country GFA is classified as Semi-Primitive Non-Motorized.

Onion Valley has been a center for packing operations since the 1870s but the present facility of Sequoia Kings Pack Trains was built much later, in 1947. Today, Onion Valley is the trailhead for the popular Kearsarge Pass trail through the John Muir Wilderness and into Sequoia National Park. Recreation activities including hiking, camping, picnicking, fishing, mountain biking, horseback riding, hunting, off highway driving, and mountaineering. A campground is located in Oak Creek and there are two campgrounds in Onion Valley, along with Seven Pines recreation residence tract. Sequoia-Kings Packs Trains serves just under 200 visitors a year providing riding and pack stock opportunities (average 2001-2004).

Environmental Consequences

Alternative 1 – Onion Valley

Direct and Indirect Effects

Removal of this pack station will have similar general effects that have been described for the Alternative 1, General Forest Area.

Recreation Use: The removal of the pack station and discontinuation of services in Onion Valley will not likely have a noticeable affect on recreation use. Onion Valley has few other recreation amenities, just campgrounds, yet the pack station is not a contributing feature in the canyon presently. The station offers very few day rides, and few pack trips leave from this stations compared to the other pack station sin this project area. Without this operation, recreation use would decrease in negligible amounts and it is not likely that other types of recreational activities will fill the capacity that is created. The range of recreation opportunities would be limited in a moderate way since it does offer an additional activity in an area with few other services.

Quality of the Recreational Experience: No noticeable change from the current situation would be detectable since commercial pack stock use is very low currently.

Cumulative Effects

Discontinuation of pack stock services in Onion Valley will have negligible cumulative effects on recreation use, and the quality of the recreation experience when added to past actions such as other permitted recreation facilities such as the few campgrounds in the canyon. The effect reverses the trend of increases in recreation use and the range of opportunities available.

There will also be no additive effect when combined with the continuation of recreation residence tract located east of the pack station facilities in the vicinity of Oak Creek. This is because the residence tract will continue and due to their location a distance from the pack station and somewhat isolated from the other recreation activities closer to the trailhead in Onion Valley, there is no additive effect of discontinuing the low use of this pack station.

Alternative 2 – Onion Valley

Direct and Indirect Effects

Recreation Use: Herd size for this operation will stay the same, 65 stock. With the elimination of service days, the herd size regulator may facilitate an increase in recreation use, as well as the allowance for up to 4 stock drives a year. If this were to be anything more than a minor increase, there would have to be a significant change in use patterns and business operations than what exists currently in Onion Valley. The range of activities would not change, as no new activities would be occurring with this alternative.

Quality of the Recreational Experience: Use of trails in the HDRA by the pack station is restricted by Alternative 2 to designated routes. This will ensure that no other routes are used that could result in conflicts with hikers, backpackers and campers.

Under Alternative 2, any pack station can use any designated route, with itinerary approval. The Kearsarge Pass Trail is one of a few trails where pack stations other than the one located at the trailhead would likely use the trail occasionally throughout the season. This could result in conflicts among the pack stations themselves, including more passing on the trail, and parking lot congestion. The congestion effect should be minor, because most pack stations do not regularly incur the extra expense of trucking stock except for the occasional traveling trip.

The Sequoia Kings stock drive route follows Independence Creek and then Onion Valley Road south of Seven Pines and Lower Grays Campground where it does not interfere with campers and residents. In the Roaded Natural ROS of Big Pine Creek GFA the stock drive route follows dirt roads in the Little Pine and Birch Creek drainage areas where recreation is relatively low and effects are minimal. Since recreation is not congested in the HDRA and authorized use is not above present levels except for allowing up to four annual stock drives, continuation of this use would contribute only minor effects to capacity and visitor density in the long term.

Cumulative Effects

Continuation of pack stock services in Onion Valley will have negligible cumulative effects on recreation use, and the quality of the recreation experience when added to past actions such as other

permitted recreation facilities such as the few campgrounds in the canyon. The effect is negligible because the pack station use is low and will add some but not substantially to the recreation use in Onion Valley. It will contribute to short periods of congestion at times since the activities of the pack station occur in the vicinity of a high use trailhead and will have some additive effect on crowding and congestion in the parking lot. These periods will be short in duration.

There will also be no additive effect when combined with the continuation of recreation residence tract located east of the pack station facilities in the vicinity of Oak Creek. This is because the residence tract will continue and due to their location a distance from the pack station and somewhat isolated from the other recreation activities closer to the trailhead in Onion Valley, there is no additive effect of continuing the low use of this pack station.

Alternative 3 – Onion Valley

There is only a small difference in direct/indirect or cumulative effects to recreation use or quality of the recreation experience than those described for Alternative 2. With 2 stock drives a year instead of 4, the effects would be lesser than those described in Alternative 2. Since the effects of these stock drives is minor due to low use on the routes where the drives occur, the effects would be negligible in Alternative 3, compared to minor in Alternative 2.

Horseshoe Meadows (Cottonwood Pack Station)

Affected Environment

The small 594 acre Horseshoe Meadows HDRA is accessed by State Route 190, the Horseshoe Meadow Road and the area is classified as Roaded Modified. Recreation within the HDRA is primarily camping, hiking, picnicking and horseback riding. There are two developed walk-in campgrounds, one picnic area and an equestrian campground. Cottonwood Pack Station, built on its present site in 1984, offers day rides around the facility. The pack station has provided riding and pack stock services to over 400 people a year (average 2001-2004).

Environmental Consequences

Alternative 1- Horseshoe Meadows

Direct and Indirect Effects

Removal of this pack station will have similar general effects that have been described for the Alternative 1, General Forest Area.

Recreation Use: Specifically for Horseshoe area, the discontinuation of the services and removal of the facilities would decrease overall recreation use and would result in a loss in the range of opportunities available as well. This would most likely be more noticeable in this location than Bishop Creek to the north, since the Horseshoe area is known for its suitability, terrain and equestrian amenities at Horseshoe campground. More visitors most likely come to the Horseshoe area for horse riding opportunities specifically, not just as another activity they participate in while there up in that

area already. As with the other locations, there would be one less activity in an otherwise diverse range of activities and opportunity available to the recreation visitor.

Quality of the Recreational Experience: Few conflicts between activities and visitors are reported in the Horseshoe area, as horseback riding is a more popular activity here. The discontinuation of this commercial operation would not likely have any beneficial effects for reducing conflicts. It may result in additional capacity for other activities and may reduce visitor density issues which may contribute to occasional sense of crowding for some visitors during their recreation visitors to the canyon. This effect would likely be of negligible intensity, hardly discernable to visitors.

Cumulative Effects

Discontinuation of pack stock services in the Horseshoe area will have negligible cumulative effects on recreation use, and the quality of the recreation experience when added to past actions such as other permitted recreation facilities such as the few campgrounds in the area. Activities such as the Horseshoe equestrian campground will continue and use will probably grow at a low pace over the next 10-20 years. Since there will be no added effects from commercial pack stock use, the effect of discontinuation is that it reverses the trend of increases in recreation use.

Alternative 2 – Horseshoe Meadows

Direct and Indirect Effects

Recreation Use: Herd size for this operation will stay the same as current authorizations, 80 stock. With the elimination of service days, the herd size regulator may facilitate an increase in recreation use. No stock drives are authorized in this alternative so there will be no additional use and less of a range of activities available than at other pack stations in the project area. The range of activities would not change from current use, as no new activities would be occurring with this alternative.

Quality of the Recreational Experience: The pack station, number of developed sites and paved access roads in a small area create congestion which is somewhat alleviated by restricting routes used by the pack station to those designated by Alternative 2. This crowding and congestion is minor in intensity compared to other HDRA locations such as Bishop Creek or Rock Creek. This alternative will not likely have any perceivable change from current capacity and visitor density concerns, which are minor.

Cumulative Effects

Continuation of pack stock services in the Horseshoe area will have negligible cumulative effects on recreation use, and the quality of the recreation experience when added to past actions such as other permitted recreation facilities such as the few campgrounds in the area. Activities such as the Horseshoe equestrian campground will continue and use will probably grow at a low pace over the next 10-20 years. There would be minor added effects from commercial pack stock use if the pack station were to operate at capacity. There may be a minor additive effect on recreation use levels (increases) on some of the trails in the vicinity where both private and commercial pack stock use

occurs. This would be minor and conflicts or crowding/congestion on the trails would be of short duration.

Alternative 3 – Horseshoe Meadows

There is only a small difference in direct/indirect or cumulative effects to recreation use or quality of the recreation experience than those described for Alternative 2. With 2 stock drives a year instead of 4, the effects would be lesser than those described in Alternative 2. Since the effects of these stock drives is minor due to low use on the routes where the drives occur, the effects would be negligible in Alternative 3, compared to minor in Alternative 2.

3.2.2.2 Ansel Adams and John Muir Wildernesses

The impacts on recreation for these two Wildernesses have already been analyzed in the 2005 Ansel Adams and John Muir Final Environmental Impact Statement and Record of Decision.

In summary, 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. Opportunities for unconfined recreation are moderate in the selected 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.

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.

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 (Appendix I) identifies indicators and thresholds for when to implement adaptive measures.

3.2.2.3 Golden Trout and South Sierra Wildernesses

The impacts to recreation in the GT/SS Wildernesses are analyzed in the Wilderness section (section 3.2.1) of this FEIS.

3.2.3 Trails

Introduction

Until the early-mid 1800s, trails in the project area—primarily in the Owens Valley east of the Sierra Nevada and in what is now the Golden Trout and South Sierra Wildernesses—were little more than dispersed foot paths used by Native American tribes. The first developed trails for equestrian travel in this area were built 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. Packing operations which were originally serving mining operations, military, and cattle operations expanded to include recreational services. 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.

Trails in many areas—especially those connecting towns in the Owens Valley and the larger mining communities, such as Mammoth Lakes, Laws, Bishop, Benton and others—historically served wagons, and eventually motorized traffic. As uses changed and development continued, many routes once used by stock and stock-drawn vehicles have become impractical for such use. As primary wagon routes became paved highways, stock use moved to lesser-used parallel trails and roads. Increasing development of homes, new roads or expanded highways now encroaches on some old stock drive routes, making it impractical to drive stock through neighborhoods or growing towns with increased traffic. This is especially noticeable in areas around the growing communities in Mono Co., such as Crowley Lake, Mammoth, and June Lake. In contrast, trails accessing more remote or rugged areas—principally accessing wilderness—have remained narrow and rugged, and have historically been primarily used by hikers and equestrians.

With wilderness designation, trails in wilderness were limited to non-motorized travel. While not formally restricted in most cases, few or no wheeled and motorized travelers have historically used the trails leading into most of the northern wilderness areas. Many of the trails leading into and through the Golden Trout and South Sierra Wildernesses were accessible by motorcycle and four-wheel drive vehicles historically, because the terrain is gentle. After wilderness designation in 1978 (Golden Trout) and 1984 (South Sierra), motorized use was prohibited on these trails.

3.2.3.1 All Analysis Areas - Summary

Affected Environment - Summary

Currently, non-wilderness trails are used by hikers, mountain bikes, private and commercial equestrians, and—increasingly—motorized trail vehicles, such as motorcycles and ATVs. In most lesser-used areas, these trail users have naturally segregated their use to those trails which serve their

particular needs, so user conflicts are relatively limited. Certain areas have substantial concentrations of divergent use types, and are subject to intensive impacts to system and non-system trails, the surrounding resources, and in creating potential conflicts with different users.

Many of these areas were designated Concentrated Recreation Areas (CRAs) in the 1988 FLRMP, and are managed “to maintain or enhance major recreational values and opportunities.” These areas generally have a long history of intensive recreational use; and management of these areas is intended to “provide a broad range of facilities and opportunities that will accommodate large numbers of people safely, conveniently, and with little resource damage.” In order to accommodate such intensive use, many recreational activities are regulated, segregated, and limited to specific areas. Camping must be in developed campsites. Motorized vehicle use is limited to designated routes and trails. In most cases, the boundaries of CRAs adequately addressed these potential high conflict areas, but in some areas with equally intensive recreational use or potential concerns with commercial stock conflicts were not captured in the CRAs. These areas have been modified in this document to reflect current conditions and recreational activities. These areas are addressed in this analysis as High Density Recreation Areas or HDRAs.

Commercial pack stock has not historically been restricted to specific trails or routes in most areas of the Forest. All commercial pack station base facilities are located in HDRAs. This means that at least a portion of each trail leaving the pack station is within a HDRA. In some cases, the vast majority of commercial stock use occurs in these areas of high recreational use. Depending upon the location of the pack station facility, many of these same trails are shared by a variety of other users.

Wilderness trails (limited to the Golden Trout and South Sierra Wilderness for this analysis) are utilized by hikers and private and commercial pack stock. Additionally, commercial cattle and the cattle permittees use system trails, as well as traveling over widely dispersed cross-country or non-system trails when grazing, herding, or trailing to destinations.

Commercially-used trails

Commercial operators utilize a variety of transportation systems on the National Forest. These include trails and roads which have been inventoried on the Forest transportation systems, as well as utility roads and non-system trails that have been used for many years by commercial and non-commercial travelers.

System trails serve as the primary non-motorized transportation routes for both private and commercial visitors on the Inyo National Forest. 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.”

In this planning area, there are roughly 560 miles of designated system trail. Approximately 260 miles of this is in the non-wilderness area along the east side of the Sierra, between Mono Lake and the Horseshoe Meadows Road near Lone Pine. Roughly 100 miles of these trails provide access to the 426 miles of Inyo NF system trails in the John Muir and Ansel Adams Wilderness (reference the

2005 “Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses” EIS). Trails accessing or within the Golden Trout and South Sierra Wildernesses constitute approximately another 300 miles of system trail. Additionally, commercial pack operators use approximately 100 miles of low-development Forest Service roads to provide stock drives and non-wilderness overnight rides.

Non-system trails are trails or routes that are not on the Forest transportation inventory. These trails may have formed from repeated use by commercial and/or non-commercial travelers to access locations not served by system trails. Some of these trails may be almost unnoticeable, while others are highly evident. Occasionally these trails provide alternative or duplicate access to system trails. Some of these have developed primarily by and for non-commercial users, such as angler trails along creeks and lakes, mountaineering routes, mountain bike routes or other “trails of desire” connecting desirable destinations in heavily used areas. Others are primarily used by, and may have been created by, commercial stock in past years to access destinations away from system trails or for short day rides near pack station facilities where no system trail has been constructed.

The high density of various recreational uses near most of the pack stations, combined with the unrestricted nature of travel by various public and commercial uses has led to a proliferation of highly evident non-system trails in addition to well-developed and managed trails in these areas. User-created trails paralleling creeks and lakeshores in close proximity have formed from anglers and day-hikers—many camping in the developed campsites that are common in high use recreational areas. Mountain bike riders, climbers, and non-commercial equestrians also have created many additional evident routes that serve the purposes of each activity.

In the immediate vicinity of the pack station facility, it is common to have loop trails that serve short “day-rides”—generally one-hour or two-hour rides. Commonly, these are used almost exclusively by commercial pack station operators.

Stock Drives

Most of the commercial operators are authorized to provide “Stock Drive” trips, which were historically used simply as a method of moving pack and saddle stock from winter pasture to the summer facilities and back again. These trips are now offered to clients, who assist in driving the mules and horses. Commonly, a herd of stock is driven to the pack station or other holding area; then in some cases, all or part of this stock is returned by truck and trailer to the starting point to repeat the trip with other clients. These stock drives take place primarily along low-development native surface system roads between winter pastures and the pack stations. The roads tend to have very low vehicular traffic, and are used by operators at the beginning of a season (spring) and at the end (fall).

During the past five years, most stock drives have been done by four of the northern operators (Frontier, Reds Meadow, Mammoth Lakes, and Rock Creek stations). Many of the stock drive routes overlap—that is, more than one operator uses the same route and then branches off to their specific area.

Since many of the trips travel long distances along the Owens Valley and Long Valley areas, the vast majority of the stock drive routes are on non-Forest land—predominately Bureau of Land Management (BLM) and Los Angeles Department of Water (DWP) land. Use of trails, roads, facilities, and occupancy are governed by those agencies, and are approved through permits obtained by individual operators from each agency.

Environmental Consequences – Summary

Introduction—General effects of stock use on trails

Indicators

The trails section of this analysis will focus on the transportation system used by the commercial operators for day rides, access to and from wilderness, and stock drive routes. Any of these could take place on system and non-system roads, system and non-system trails, or cross-country where allowed. When analyzing the actual or potential effects of commercial pack stock on these routes, there are three key indicators considered:

- Effects on trail or road infrastructure and the resultant need for maintenance.
- Effects on resources in the immediate travel corridor.
- Potential for creation of new routes and associated new or increased resource effects.

For the purpose of this analysis these effects are described by their context (or scale) of the effect, the intensity of the effect, and the expected duration. When using these terms, the following descriptions apply:

Context refers to the scale of the area affected. Localized effects are those which typically affect one or more resources in the immediate vicinity of a specific trail/road or at a juncture with another feature, such as a creek or meadow. Effects described at the operating area level refer to trails, roads, and areas in the vicinity of the pack station which are commonly used by the operator in that area. Effects described at the project area scale are those which have an effect on the overall Forest trail system used by commercial pack stations – both in and out of wilderness.

Intensity considers the level of effect on one or more of the indicators, as negligible, minor, moderate or major. A negligible effect is one which is not readily evident and does not appear to have a measurable impact at the described scale. A minor effect is evident, but does not have a notable impact on the function of the described indicator(s). Moderate effects are clearly apparent and may affect the function of the indicator described. Major effects are those which clearly affect the function of the indicator(s), or would substantially and irreversibly affect conditions.

Duration describes the timeframe of either how immediately the effect would take place or how long it would continue once it has occurred, assuming no controlling influences such as mitigation or other unforeseen event. Short term effects are those where an effect may be evident during or immediately after the presence of commercial stock, but are not likely to be evident after a year has passed. Moderate duration effects are those which may be present for up to ten years without mitigation, but is not likely to have a permanent effect on one or more indicators. Long term effects

are those which may be fully present and not likely to reverse themselves without active influence or mitigation.

Type of effect describes whether the effect is beneficial or adverse to a particular indicator. Beneficial effects are those which improve the physical condition or stability of trails/roads and associated resources or reduce the costs of managing them. Adverse impacts are those causing greater instability, higher costs, and greater effects on resources.

General Effects

Effects of pack stock on trails or native surface roads consist primarily of churning of tread surface 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 below 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. Additionally, trail structures in the tread and supporting the trail are subject to very great forces by heavily laden pack animals, and are frequently loosened or damaged by such use. Soils which are loosened in the tread tend to be displaced to either side, creating berms, which further contains water on the trail. The loose soils can also plug waterbars and other drainage structures, requiring an increase in frequency of this 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 comparative 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% without tread retaining structures), increased water velocity can remove more soil, and deep incision and loss of soil can occur.

The presence of large numbers of stock on trails may have the effect of discouraging or displacing other non-equestrian uses. The loosened tread surface of such trails—especially in areas with very soft soils, such as pumice—makes bicycle travel very difficult, and could make hiking less pleasant for some. Strollers or wheelchairs can commonly use compacted native surface trails, but are difficult or impossible to use on trails that have been loosened by stock. Additionally, some non-equestrian visitors—especially families with young children—may not feel comfortable around

horses and mules on the same trails. Fast-moving wheeled vehicles, such as mountain bikes or motorcycles tend to spook equestrians, so most stock use occurs on trails with little or no existing wheeled traffic.

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.

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.

Most trails in this planning area used by commercial operators for day rides, horse drives, and wilderness access are in areas with relatively low resource risk factors. That is, the trails and roads tend to be in moderate to low angle slopes and only occasionally are in close proximity to riparian and aquatic habitat. Some isolated areas with moderate to severe impacts and connectivity to hydrology have created localized areas of resource concern over time. In general, the effects of commercial operations in the planning area are of limited intensity and scale. Most effects are isolated to local areas, and are overshadowed by the multiple other recreational activities in the area.

Stock Drives

Since stock drives on Forest lands are generally confined to either county or forest roads and occur during the low-use “shoulder seasons” of spring and fall, impacts tend to be of a very low intensity and tend to be of short duration. The general effects of stock use on trails and roads (as described above) when confined to a compacted road bed or shoulders are negligible and almost undetectable after a short period of vehicular use on the roadways.

Some potential for minor detrimental effects are possible with stock drives. Since the horses and mules are not tied together in a string, the unconfined animals occasionally spread out, causing dispersed impacts to soil and vegetation outside the roadway. Though only a small number of stock

drive trips occur during spring and fall, the number of animals on each trip can be large—sometimes exceeding 100 animals. This can lead to some minor loosening of soils alongside roads and short-term disturbance of vegetation.

Eleven operators have historically been authorized to provide stock drives. Of these, only four operators have reported stock drive trips during the past four years. At the current levels of use, the effects are minor and dispersed, and short-term, recovering rapidly during the interim periods of non-use.

Non-Traditional Stock

One of the operations described in this analysis uses animals other than mules and horses. Three Corner Round uses burros to pack supplies for youth to a variety of remote locations. Burros are considerably smaller and lighter than mules, and are used for packing relatively light loads. The burros are generally not used by riders, and are commonly lead up the trail by a hiker. The types of effects of these animals are roughly the same as described for horses and mules, but with a somewhat lower intensity of impact on the tread surface. Due to their smaller size and hoof profile, burros tend to be capable of traveling on slightly more difficult terrain and awkward trail conditions than most traditional stock.

Alternative 1 –All Analysis Units

Direct and Indirect Effects

Since no commercial uses would be permitted on trails, roads, or for cross-country travel in this alternative, there would be no direct or indirect effects (as described above) to the transportation system, resources in the trail corridors, or in the development of new routes resulting from the activities of commercial operators. Stock drives on Forest roads and trails would no longer occur, so the minor effects associated with stock drives would also cease. Since the current effects of commercial horse drives on roads and trails are negligible to minor—especially when compared to non-commercial uses, the beneficial effects of removing all commercial stock drives would likely be negligible.

Compared to the current situation, this alternative would substantially reduce pack and saddle stock use of most trails in the planning area. While some private stock use would continue to use certain trails, many trails would likely have almost no stock use of any type. Trails that currently have substantial commercial stock use would tend to remain more stable than currently with lower maintenance levels. At the planning area scale, this would likely have a slight beneficial effect or reducing maintenance costs of some trails in the planning area. It is likely that on a few individual trails, there would be a moderate benefit in reduced trail impacts and maintenance costs.

In this alternative, no commercial stock would be authorized or present to travel cross-country in any non-wilderness area of the forest, so to the extent that this use is currently having effects on areas off trails or roads, these effects would cease. Currently, this type of use is very low, and effects appear to be negligible to minor, so the beneficial effects would likely be imperceptible. The long-

term beneficial effect would be to ensure that no additional trails would form over time due to gradually changing use patterns.

Since this alternative would not allow for use by commercial pack stations of any trails in the Ansel Adams and John Muir Wildernesses, the indirect effects to the AA/JM by implementing this alternative would be those described in Alternative 5 of the 2005 Trail and Commercial Pack Stock Management FEIS.

Cumulative Effects

Cumulative effects of Alternative 1 are summarized here, but can be found in more detail in the individual Analysis Units sections.

The primary past, present and future actions that, when combined with actions in this alternative, may have cumulative impacts related to transportation include:

- Past activities such as mining or logging which established trails or roads;
- Other recreational visitors either using the transportation system or traveling off-trails;
- Increasing development of urban areas near the trail systems;
- Trail and road maintenance activities of the Forest Service;
- 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses FEIS;
- Wild horse use of the MPWHVA;
- Ongoing “Region Five Route Designation” planning effort to determine motorized status of routes; and
- Management actions of contiguous agencies.

Compared to current levels of authorized route use, removing all commercial stock from the transportation system would have a minor and barely measurable beneficial additive change in effects when combined with any of the activities described above. Trail maintenance of certain non-wilderness trails would be slightly reduced—especially on the very few trails that are exclusively used by the operators. Almost all trails and roads in the planning area will continue to receive maintenance on a schedule dictated by the demands of the various other recreational users, and this would change negligibly by the cessation of commercial stock use.

Alternative 1 would not permit commercial pack stock operations on trails in the Ansel Adams or John Muir Wildernesses. Generally, the effects described in Alternative 5 in the 2005 Trail and Commercial Stock FEIS would occur for this area. Commercial stock use would no longer occur in this alternative, so it is possible that certain trails would no longer require the assigned level of development and maintenance as described in Alternative 2 – Modified. It is likely that changes to the designated trail classes would affect only a very small number of trails; and development levels on these trails would change by no more than one trail class level. This would have a gradual, long-term minor (and almost unnoticeable) effect on the actual condition of the trails.

In the non-wilderness areas, the motorized route designation effort would designate the routes that are open to motorized uses. It would generally limit motorized uses to the roads and trails most

capable of withstanding such use and which would typically have the lowest potential for conflict with non-motorized trail users. Without commercial stock on any of the non-wilderness routes, it is possible that a small number of additional routes would be available for motorized uses.

In the Montgomery Pass Wild Horse Territory, the greatest trail-related impacts are those caused by the wild horses themselves. The effects of removing commercial pack station use could cause a very minor to negligible improvement in trail condition and reduction in trail numbers, but the effect would be almost entirely masked by the negative, minor, widespread effects of wild horse trailing.

The Golden Trout and South Sierra Wilderness Areas have had a long history of recreational use—primarily by equestrian travelers, and of livestock grazing. The current use of this area by hikers and equestrians is much lower than its peak in the early-mid 1900s, when cabins served the many tourists who were packed around by many small commercial pack stations. The trail system was fairly well-developed for heavy stock use, despite some poor alignments following the line of least resistance along streams or meadows. Livestock have developed stock trails throughout the Kern Plateau area, which are sometimes used by commercial pack stations. With today's reduced recreational and grazing use, the trail system is generally stable. The effects of non-commercial equestrian and hiker recreation on the trail system are minor at the wilderness scale, and generally minor to moderate at the local scale. Removing commercial stock use of trails would have only negligible to minor additive beneficial effect to trails, because their use would allow some narrowing of a few trails in the area.

Alternative 2 -All Analysis Units

Direct and Indirect Effects

In Alternative 2, commercial day rides and access to wilderness would be restricted to the trails listed in Table 2.3 in Chapter 2 in high density recreation areas. No commercial stock would be allowed to travel cross-country in these areas. Since all pack station base facilities are located in HDRAs, this would affect all operators, though the extent will vary based upon how large an area and how much trail around the pack station is within the HDRA. This would prevent any potential expansion of use trails and disturbance off of existing trails in these areas. Most commercial use occurs within these HDRAs, so this action addresses the areas most likely to have effects, such as new use trail development and off-trail disturbance.

Certain existing trails with known resource concerns or high potential for conflict with other users—both in and out of HDRAs—would be specifically prohibited to commercial stock use. This would likely have a moderate beneficial effect in these areas by ensuring that the majority of use occurs on those routes which appear to be most stable and appropriate for recurring stock use.

In this alternative, commercial operators could travel on any existing route or cross country to access destinations outside of HDRAs, unless specific resource concerns are identified. Compared to Alternative 3, which requires commercial stock to travel in this analysis unit only on approved routes listed in Table 2.3, this alternative allows operators to travel on any established route or cross-country outside of HDRAs. The area potentially available for such travel by commercial stock is very large

and dispersed, and only a very small fraction of their use occurs outside of HDRAs (estimated at less than 2%) The great majority of even this small amount of use occurs on native surface roads and trails. The very small amount of true cross-country travel (off of an established trail or road), combined with the very large area over which it is dispersed is precisely why there is little evidence of unacceptable resource impact from past and current “cross-country” use in these areas. Presently, observed effects are minor to negligible from such use, and it is unlikely that use patterns will change dramatically. The potential risk of even a minor effect at the operating area or moderate effect at localized areas is very low. However, because it is unknown how often this would occur, there is a slight inherent uncertainty about the potential effect of allowing such use.

There is a slight risk of new trails forming, due to recurring use in the same basic travel corridor. If trails formed in areas with high risk factors and/or resource effects, these routes could be addressed by limiting use to the areas or through other mitigation to prevent resource effects of user-created trails, if and when they were identified. At highly localized areas, it is possible that there could be minor to moderate effects at areas with high risk factors, such as steep slopes or riparian areas, if use trails eventually formed in these areas.

Since this slight potential for expansion or creation of new routes in untrailed areas applies to all non-HDRA areas in Alternative 2, and since it would be highly speculative to address specific locations that would be likely to have this effect, this analysis will not attempt to pinpoint this effect by analysis area below.

Limitations affecting commercial stock operators in HDRAs would not apply to private equestrian or other non-equestrian visitors, so some similar type of equestrian related effects on trails not approved for commercial use may continue, but at a greatly reduced level in most areas.

In this alternative, the eleven operators who are approved for stock drives are limited to a total of four drives for each operator annually. Operators will use the stock drive routes listed in Table 2.3. As noted above, only four operators have recently conducted stock drive trips, even though currently, all operators have been authorized to run such trips at an unlimited level. It is highly unlikely that the current numbers of stock drives would change substantially, but this alternative does allow for the potential for growth in this use above current levels. As described in “common to all areas” this activity is mostly confined to roads, so the environmental effects—even if there were substantial increases in use—would likely remain very low. Effects such as surface disturbance or structural effects on the roads and trail infrastructure would be negligible to minor and short term even if all approved use is fully utilized in this alternative.

Cumulative Effects- Alternative 2

The past, present and reasonably foreseeable future actions would be the same as described under Alternative 1.

In most areas, commercial stock would make up a very small portion of the total use of trails and low-development roads on the Inyo National Forest. More prevalent activities include mountain biking, private equestrian use, hiking, angler access, and motorized recreation (mostly motorcycles

and ATVs). These users tend to segregate themselves where either direct conflict occurs or where the prevalent use affects the trail system in a way that makes the other activity less enjoyable. Motorized vehicles tend to have direct social conflicts with non-motorized trail users—especially equestrians. Conversely, motorized travel tends to be hindered by high levels of other use types—including equestrians, due to speed and safety concerns.

Trails which have been heavily used by stock tend to have looser tread surface, and may be more difficult to travel on bicycles or even by foot. This has gradually caused either the development of trails that serve specific uses or displacement of different user types to other existing trails. Commercial stock use continuing at the authorized levels on just specified trails in these alternatives will assure that there is no further displacement. This will likely have a minor beneficial effect by reducing further development of non-equestrian trails by other recreational users.

In non-wilderness areas, the area disturbed and compacted by non-commercial recreationists is vastly greater than the total disturbed area of the authorized commercial stock trails. There would be a negligible additive effect by authorizing commercial stock use, and it would be too small to have measurable effects to trail maintenance costs or trail conditions overall.

Certain areas near trails have experienced rapid growth of development during the past decade, and this trend appears to be continuing. The most notable locations with some impact to trail and recreation use are near the Town of Mammoth, June Lake, and Crowley Lake. This has potential to increase the number of competing recreationists and trail users, which may displace stock users and lead to multiple trails as more users try to avoid dusty stock trails.

Heavy maintenance and reconstruction projects have been periodically conducted on many trails in the project area during the past 20 years. Because of the relatively high demand by hikers and equestrians and because roughly 65% of all trails on the Forest are in designated wilderness, most of these larger projects occur in wilderness or on the trails accessing wilderness. Smaller repair projects have occurred on short segments of other trails in the Forest – mostly in wilderness areas. Segments of non-wilderness trail between the pack stations and wilderness boundaries were also typically repaired.

These larger projects generally make the trails more stable for the anticipated use, reduce the off-trail resource effects, and typically also make the trail somewhat easier and safer for trail users (including commercial stock) than in its previous substandard condition. Well-designed reconstruction work reduces the need for maintenance over the long-term. Recurring maintenance also protects the trail infrastructure and reduces trail and resource damage in the trail corridor. With trail use authorized in Alternatives 2 on trails reconstructed in the past decade, there is likely to be negligible to minor negative effects at the local level. Trails which have not been adequately maintained may have minor to moderate effects at highly localized areas.

As maintenance and reconstruction budgets have declined, fewer trails in the project area are slated for reconstruction, leading to potential for trail and resource instability. Over the long-term, there is potential for moderate localized adverse effects on the stability of trails used by commercial stock, and minor effects at the project area scale. This could result in reduction of trails available to

commercial stock, if resource conditions are substantially affected, or the need to rely more heavily on maintenance performed by the operators themselves.

The 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses ROD restricted commercial stock to specific system trails and use trails, and prohibited cross-country travel except in very few cases. Trails and use trails with the greatest potential for instability under recurring pack stock use were prohibited to commercial operations. This will greatly minimize the extent of effects on trails and resources in the trail corridors, and reduces the extent of potential effects off trails from cross-country travel. Combined with the actions in these alternatives, which also restrict use to approved routes in most areas traveled by the commercial operators, there will be a minor to moderate net beneficial effect to trail stability and reduction of off-trail resource effects throughout the planning area.

Since the selected alternative in the 2005 FEIS had the effect of restricting commercial operators from some areas of the AAW and JMW, this has the potential to increase use and the incentive for operators to access more destinations in the non-wilderness areas of the Forest. Both Alternative 2 and 3 would allow for continued use on most trails that are currently used by operators. Alternative 2 allows for a relatively high degree of flexibility outside of HDRAs, as well as a slight growth in herd size (about 9% overall relative to currently held herds), with a potential minor growth in trail use in and out of HDRAs. Combined with the restrictions in the 2005 FEIS, Alternative 2 provides opportunity for commercial stock use expansion outside of the AAW and JMW.

Very little motorized use occurs in areas or on trails used by the commercial operators, with the exception of roads also used for stock drives, so there is generally not a combined effect of these activities on individual trails. The increase in motorized use, however, has created an expansion of trails and roads that serve motorized needs. The presence of commercial stock on the routes approved in this alternative would likely have no additive effect on increasing such motorized trail expansion.

The Pacific Southwest Region is undertaking a region-wide effort to inventory and designate routes as to their availability to motorized travel. This Travel Management Rule is known as the Region Five Route Inventory and Designation process, and should be complete by the end of 2008. It will determine which routes will have various types of motorized use, and may affect some of the routes currently used by commercial operators. At this time, it is unknown which routes will be off-limits to motorized use, or how it could affect stock drives or other commercial stock operations. It is likely that most motorized use patterns would not change substantially from current patterns. There is a potential beneficial effect in reduction of user conflicts and displacement of other non-motorized and motorized recreationists when the route designation process is implemented.

Stock drives occur almost entirely on maintained roads and motorized routes, where motorized activities often occur year-round. The effects of motorcycles, ATVs, SUVs and passenger vehicles on these routes have substantially greater effects on stability and maintenance needs on the network of roads than do the effects of horses and mules. While stock may have a slight temporary loosening effect on the surface of a road, the repeated travel of vehicles tends to counter this by compacting the surface almost immediately. Stock drive routes commonly travel to and through cattle grazing range.

Cattle do not regularly use the roads, other than for short stretches, but commonly graze and travel along the same corridor that is used by the horses and mules during the stock drives. This disturbance of soil and vegetation in the route corridor likely has a similar type of effect, but at a much greater overall level than the passing of the horses and mules. Since ongoing road maintenance would occur based on the substantially higher demands of motorized use, there would be no change in maintenance needs with the addition of commercial stock drives at the levels described in both Alternative 2 and 3.

Alternative 3 –All Analysis Units

Direct and Indirect Effects

The most substantive change between Alternative 2 and Alternative 3 is the requirement that commercial operators stay only on authorized trails in the Non-Wilderness Analysis Unit. These trails are listed by operator in Table 2.3. Since these trails currently provide access to the main destinations used by these operators in recent history, and since it is anticipated that use patterns would likely remain the same in both alternatives, the primary effect of this alternative is in assuring that use patterns do not change, and off-trail impacts do not increase. This would prevent any further development of new stock-created trails and the resulting impacts to off-trail resources in and out of HDRAs. The vast majority of existing trail activities by commercial operators occur within HDRAs, so only a small subset of travel occurs outside of these. In general, most benefits of keeping commercial stock on trails are derived from the restrictions in Alternative 2, so the action in Alternative 3 will provide only a very minor incremental benefit.

Since this action is mostly preventative, and the extent to which off-route use would occur is unknown, the extent of the beneficial effect of containing this use is somewhat speculative. It is likely there would be a minor beneficial effect of reduced trampling and on resources in the trail corridor, as well as a minor reduction in the potential for new use trails forming.

Other actions and effects related to trails would remain the same in this alternative as in Alternative 2, with the exception of stock drives, which would be limited to two trips per year. It is assumed that a permittee would generally run one drive in the spring and one in the fall, but this would not be required, so two trips could potentially occur at the same season, and animals could be trucked during the other season. As described in Alternative 2, authorizing two trips each for eleven operators could greatly increase the potential number of stock drive trips over recent actual numbers. In actuality, it is extremely unlikely that numbers would increase over current numbers, except for annual fluctuations. Operators historically have not been limited to a set number of stock drive trips, and records show that only a small number even run two stock drives a year, and most have not run stock drives since 2002. As in Alternative 2, the measurable effects of stock drives are minor, and reductions in the number of trips would have only incidental or immeasurable short reduction of short-term impacts to roads or trails in the stock drive corridors.

Assuming that the number of trips is fully utilized in both alternatives, there would be half the effects of disturbance along the road corridors as in Alternative 2, though these would be very minor

in either alternative. The effects on roads and trails of authorizing stock drives at the numbers proscribed in this alternative are negligible to minor and short term.

Cumulative Effects

The cumulative effects of Alternative 3 would be almost the same as under Alternative 2, except at a few locations. Those differences are described in more detail in the Analysis Unit sections below. A summary of the differences in cumulative effects is given here.

The difference in actions between Alternatives 2 and 3 that would cause different cumulative effects on a project-wide scale is the fact that Alternative 3 would not allow cross-country trail by commercial pack stock outside of the GT/SS Wilderness, MPWHVA, and Monache Meadows. The effect of the foreseeable future motorized route designation, and the past actions in the 2005 AA/JM FEIS/ROD both should result in a reduction in the number of trails, especially those that have major resource concerns. Alternative 3 would likely not change the current number of trails, but would cause less future proliferation than Alternative 3. When combined with the other related actions mentioned above that lead to reduced overall trail numbers, there would likely be a minor long-term benefit from a slight reduction in overall maintenance costs.

3.2.3.2 Non-Wilderness Analysis Unit

Affected Environment

Trails outside of wilderness are used by the commercial operators for three primary purposes: wilderness access, day rides, and stock drives. Since each pack station facility is located outside of wilderness, at least a short section of non-wilderness trail is needed to access the wilderness for either overnight or day use. Most “day rides”—short horseback rides that leave and return to the pack station, lasting from ½ hour to a full-day in the saddle—occur on non-wilderness trails. Stock drives occur primarily on forest and county roads, and to a lesser extent on forest trails.

Trails accessing wilderness from the pack station and trailheads are typically highly maintained primary trails. These trails tend to have high levels of non-commercial non-motorized use, and are developed and maintained to remain stable under such use. These trails are typically used as the primary route for the commercial operators to take overnight backcountry visitors and supplies for multi-day trips—potentially requiring large numbers of riding and pack stock. Additionally, in most cases, parts of these trails are also used for short day ride trips that may or may not enter the wilderness. Ultimately, this means that these trails generally receive the highest levels of commercial pack stock use, and very high levels of other non-motorized (predominately hiker) use.

The high level of development of such primary corridor trails helps to ensure that the trails and resources in the trail corridor generally remain stable despite the combination of intensive uses. Typically, these have required more frequent maintenance and slightly higher repair costs, though the majority of the investment would likely be required whether commercial stock use these trails or not.

The existing effects of authorizing commercial stock on the trail infrastructure and associated resources on these primary corridor trails are generally negligible to minor.

Day rides occur primarily on non-wilderness trails. In many cases, longer day rides occur on the same trails that are used for wilderness access. Most day rides are short—one half to two hours—and occur within a short radius of each pack station on the easiest/safest trails to accommodate less-experienced clientele. Even shorter trails exist at certain pack stations to allow for “Walk and Lead Rides,” where typically younger clients are led around by someone on foot on a short path on horseback.

June Lake Area

Frontier Pack Trains operates on a limited number of non-wilderness trails in the greater June Lake area. The Ansel Adams Wilderness boundary lies approximately 1/3 mile to the west of the pack station. Expanding June Lake developments and existing campgrounds and lakes limit the potential area of trail use in the remainder of the June Lake Loop. Trails used primarily by this operator are listed in Chapter 2, and are the same in each action alternative.

The Rush Creek Trail provides the primary access to the Ansel Adams Wilderness for overnight pack stock access. The trail has some steep and awkward sections through a cliff band near the wilderness boundary, and does not provide access to particularly scenic high country in short distances, so it is not commonly used for day rides. This trail provides rapid access to the Pacific Crest Trail, accessing Yosemite National Park, and receives very high levels of public hiking and commercial stock use. When originally constructed, the trail was not well-designed, and did not receive sufficient structural development, so much retrofitting of improved structures has occurred during the past 10-15 years. Currently, the trail is generally stable and meets standard, but requires frequent light maintenance to handle the high levels of stock and hiker use. Aside from the steep alignment of the trail, very few resource risk factors exist along this trail, as the trail climbs a mostly dry slope with a few stable creek crossings.

Most commercial day rides occur on two trails leading northward from the pack station. In past years, roughly 2,000 day rides per year were conducted by the pack station. The Parker Bench Trail contours northward just outside of the Ansel Adams Wilderness boundary, leading to a viewpoint south of Parker Lake and west of Grant Lake. This trail is used most commonly for half-day rides, and occasionally for wilderness access to Parker Lake. Approximately 20% of the recorded day rides are half-day trips on this trail. Most of the trail is stable and on dry open slopes, though there are some risk factors where the trail traverses some soft meadows and structures have been built to provide a stable trail through it. On occasion, this trail is used to provide overnight visitor access to Parker Lake and vicinity.

The Lower Rush Creek Loop parallels the June Lake Loop Road (Hwy 158) north of Silver Lake, crosses the road to access a decommissioned campground along Rush Creek, and then loops back across the road. This route is used for one-hour rides. This trail is stable, low angle, and has few risk factors, with the exception of one creek crossing and riparian area with isolated severe impacts.

There are other trails in the June Lake area which have either received incidental or no use by Frontier Pack Trains. While these have not been prohibited to the operator, most have been impractical to use due to access issues or terrain and trail conditions. Most of these trails receive moderate hiker use, primarily for day use.

Frontier Pack Trains has horse drives along the Long Valley Stock Drive (also used by other operators), and along the Owens River Road and to Rodeo Meadows via the road north of June Lake. While on Forest land, this route follows either paved or native surface roads.

Reds Meadow and Agnew Meadow Area

Reds Meadow and Agnew Meadow Pack Stations (RMPS) are operated by the same permittee. They use a small number of short non-wilderness trails that are used to access destinations in the Ansel Adams Wilderness. The boundaries for the Ansel Adams Wilderness and Devils Postpile National Monument are very close to the pack station, roads, and recreational developments in this area, so there is very limited opportunity for many activities on non-wilderness trails. There is a substantial amount of non-commercial recreation use in the vicinity—mostly day use by hikers, anglers, and mountain bikers. Many nearby campgrounds serve a large number of overnight campers. Devils Postpile National Monument (DPNM) borders the west edge of this area, and some of the trails used by RMPS lead to and through the monument.

Terrain in the non-wilderness area around the pack stations tends to be low to moderate angle. The soils, however, are very light pumice with highly erosive properties. Much of the dry pumice “rock” and soil is so light and porous that when placed in water, it will float—and is easily carried away by sheeting water. This creates particular concern for trails—especially when equestrians are present. Trails in this area need to have frequent drainage and tread retention structures or the risk of soil loss is high. The soft trails can be hard to walk in, and hikers and equestrians have traveled along the more firm edges of trails, leaving widened paths.

The primary trails used by RMPS are the Pacific Crest National Scenic Trail/John Muir Trail (PCT/JMT), the Rainbow Falls Trail, and some short segments of trails leading from the Agnew Meadows facility to access a pasture and the River Trail for wilderness access. Other segments of trail leading between the pack stations, paralleling the Reds Meadow Road were used historically for moving stock, but as vehicular and recreational traffic have increased, this has become less practical, and this activity no longer occurs.

No RMPS day rides have destinations in the non wilderness area, but most day rides accessing Ansel Adams Wilderness, such as Rainbow Falls day ride are primarily taken on non-wilderness trails. Rainbow Falls is the primary day ride trail for RMPS. This trail mostly parallels and avoids the trail used by hikers accessing the same destination. The trail goes just into the Ansel Adams Wilderness and into the DPNM before reaching the falls, so, while most of the trail is not in wilderness, actual day ride use numbers are controlled by wilderness direction. The trail used by RMPS is generally stable, with a few risk factors at creek crossings. Activities within DPNM are controlled by administrative actions of that agency. The primary use by RMPS into and through

DPNM is on the Pacific Crest Trail, leading to King Creek Trail and Minaret Creek Trails west of the Monument.

RMPS conducts stock drives on the Mammoth Stock Driveway, which on Forest lands mainly uses the Hot Creek Road and Sherwin Creek Road.

Mammoth Lakes Basin Area

Mammoth Lakes Pack Outfit (MLPO) operates on a large web of non-wilderness trails in a broad basin bordered on the west by the Ansel Adams Wilderness and on the south by the John Muir Wilderness. The basin is connected to the Town of Mammoth Lakes by a short (roughly two-mile) paved road, and receives massive amounts of a wide variety of recreational activity during the summer. All non-wilderness trails in the basin are in a designated HDRA. The trails are used heavily by hikers, campers staying in the many campgrounds, anglers, mountain bikers, and a small number of private equestrians. This area is one of the highest density recreational areas on the forest—in part, due to its proximity to Mammoth Lakes. It also has the highest commercial stock use—primarily day rides

Wilderness access for overnight pack trips is primarily provided by the Duck Pass Trail, which leads south into the JMW. Access to the PCT and the AAW is provided by the Mammoth Pass Trail, with a connector trail that leads from the pack station to the Mammoth Pass Trailhead at Horseshoe Lake. Both of these trails also receive intensive use by day hikers and backpackers. Both trails are also used for day rides into and outside of wilderness.

In recent years, MLPO has offered close to 7,000 day rides per year on trails in the Mammoth Lakes Basin. On average, 97% of these are short, two hour rides or less, and the remaining 3% are half-day rides. The main trails used for day rides include: one loop on Panorama Dome, the connector trails to Duck Pass trail, Consolidated Mine Loops, Heart Lake trail (leads to JMW), Emerald Lake to Lake George Loop, the McCloud Lake trail cutoff (from Mammoth Pass Trail), and the Mammoth Mountain (Dragon's back) Trail from Mammoth Pass. There is also a series of very short loops in the vicinity of the pack station, below Lake Mary that are used as "walk and lead" pony rides. One other trail leading to McCloud Lake from near Lake George has been approved in a past planning effort as mitigation for the intrusion of bike trails and other developments in the basin that displaced equestrian access to Mammoth Pass trail. This trail is not yet constructed, so commercial use of this route has not been allowed, in order to prevent the development of a non-designed trail by recurring use. Currently, the pack station must use sections of the heavily used paved road to get to the Mammoth Pass Trail.

MLPO uses the Antelope Springs and Mammoth stock driveways, which on the forest consists of Antelope Springs Road, Hot Creek Road, and Sherwin Creek Road. The Mammoth Rock Trail is used to connect to the Old Mammoth Road and the Mammoth Basin. When moving stock between Old Mammoth Road near Sierra Meadows to the pack station, stock are led up the trail single-file loose herded, and the stock generally stay on the immediate trail, because the terrain confines use to the trail. The current use as stock driveway is creating no notable effects on the roads and trails.

Mountain bikes and hikers are present on the Mammoth Rock Trail and the Old Mammoth Road. Potential exists under current use for some social user conflicts in these situations or with vehicular traffic, but there is no record of any complaints from other users.

While there is a component of loose pumice soil mixed into the granitic soils of the area, the soils here resist erosion somewhat better than those in the nearby Reds Meadow area. Most of the grades and side hills are low to moderate angles in the non-wilderness segments of the trails, and most trails are generally stable, though the trails used most heavily by stock have loose, dusty tread material which is moderately susceptible to erosion. The Mammoth Pass Trail is aligned steeply, and has areas of incision and soil loss, but sediment is not directly depositing to water sources. Because of the alignment and the very heavy hiker and moderate stock use, this trail requires higher than normal maintenance, and is somewhat below standard currently.

McGee Creek Area

McGee Creek Pack Station (MCPS) has facilities at the base of McGee Canyon, approximately half mile below the McGee Canyon Trailhead, and about one and a half mile below the John Muir Wilderness boundary. A series of trails and decommissioned roads leads from the pack station to various destinations just below the wilderness boundary, where an old trailhead and campground had been located. Most day rides use the decommissioned road to the trailhead, then loop down to the creek using the old campground road. Parties then return on either the same path or loop up to the McGee Creek Trail (single-track trail at this point) to return to the pack station.

The McGee Creek Trail is used beyond this point to access wilderness for overnight pack trips and wilderness day rides. This trail is a former mining road, with a firm wide trail bed and low trail grades. The trails in this area are highly stable due to high rock content in the soils, low grades, and low risk factors. All non-wilderness trails used by the operator in this area are in a Concentrated Recreation Area, though the levels of other recreational use are relatively light. Most non-commercial use is by day hikers—some who camp at a campground located below the pack station—and overnight backpackers on the McGee Pass Trail.

MCPS also uses trails in outlying areas to access other wilderness destinations. The McGee to Hilton Trail accesses the Hilton Creek Trail for overnight pack trips and on rare occasion, all-day rides into the Hilton Creek drainage. This trail crosses McGee Creek at a steep, but generally stable crossing below the pack station. The crossing of Hilton Creek just west of the junction with Hilton Creek Trail has risk factors, and some instability. MCPS also use the Laurel Lakes road/trail to access the lakes in upper Convict Canyon. An operator with an existing permit (not considered in this analysis) operates a small number of day rides in the non-wilderness areas of the Convict Canyon area. Most of the non-wilderness segments of these trails are stable and have few risk factors, primarily traveling through moderate angled dry slopes with little riparian habitat. These trails are not in HDRAs.

Pine Creek Pack Station (PCPS) also has historically used some trails/roads on the eastern edge of this area, just west of Highway 395 in the vicinity of a decommissioned pack station and near a

BLM campground. These were used as day rides when the Hilton Pack Station was open, and have not been used regularly since. The routes mostly follow old roads and power lines, and are in dry, flat and open sagebrush steppe with few risk factors.

MCPS conducts stock drives on roads that lead around the north side of Crowley Lake. On forest land, the route follows old roadbeds roughly along a power line west of Highway 395 to the McGee Creek Road.

Rock Creek and Hilton Creek Areas

Trails in the non-wilderness area of Rock Creek and Hilton Creek are primarily used by Rock Creek Pack Station (RCPS). Most trails are used as John Muir Wilderness access for overnight trips into Hilton Creek, Tamarack Lakes Bench, Little Lakes Valley, or over Mono Pass into the Sierra National Forest. RCPS also has overnight pack trips in the non-wilderness area of Tamarack Bench along the East Fork of Rock Creek. In addition to RCPS, Pine Creek Pack Station has historically used some of the non-wilderness trails in this area to move between Pine Creek and Hilton Creek, via Morgan Pass. This use does not appear to have occurred in recent years. As mentioned in the McGee Creek area, MGPS also uses trails in the lower non-wilderness segment of the Hilton Creek area. All activities of operators within wilderness are controlled by destination limitations as directed in the 2005 “Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses” EIS.

Most trails in this area are heavily used by hikers from the many campgrounds in the canyon. Many of the trails in the Rock Creek Canyon travel to and through the campgrounds. Mountain bikes also use many of the trails in this area—many just for downhill travel.

Overnight commercial trips occur on the trails north of the wilderness boundary on Tamarack Bench. These camps are accessed by the Sand Canyon Trail and use trails leading to the camps. The terrain is moderate here with low angled slopes, but there are some risk factors at stream crossings and meadows. Some camp trails have some instability issues.

The main wilderness access trails are Hilton Creek Trail, Mono Pass Pack Station Trail, Tamarack Lakes Trail, and the Lower Corral to Tamarack Bench Trail. Day rides are conducted on some of these trails, as well as non-wilderness trails on the northern part of Tamarack Bench. In recent years, RCPS has started using a non-designed trail that creates a loop above Rock Creek Lake from the Tamarack Cutoff trail to the pack station. This trail has no structures, is steep and has multiple risk factors. Sections of the trail are very awkward, and would likely become increasingly difficult for less-experienced riders—especially on descent. The trail shows signs of instability, and duplicates access provided by the Tamarack cutoff trail. Other trails in the canyon, which have received little or no recent use by RCPS include trails from Rock Creek Lake along the bottom of the canyon past the lower corrals and on to and through the East Fork Campground. These trails have been designed for foot-traffic, and are currently stable with such use. Little or no equestrian use has been present on the trails.

RCPS occasionally uses the access trails from Lower Hilton Creek for wilderness access—primarily when snow precludes ready access from the upper pack station facilities. These trails are

also used by McGee Pack Station and Pine Creek Pack Station. Sections of the trails were mining roads. The majority of the routes are on dry, open slopes, and the trails, while sandy, are generally stable.

RCPS conducts stock drives that on forest lands follow dirt roads above Swall Meadows and Witcher Canyon on the Sand Canyon Road on to the Tamarack Bench, and down a steep trail to the Lower Corral. The route stays outside of wilderness, and only enters the HDRA once it descends to the Lower Corral. Most of this route is sandy but stable, though there are some risk factors and trail damage descending between the Tamarack Bench and the Lower Corral.

Pine Creek Canyon Area

The area around Pine Creek Pack Station was designated a CRA in the Forest Land Management Plan, but compared with many other trailhead areas, has relatively low use. Aside from the pack station, the primary use is overnight backpackers and day hikers—primarily on the Pine Creek Pass Trail. Very few anglers use trails near the pack station, and there are no developed campsites in the canyon. Mountain bikes rarely, if ever, use the trail systems, though they may occasionally be present on old mining roads in the canyon. User trail conflicts are generally not a large issue here.

Pine Creek Pack Station (PCPS) primarily uses two trails—the Pine Creek Pass Trail and Morgan Pass Trail for wilderness access for overnight pack trips and day rides. Both trails are former mining roads providing access for tungsten mining in the canyon. Pine Creek Pass Trail is steep, but generally stable and well-maintained. It has moderate backpacker and hiker use, and an incidental amount of private equestrian use. Morgan Pass Trail ascends a remarkably loose and steep slope north of the pack station, and had required frequent maintenance by the mining company to keep the road open for vehicles up until the mine closed. Reclamation work was completed in Morgan Canyon in 2001 and 2002, and substantial maintenance of this road has not occurred since then, though it was still travelable by trucks and OHV until 2003. Cribbing and retaining walls have been failing for the past decade, and in many areas have failed entirely, leaving the trail nearly impassable. Reconstruction and maintenance needs are extensive and could not be accomplished without machinery.

Due to issues with private land boundaries adjacent to the pack station, past mining activity in the area, and the relationship of the trail alignment to Pine Creek, non-commercial stock and hiker access to the Pine Creek Pass Trail from the trailhead parking is directly through the pack station facilities.

Gable Lakes Trail is a former mining trail accessing the JMW, and has some similar conditions, though it has never been maintained as a road. Switchbacks in the lower section have collapsed, leaving some of the trail in substandard condition. The trail enters the JMW after a short distance, and is not an approved route for commercial operators in the JMW, based on the 2005 Trail and Commercial Pack Stock Management EIS. Historically, the trail was used by pack stock for mining and recreational activities, but has not been used by commercial stock for at least five years.

PCPS conducts day rides on the Morgan Pass Trail, the Pine Creek Pass Trail, and occasionally has offered short day rides on former mining roads in the vicinity of and down-canyon of the pack

station. These are on relatively low-angle, stable roadbeds amongst areas which have been disturbed by past mining activity.

PCPS occasionally drives stock down the canyon to winter pasture. Stock has been driven up to Crowley Lake (Hilton Creek), using roads mostly on non-forest land. The routes used to access Hilton are the same as those described in the McGee Canyon section. PCPS has done very few if any stock drives during at least the past five years, but has historically driven their stock between pasture and facilities. Historically, when a connected pack stock facility still existed at Hilton Creek, stock had been lead over Morgan Pass, through Rock Creek and to Hilton Creek, but this use has not occurred for at least ten years.

Bishop Creek North Fork

Bishop Pack Outfitters operates primarily on trails in the northern part of the Bishop Creek drainage near North Lake and Sabrina Lake, and on old mining roads near the Cardinal Mine, as well as on roads leading northward to the Buttermilk area below Mt Tom. Most system trails used by this permittee access the John Muir Wilderness after a very short distance. Accessing the Piute Pass Trail and Lamarck Lakes Trail requires the pack stock to share a road leading to a campground and trailheads for approximately one half mile. The non-wilderness sections of the Piute and Lamarck trails are generally stable and well-maintained. A trail leading along the outlet creek from Grass Lake leaves at an unmarked trail from near the pack station, and requires crossing a barbed wire fence. This was the original Lamarck Lakes Trail, but was abandoned after the new route was constructed to Grass Lake at least 30 years ago. Though the trail was no longer maintained, it was not obliterated, and has had periodic use ever since. It is currently used by hikers looping back to the parking lot from Grass Lake. The route is steep, incised, has few structures, crosses some small seeps and the outlet of Grass Lake, and has many risk factors. It enters the Wilderness about ¼ mile from the road.

To access the Sabrina basin for overnight and day trips, stock must travel the mostly unpaved North Lake Road, also used by many vehicles, accessing campgrounds, fishing, and hiking at trailheads for the John Muir Wilderness. BPO uses old roads paralleling Highway 168 to reach roads leading to the Buttermilk area for both day riding and for stock drives. A trail leads north from the pack station, and is used for day rides to a viewpoint overlooking the Owens Valley. Other day rides use old mining roads to Cardinal Mine from a facility near Aspendell.

Stock drives utilize the Buttermilk Road and some of the roads associated with the SCE hydro plants. The roads are well-maintained with few risk factors. Gates prevent unauthorized vehicular traffic on some of the upper segments of the road.

Bishop Creek South Fork

The primary trail used by Rainbow Pack Outfitters (RPO) for wilderness overnight and day use is the Bishop Pass Trail, accessed by a mile long connection trail below the trailhead. This trail roughly parallels the South Lake Road, and climbs steeply in places, but is generally stable despite some risk factors, such as proximity to meadows and slope steepness. The trail has been gradually improved to

adequately handle the frequent equestrian use. Other trails are primarily used as day rides—the vast majority (98%) under 2 hours. Most rides go to Rainbow Meadow and Willow Camp, with a much smaller number traveling to Green Lake, south of the pack station. There is a substantial amount of non-commercial recreation use in the vicinity—primarily heavy day use by anglers and hikers. Many of these stay in the campgrounds that dot both the north and south forks of Bishop Creek.

The pack station is located in a HDRA, but most trails extend beyond the HDRA boundary into the Green Lake area and to Coyote Ridge. The Tyee Lakes Trail is used to access the lakes for overnight and day use in the John Muir Wilderness, as well as occasional deer hunting trips to Table Mountain. East of the pack station, trails lead toward Coyote Ridge. The Bishop Pass Trail enters the JMW a short distance above the trailhead. Unlike many non-wilderness areas, most of the terrain where trails are located is moderately to very steep, which creates more “wilderness-like” conditions and higher risk factors.

The Tyee Lakes Trail is in generally stable condition, though it is of only moderate development and has some rough sections. Green Lake Trail is minimally developed and has some steep sections with risk factors, but has been used at low levels, and is basically stable. The Green Lake Trail is used to provide day rides and occasional overnight pack trips in a non-wilderness area that has a wilderness-like character. The trail is steep, has minimal development (few drainage and tread-retaining structures), and has risk factors—primarily steepness, riparian habitat, and connectivity to hydrology. At current use levels the trail is rough, but is generally stable and functional for a low standard trail. An old road leading to Willow Campground is also used frequently for day rides. This road is stable, but parallels Bishop Creek at close proximity, and travels through the Willow Campground, which on occasion has resulted in user-conflicts with campers and vehicles in the past. Lesser-used roads and trails access Coyote Ridge via Lindner Prospect Mine Trail and Baker Creek Trail from Green Lake.

Rainbow Pack Station has not conducted stock drives on trails or roads in this area for many years, but has been authorized to do so in their permit. Proposed and past routes included the same route used by Bishop Pack Outfit from Buttermilk area, then paralleling the South Lake Road to the pack station. Alternatively, these drives followed roads and trails also used by cattle permittees from Shannon Canyon, over Coyote Ridge and down a trail from an old mine into Donkey Meadow, or optionally, following the lightly used road down toward Habegggers Resort, then paralleling the South Lake Road to the pack station.

Big Pine Canyon Area

The area around the Glacier Pack Train (GPT) facility is designated a HDRA but has relatively low use, compared to many of the HDRAs. There are three small campgrounds along the Glacier Road, and the Glacier Lodge facility, which has been in reduced operations status for about 10 years, following a fire at the main lodge. Lightly-used summer homes are also present near the wilderness trailheads. The primary trail users are overnight and day hikers—primarily using the North Fork Big Pine Trail and, to a lesser extent, the South Fork Big Pine Trail. Mountain bikes occasionally use

some non-wilderness sections of the trail systems—primarily the Baker Creek Trail, which descends from Coyote Ridge. Most trails in the canyon are well-developed and generally stable.

Glacier Pack Trains primarily uses the North Fork Big Pine Trail, leading to the John Muir Wilderness. This trail has moderate to high backpacker and hiker use, and very low, if any private equestrian use. The sections leading to the JMW are stable, low angle, and generally do not require extensive annual maintenance. Very little commercial or private equestrian use has occurred on the South Fork Big Pine Trail during the past decade. While most of the non-wilderness part is generally stable, sections just outside of and just inside the JMW are exceedingly steep, rocky, narrow, and difficult to maintain.

Other trails that have not been used by the operator exist in the canyon, and were constructed primarily for use by users of the campground and lodge facilities. These trails generally parallel Big Pine Creek, and travel directly through or to the campgrounds. They are not connected to the pack station facilities except by paved roads through the campground. One trail (the Waterfall Trail) parallels the North Fork Big Pine Creek and leads between the abandoned North Fork Road, and the South Fork Trail. It was designed to handle day hikers who were descending directly down the slope, so it is very steep and has many steps which would be very awkward for stock. This route has never been in use by the pack station.

Glacier Pack Trains has not recorded day rides in the non-wilderness areas of Big Pine Creek.

Glacier Pack Trains has winter pasture in the McMurry Meadows area, and has a stock drive route between the pack station and the pastures. The route has not been used for stock drives during at least the past five years. This route follows the upper part of Glacier Road for a few miles, then crosses the canyon and contours around a ridge above Little Pine Creek to McMurry Meadows. Most of the route is on dirt roads and leads through areas currently grazed by cattle.

Eastern Sierra Escarpment Area

This non-wilderness strip parallels the eastern edge of the John Muir Wilderness from near just south of Big Pine to south of Mt Whitney. In general, there are very few trails in this area, and they tend to be very short—providing access between trailheads and the wilderness boundary. Aside from those in the immediate area of the Onion Valley Trailhead, most of the trails are at low elevation, and on moderately angled, sagebrush covered slopes. These trails tend to have very few risk factors. Aside from the use of trails to access the JMW, very few commercial activities occur in this area.

Sequoia Kings Pack Trains has a pack station facility at Onion Valley, and operates on most of the trails in the Onion Valley area as well as along the eastern escarpment of the Sierra. The wilderness boundary is very close to the Onion Valley Trailhead, so there are limited opportunities for non-wilderness trail use in this area. Most use occurs as access for overnight trips into the JMW via the Kearsarge Pass Trail. Some day rides also occur on this trail. Other trails in the area include the Golden Trout Lakes Trail, which quickly enters the JMW, and has received very low levels of use by either hikers and no recorded equestrian use during the past decade. It is basically impassable less than a mile above the Kearsarge Trail junction. A poorly developed, steep trail leads up to Robinson

Lakes south of Onion Valley. This trail travels through steep riparian habitat with multiple creek crossings and very few structural improvements. It receives very little use—primarily hikers from the campground at the trail's start.

Other routes in the area are remnants of the mining era from the turn of the century and from the original alignment of the Onion Valley Road. The Grand Group Mining Trail is an unmaintained trail ascending north from the Onion Valley Road on a steep, dry, south facing slope with few or no resource risk factors. It currently is rough, with some overgrown vegetation. The Sardine Canyon Trail follows an old mining road, which was maintained for mining operations up until the mid-1980s. The trail itself is stable and wide, with few areas of instability, but is difficult to access, since it is approximately five miles down from the pack station, following either the Onion Valley Road, or the old road alignment.

SKPT also has historically had authority to run a stock drive between the pack station and the valley floor to Foothill Road. This route follows old mining roadbeds and the old alignment of the Onion Valley Road, to an unmaintained trail that parallels and accesses Foothill Road. Foothill Road provides access to Shepherd Pass Trailhead, and is a well-maintained graded road, with low levels of vehicle traffic. SKPT also uses dirt roads that continue north to McMurry Meadows area near Big Pine, but these routes are entirely off the Inyo National Forest.

Environmental Consequences - Non-Wilderness Analysis Unit

Alternative 1 – Non Wilderness Analysis Unit

Direct and Indirect Effects

June Lake Area

Compared to the current uses of the trails, the effect of this alternative would be a slight reduction in the overall use of the trails in this area. A small amount of private equestrian use would occur in the more moderate terrain in this area, but trails such as Rush Creek Trail (toward Agnew Lake) would likely see a nearly complete cessation of stock use, with the exception of occasional administrative use for trail and wilderness work. It is likely that trails in the immediate vicinity of pack station facilities would see a near-complete reduction in use, while trails in the outlying areas would still receive substantial recreational activity by non-commercial (and mostly non-equestrian) users. The Lower Rush Creek Trail, currently used for approximately 1500 one-hour rides annually, would likely receive less than 5% of this use by private equestrians, and very low levels of use by non-equestrians. These reductions would mean less impact to trail infrastructure – especially on the Rush Creek trail. The trail would still require maintenance allowing non-commercial stock in very low numbers (probably less than 50 animals annually), but tread and trail structures would require less work to remain stable. This would have a minor to moderate benefit in cost savings at the localized (trail specific) scale, and a negligible to minor effect at the project area scale.

There would be a minor reduction in effects on resources over the long-term. The cessation of commercial stock use would have moderate beneficial effects on one isolated riparian area at a creek crossing and a minor reduction of erosion and soil movement on the remainder of the trail.

Reds and Agnew Meadows Area

Trails in the Reds Meadow Area would still receive low to moderate levels of administrative and private equestrian use, though certain trails, such as the trail between the pack station and Rainbow Falls Trail would see little or no equestrian traffic. Eventually, this trail may become obsolete and may be decommissioned when the pack station facilities are removed. In general, the trails would not receive the effects of tread loosening, and would tend to be easier to walk on, as they gradually became more compacted. In areas such as Reds Meadow, with very light and erosive soils, this would be especially evident, and there would likely be a minor to moderate improvement in trail stability, and a minor reduction in maintenance cost. It is likely that the trails would gradually become more narrow and stable over the long-term.

Because the grades of trails and side slopes are mostly moderate in the non-wilderness areas of Reds and Agnew Meadows, the current effects of stock use are a slight widening and deepening of the trails, causing a minor increase the costs of maintenance. Thus, the beneficial effects on trails and on vegetation and soil in the immediate trail corridor of this alternative would likely be minor at the project area scale, with some minor to moderate benefits at highly localized spots. There would likely be a slight reduction in maintenance cost in most non-wilderness areas.

Mammoth Lakes Basin

Trails in the Mammoth Lakes Basin, which currently have extremely high levels of use by both commercial pack stock and many other use types would likely see the most dramatic effects from the complete removal of commercial stock from the basin. Trails leading to the wilderness boundaries from trailheads would still receive low levels of administrative and private equestrian use, though certain trails, such as the trail between the pack station and the Duck Pass and Mammoth Pass Trails would see little or no equestrian traffic. It is likely that most of the trails not used by MLPO would become used by other recreationists—most likely by mountain bike riders. Some trails, especially the small loops nearest the existing facilities, will likely become obsolete and would be decommissioned as the pack station facilities were removed. Since no regular maintenance by the Forest Service occurs on these short loops, this would have no effect on trail maintenance costs. In general, other trails in the basin would not receive the effects of tread loosening, and would tend to be easier to walk on as they gradually became more compacted by hikers. It is likely that most of the trails in the Mammoth Lakes Basin would gradually become more narrow and stable over time.

Because the grades of trails and side slopes are mostly moderate in the non-wilderness areas here, the current effects of stock use on the trails are low to moderate, and do not substantially increase the costs of maintenance, with the exception of Duck Pass Trail and Mammoth Pass Trail. The risk factors and effects on these trails would continue to be most pronounced in the wilderness segments

of the trails. Thus, the beneficial effects on the trail infrastructure and on resources in the trail corridors of removing commercial stock from the non-wilderness trails in the basin would likely be minor at the operating area scale, with some moderate to very localized high benefits on these two trails. Since there would be no stock traveling between the pack station and Mammoth Pass, the connector from George to McCloud Lake would not need to be constructed or maintained. There would be a minor reduction in maintenance costs on all commercially used trails in the Mammoth Lakes Basin.

McGee Canyon Area

In this alternative, no commercial pack stock would be approved in the McGee Creek area. Trails leading to the wilderness boundaries from trailheads would still receive low levels of administrative and private equestrian use, though certain trails, such as the trail between the pack station and Hilton Creek Trail would see little or no equestrian traffic. This trail would likely become obsolete and would be decommissioned when the pack station facilities were removed. Any instability at the creek crossing would likely stabilize in the short to mid term as riparian vegetation grew into the trail way. With reduced stock use, the trails would likely be slightly more firm and easier to walk on, but since the trails are currently resource stable with few risk factors, there would likely be only a minor resource benefit – even at the local level. It is likely that the trails would gradually become more narrow and stable over time.

Beneficial effects of removing commercial stock from the frontcountry trails in this area would likely be low at the operating area scale, with some localized moderate beneficial effects. Due to the low level and combination of risk factors, trails in this non-wilderness area do not require high levels of maintenance, and stock are not currently adding substantially to this need. There would be a minor reduction in maintenance costs on all trails currently used by the pack station.

Rock Creek Area

Trails leading to the wilderness boundaries from trailheads in the Rock Creek area would still receive low levels of administrative and private equestrian use, though certain trails, such as the trail between the pack station and Tamarack Lakes Trail, the upper trail from the pack station to Mono Pass, and the trail descending from Tamarack to Lower Corral would see little or no equestrian traffic. Most of these trails would not be used by other recreationists, since they are primarily used for accessing the pack station facilities. It is more likely that these trails would become obsolete and would be decommissioned as the pack station facilities are removed. Some trails in the basin, such as the Tamarack Lakes Trail, Mono Pass Trail, and Hilton Lakes Trail would no longer receive the effects of tread loosening, and would tend to be more stable and easier to walk on as they gradually became more compacted by foot traffic. In this area, there would be a minor to moderate reduction in resource impacts – primarily to riparian and meadow habitats – at the local and operating area scales.

The beneficial effects of removing commercial stock from the non-wilderness trails in this area would be most evident on the Lower Corral to Tamarack Bench Trail and on the non-wilderness trails

on Tamarack bench toward Sand Canyon. The impacts which have occurred to date would gradually recover as use is diminished. The beneficial effects would be minor to moderate at the operating area scale, with some moderate beneficial effects on specific trails. There would be a minor reduction in maintenance costs on all trails currently used by the pack station.

Pine Creek Canyon

In this alternative, no commercial pack stock would be approved in the Pine Creek Canyon. Trails leading to the wilderness boundaries from trailheads would still receive low levels of administrative and private equestrian use, though certain trails, such as Morgan and Gable Trails would see little or no equestrian traffic. Both of these trails have had almost no commercial or private equestrian use in recent years, so there would be no measurable change in this alternative. With reduced stock use, the Pine Creek Trail would likely be slightly more firm and easier to walk on, but since the trails currently have minimal resource effect, there would likely be only a minor resource benefit. Trails used for day rides are currently used at a very low use level, and eliminating these would have negligible effect compared to current conditions.

Beneficial effects to maintenance costs of removing commercial stock from the wilderness access trails in this area would likely be low at the operating area scale, with some localized moderate beneficial effects. The Pine Creek Pass Trail, though once a former mining road, is quite steep, and requires a great deal of maintenance due, in part, to the effects of stock on the trail. Removing commercial operations from this trail in Alternative 1 would have a moderate reduction in maintenance costs for this trail. The Morgan Creek Trail would likely become obsolete and would likely either be decommissioned or maintained at very low levels when the pack station facilities were removed.

Bishop Creek

In this alternative, no commercial pack stock would be approved in the Bishop Creek area. Trails leading to the wilderness boundaries from trailheads would still receive low levels of administrative and private equestrian use, though certain trails, such as the trail between the pack station and Grass Lake and the trail leading to the viewpoint north of North Lake would probably have no equestrian traffic. Hiker traffic would continue on all trails currently used by the operator—especially Piute Pass Trail, Sabrina Trail, and Lamarck Lake Trail. With reduced stock use, the trails would be slightly more firm and easier to walk on, but since these non-wilderness segments of trail are currently resource stable, there would likely be only minor resource benefits. It is likely that the trails would gradually become more narrow and stable over time.

Trails emanating from the Rainbow Pack Station would see little or no further equestrian traffic. Hiker traffic would continue on all trails currently used by the operator, except the trail currently used to access pasture north of Willow Camp. The route used by RPO to access Green Lake would not commonly be used by hikers, who would continue to access Green Lake from the South Lake Trailhead along a pipeline trail. With reduced stock use, the trails would likely be slightly more firm

and easy to walk on, and would result in a minor – moderate benefit at the local level. It is likely that the trails would gradually become narrower over time.

Beneficial effects of removing commercial stock from the non-wilderness trails in this area would be minor at the operating area and moderate on localized sections of trails. Because of relatively high risk factors on certain trails (primarily Green Lake, Tyee Lakes, and the connector trail to South Lake) removal of all commercial stock would likely have a moderate to major localized effect on trail stability and maintenance, though it would be minor at the planning area scale. Maintenance costs would likely be only slightly reduced on the other trails in the South Fork Bishop Creek area.

Eastern Sierra Escarpment

Eliminating commercial stock from the short trails along the non-wilderness strip east of the John Muir Wilderness south of Bishop would likely have very minor effects to the non-wilderness trails. In Big Pine Creek, there would be a minor to moderate reduction in trail tread disturbance on the North Fork Trail, and a minor reduction in maintenance costs. Compared to current condition there would be little or no noticeable effect on any other trails in the area. In the Onion Valley area, only about a mile of trail leading to and on the Kearsarge Pass Trail would show any notable change. Other trails in the area are currently used so little by the operator that beneficial effects of removing commercial operations would be almost unnoticeable.

Other trails along the east side of the Sierra receive so little commercial use, and are in relatively low angle terrain with resistant tread material, that the effects of having no commercial stock would be a negligible to very minor improvement in tread stability and a nominal reduction in maintenance cost on these non-wilderness sections of trail.

Cumulative Effects - Alternative 1

The primary past, present and future actions that, when combined with actions in this alternative, may have cumulative impacts related to transportation include:

- Past activities such as mining or logging which established trails or roads;
- Other recreational visitors either using the transportation system or traveling off-trails;
- Increasing development of urban areas near the trail systems;
- Trail and road maintenance activities of the Forest Service;
- 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses FEIS;
- Ongoing “Region Five Route Designation” planning effort to determine motorized status of routes; and
- Management actions of contiguous agencies.

The cumulative effects analysis for trails will include a land area encompassing the Inyo National Forest. The area of cumulative effects was bounded in this manner because the Forest is managed as one unit, and actions on one part of the forest may, by design or by coincidence, effect trail conditions on another part of the Forest. Areas off-forest are not considered because actions outside of the Inyo

National Forest management unit have little potential to affect trail conditions on the Forest, and vice-versa.

In assessing cumulative effects for trails, impacts of past actions were included for actions implemented in the past 150 years. Although many trails still used today were established before then by Native Americans, the current trail condition and configuration cannot be traced to a particular activity before major trail building completed by Euro-Americans. Impacts of reasonably foreseeable future actions were not included beyond about 2027, or 20 years after the expected implementation of this project. Beyond 20 years, impacts to trails cannot be predicted reliably.

Since Alternative 1 does not authorize any commercial pack stock activities on transportation routes, there is no net additive effects of commercial stock activities to the activities listed above. The *actions* in this alternative, however, have some slight additive effect to the activities described above.

Compared to current levels of authorized route use, removing all commercial stock from the transportation system would have a minor and barely measurable additive change in effects when combined with any of the activities described above. Trail maintenance of certain non-wilderness trails would be slightly reduced—especially on the very few trails that are exclusively used by the operators. Almost all trails and roads in the planning area will continue to receive maintenance on a schedule dictated by the demands of the various other recreational users, and this would change negligibly by the cessation of commercial stock use.

The motorized route designation effort, which would designate the routes that are open to motorized uses, would generally limit motorized uses to the roads and trails most capable of withstanding such use and which would typically have the lowest potential for conflict with non-motorized trail users. Without commercial stock on any of the non-wilderness routes, it is possible that a small number of additional routes would be available for motorized uses.

No specific management actions of other contiguous agencies are currently proposed which would create an additive effect to transportation related actions in this alternative. However, if commercial operators are not authorized for pack station operations, it is likely that there would be no need for operators to run stock drives on other private land or land managed by other agencies, so it is likely that such activities would also cease. Otherwise, current authorizations for use of lands and transportation systems for stock drives and overnight use would likely continue if requested by operators. Commercial operators would be unable to access National Park Service (NPS) lands in Yosemite, Sequoia and Kings Canyon National Parks, so to any trail impacts that currently occur on NPS lands would cease.

Alternative 2 - Non Wilderness Analysis Units

Direct and Indirect Effects

In this alternative, in High Density Recreation Areas, commercial day rides and access to wilderness will be restricted to the trails listed in Table 2.3 in Chapter 2. No cross-country travel by commercial

stock would be permitted in HDRAs. This will prevent any potential expansion of use trails and disturbance off of existing trails in the high-use areas near the pack stations. Compared to the current trail use pattern of commercial pack stations, this alternative in the short term would have only slight beneficial effects, since the trails being authorized by the operator are generally the same as currently used, and very little travel occurs off-trail. The greatest potential effect is over the long-term, since operators will be restricted to specified trails in HDRAs, and to those which appear to have the fewest potential risk factors and resource impacts.

June Lake Area

All trails used by Frontier Pack Trains for day rides and wilderness access are in HDRAs. The trails authorized for FPT use are those which have been used heavily in recent years, so there should be no notable change from current effects. Use on these trails at the levels authorized are expected to have minor continued impacts at the area scale, with some moderate effects on very localized areas, where trails cross riparian zones—primarily on the Lower Rush Creek Loop. This may require minor additional investment to stabilize crossings. Ensuring that commercial use will not move to less stock-suitable trails in the June Lake area, such as the Fern Lake Trail and other trails traversing the June Mountain Ski Area, will reduce potential future conflicts and high costs of maintenance.

In Alternative 2, Frontier Pack Trains would be authorized to run four stock drives each year. In recent years, the operator has run between two and four trips each year, so this alternative would not change current use patterns. As described in the common-to-all section above, the resource and infrastructure effects of driving stock along the paved and native surface roads used by the operator are anticipated to be negligible.

Reds and Agnew Meadows

All trails used in the Reds Meadow and Agnew area are within HDRAs, so in this alternative, the pack station would be restricted to specific trails in the area. Certain trails which have been available to the packer previously and which have not been used for many years would no longer be approved for future use. These include trails which would otherwise have caused conflict with non-equestrian users, such as the trail that leads between the Agnew and Reds meadow facilities. This trail would change little from its current condition.

Stock on day rides accessing wilderness destinations (primarily Rainbow Falls Trail) would continue to loosen soils on the trail tread. This will primarily affect other users, who try to avoid walking in the soft soils by using the trail edge. This has the indirect effect of widening the trail way, with potential for minor to moderate effects at a very localized area on vegetation and soils in the trail corridor. The heavy use of stock in the non-wilderness area of operations has a minor effect on maintenance costs, because the trail lengths outside of wilderness are very short here.

In Alternative 2, Reds Meadow Pack Station would be authorized to run four stock drives each year. As described in the common-to-all section above, the infrastructure and resource effects of

driving stock along the paved and native surface roads used by the operator are anticipated to be negligible.

Mammoth Lakes Basin

All trails used in the Mammoth Lakes Basin area are within HDRAs so in this alternative, the pack station would be restricted to specific trails listed in Table 2.3 for operating day rides and providing wilderness access. The trails that would be authorized are generally consistent with those used by the operator during the past four-five years, so there would be minimal if any notable change from current uses. Certain trails which have been available to the packer in past years would no longer be approved for future use. These include trails which would otherwise have caused conflict with non-equestrian users, such as the trail around Horseshoe Lake, the outer loops of the Panorama Dome Trail, and the Panorama Flume Trail. The trails accessing Consolidated Mine and Heart Lake would be authorized, but secondary connectors and alternative routes in these areas will not be approved.

Such limitations will ensure that stock remain on trails that are most capable of handling the use. The greatest effects will be to ensure that over the long-term, additional trails are not used by the operator, and that other uses are not displaced. This should have a moderate beneficial effect in reducing user-conflicts and in ensuring less expansion of new user-created trails in the Mammoth Lakes Basin. There will be minor to moderate beneficial effects to the trails where commercial use will no longer occur. Due to the high number of day rides authorized in this area, it is expected that the restriction of travel to specific trails in this area will have the most substantial potential effect on preventing establishment of additional stock-created trails. This would have a minor to moderate beneficial effect on soils, vegetation, and water resources in the operating area.

This alternative allows for growth of up to 10% in day rides in the Mammoth Lakes Basin. This would be an increase of approximately 700 day rides per year, if maximized. The majority of stock-related trail impacts and potential resource impacts occur with relatively low levels of use and there is not a proportional increase in effects as use increases, so increasing use by 10% on these trails would likely have a nominal and likely immeasurable increase in effects on trail tread and associated resources. This potential adverse effect is further moderated, because the use and effects would be spread out over 26 miles of trail that have relatively few risk factors.

In Alternative 2, MLPO would be authorized to run four stock drives each year. This is similar to the two to four annual trips currently occurring. As described in common-to-all above, the resource effects of driving stock along the paved and native surface roads used by the operator are anticipated to be negligible. The Mammoth Rock Trail between Sherwin Creek Road and Old Mammoth Road would experience short-term tread disturbance when the horses and mules are led single-file up the trail. This would temporarily loosen the tread, making travel for mountain bikers slightly more difficult, though most mountain biking is done downhill on this trail.

McGee Canyon and Lower Hilton

In this alternative, all use in the area around the McGee Creek Pack Station would need to be confined to designated routes. The authorized routes are the same which have been used by the operator during recent years, so there would likely be no notable changes from current use. There would be negligible to minor reductions in trail disturbance and maintenance cost for trails in the McGee Trailhead area.

The trail leading to Hilton Creek and the Laurel Lakes Trail would continue to receive stock use by MCPS, limited by other destination guidance in the wilderness areas. These trails receive very little other recreational use, are generally in areas of low risk factors, and would likely remain stable under anticipated use levels. Continued use of the McGee to Hilton Trail will continue to create some instability at the creek crossing of Hilton Creek, and to a lesser extent at McGee Creek. It is likely that continued use of the Hilton Creek Trail will require some minor investment in maintenance to ensure stability in these and other areas with risk factors.

The trails used by Pine Creek Pack Station at the base of Hilton and McGee Creeks west of Highway 395 near the BLM campground are likely to receive very limited day ride use. These trails are native surface roads, and are very low angle with no notable risk factors, so these are capable of remaining stable under heavy stock use. At the anticipated use levels in this alternative, there should be negligible effect on the roads and resources in the travel corridors. McGee Creek Pack Station could offer up to four stock drives per year on the old roadbeds from north of Crowley Lake and west of Highway 395 to the McGee Creek Road. As with other stock drives, there is negligible to minor effect on the road system and associated resources from this level of use.

Rock Creek Area

In this alternative, all use in the HDRA around the Rock Creek Pack Station facilities would be confined to designated trails. The authorized routes are mostly on the same trails which have been used by the operator during recent years, so there would likely be only minor changes from current use. There has been some expansion of trails through recurring use of certain trails by the pack station, and there would be potential for other non-designed routes to develop if use were not limited to just the specified trails. By requiring RCPS to stay on designated trails, the long-term beneficial effect will be to ensure that no additional use trails would form in the area. Continued commercial stock use on the authorized non-wilderness trails will continue to have some minor to moderate effects on these trails, causing some minor increases in maintenance needs to maintain trail stability.

The trail leading west to Hilton Lakes Trail from the Lower RCPS Corral would no longer be used as wilderness access, so stock would need to access Hilton Lakes from the Upper Corrals. Because the Lower Corral Trail is steep with limited development, ensuring that stock does not use it will prevent resource and trail damage. The trails leading through the canyon to East Fork Campground will not be available to commercial stock, which will ensure trail and resource stability, improve the tread surface for hiking, as well as eliminate the potential for user conflicts with the campground day hikers. The non-designed trail loop above Rock Creek Lake will not be available for

commercial day rides. This action will prevent further degradation and potentially high future repair and maintenance costs, as well as potential resource effects from instability.

Rock Creek Pack Station could use up to four stock drives following the Sand Canyon Road above Swall Meadows and Witcher Canyon on to the Tamarack Bench, and down a steep trail to the Lower Corral. The effects on the Sand Canyon Road would continue to be minor. Erosion and trail damage would continue to occur on the steep trail into the Lower Corral. It is unlikely that RCPS would increase the number of stock drives above its current level of two trips annually, but there is potential for increased effects on this section if the maximum number of four is reached. This could have a moderate increase in erosion of the trail tread, with a likely minor to moderate increase in repair and maintenance costs of this trail.

Pine Creek Canyon

In this alternative, all use in the HDRA around the Pine Creek Pack Station would be confined to designated trails. The authorized routes include some non-wilderness trails in the pack station vicinity and on abandoned mining roads down-canyon, which have not received day ride use in the recent past. These roads are stable, dry, relatively low angle with few risk factors, and are mostly in areas previously disturbed by mining activity, so the effects of such use would be negligible. By requiring PCPS to stay on these designated routes, the long-term beneficial effect will be to ensure that no additional use trails would form in the area. The day ride loop trails identified east of the pack station are on abandoned mining roads with very low grades, and travel through disturbed mine tailings, so the routes would remain stable under very high levels of stock use. Use on these trails at the anticipated levels would have negligible effect on the roads or associated resources.

Morgan Pass mining road will likely continue to degrade, due to aging structures and severe terrain, so the “trail” may become more awkward and will likely require continuing efforts by the pack station operators to keep the trail in passable condition. Due to the very low commercial and public use of this trail, and the exceedingly high level of investment required to repair and maintain, it is unlikely that this road/trail would receive high priority for annual maintenance. Over time, this could affect the ability of the operator and the non-commercial public to use the trail. The effects of allowing use on this trail/road in Alternative 2 would have no measurable effect on the road or associated resources.

Pine Creek Pack Station could use up to four stock drives annually on the old roadbeds paralleling the Pine Creek Road and on their historic routes in the Crowley Lake area. There would be places where the stock drive would be on the paved Pine Creek Road, and there would be a likelihood of conflicts with vehicular traffic. As with other stock drives, there are negligible to minor effects on the road infrastructure from this level of use.

Bishop Creek

In this alternative, all use in the HDRA around the Bishop Pack Outfitters facility would be restricted to designated trails. The authorized routes are on the same trails which have been used by the

operator during recent years, so there would likely be no notable changes from current conditions. By requiring operators to stay on these designated trails, there will be a moderate long-term beneficial effect to soils and vegetation by ensuring that no additional use trails would form in the area. Additionally, use would remain on trails that have the fewest resource concerns and risk factors.

Most trails currently available to the operator would continue to be authorized, with the exception of the Grass Lake Outlet Trail. Ensuring that stock are not on this degraded trail with high risk factors will prevent further degradation and allow for relatively low cost and low-profile repairs and maintenance that would be suitable for low levels of use. The beneficial resource and trail infrastructure effects would be moderate at the trail-specific level, and would result in a moderate localized cost savings over the long-term.

In this alternative, all use in the HDRA around the RPO facility would be restricted to designated trails. Most authorized routes are on the same trails which have been used by the operator during recent years. Some use fluctuations would likely occur, including the potential of increased use on the Green Lakes Trail. Due to the steepness and substantial riparian component along this trail, a large increase in use would likely have a moderate negative effect on the trail and resource stability in the trail corridor, unless additional physical mitigation is performed. Effects of authorized use on this trail would likely have moderate effects on trail tread stability, causing minor to moderate levels of erosion and a minor increase in maintenance need.

Other trails authorized in this alternative would likely see similar use levels as currently, and would continue to be generally stable. By requiring RPO to stay on designated trails, the long-term beneficial effect would be to ensure that no additional use trails would form in the area. Additionally, use would generally be on those trails that have the fewest resource concerns and risk factors.

In this alternative, RPO could offer up to four stock drives per year on the Buttermilk and related access roads, which are shared with Bishop Pack Outfitters. This would mean that if both permittees maximized such use, there could be up to eight trips annually on this route. It is extremely unlikely that such use levels would occur, as this use has been allowed at unlimited levels to date, and demand has not driven the use of even a consistent annual stock drive on this route. As with other stock drives, even if all authorized use is utilized, the effects are anticipated to be negligible to minor on the road system from this level of use. Since there has been no limit on this use in the past, and use has remained low—not even occurring annually—it is unlikely that this level would even be reached.

The effects of surface disturbance on the Shannon Canyon cattle driveway and the Coyote Ridge trails would be negligible to minor and short to moderate duration.

Eastside Escarpment (Big Pine to Lone Pine)

Authorizing use on trails on the non-wilderness eastern escarpment of the Sierra at the levels in this alternative will have negligible to minor effects on trail stability at the area scale. In general, the trails outside of wilderness have a high level of stability and few risk factors, so the effects of stock on the trails would be minor. Big Pine North Fork Trail and Kearsarge Trail would not change from their

current generally stable condition. Compared to Alternative 1, there would be a slight increase in trail instability and maintenance needs.

Restricting commercial stock to specified trails in the Big Pine Canyon area and Onion Valley Trailhead will ensure the continued stability of other trails in those areas, primarily used by other recreationists. In Big Pine Canyon, this includes trails such as the steep “Waterfall Trail” which parallels the North Fork Creek from just above the summer cabins to the North Fork Trail. Since this trail was not designed suitably for recurring stock use, this alternative would help ensure its continued stability. The Robinson Lake Trail south of Onion Valley will not have commercial stock use, and is expected to stay in its current substandard, but generally stable condition.

The stock drive used by Glacier Pack Train traveling down the Glacier Road, then crossing southward on an old mining trail to McMurtry Meadows pasture could receive up to four stock drives per year. Some of this route has steep side slopes, and has a creek crossing with moderate risk factors. At the authorized level of use there is a potential for minor instability and highly localized moderate impacts at creek crossings. The stock drives along Foothill Road and on the abandoned Onion Valley Road alignment would likely have negligible effects on the road surface or resources in this corridor.

Non-wilderness trails providing access to the Golden Trout and South Sierra Wildernesses are addressed in the GT/SSW section.

Alternative 3 – Non Wilderness Analysis Unit

Direct and Indirect Effects

Most transportation-related effects described in Alternative 2 apply to Alternative 3, with a few exceptions. The greatest difference between Alternative 2 and 3 in actions affecting the transportation system is the requirement that all commercial stock be limited to designated existing routes in all non-wilderness areas of the Forest (except in the Montgomery Pass Wild Horse Territory). Since the vast majority of trails and roads used frequently by the operators are in HDRAs and comparatively little use occurs outside of the HDRAs, this alternative would have negligible to minor additional beneficial effect on soils and vegetation off of established trails as compared to Alternative 2..

The actions and effects to the transportation system at specific areas and on specific trails are expected to be the same in HDRAs in Alternative 3 as in Alternative 2. The effects of limiting use to approved trails outside of HDRAs are mostly speculative, cannot be isolated with site-specificity, and are anticipated to be minor. Current use levels in these non-HDRA areas are very low (estimated at less than 2% of the commercial use, with a fraction of this occurring off-trail) and there is no indication of a growth trend, so the potential effects caused by not restricting off-trail use (as in Alternative 2) are expected to be negligible or very minor. Thus, the potential beneficial effect of preventing such off-trail impacts would also be negligible to minor.

The routes used for stock drives are the same as those approved in Alternative 2 (see Table 2.3). The difference in actions for stock drives in Alternative 3 is that only two stock drives are approved annually, while in Alternative 2 four trips are allowed. As described in Alternative 2, the effects on

individual stock drive routes, and the associated resources are anticipated to be minor at the route scale, with some moderate localized short to moderate duration impacts at specific areas, such as creek crossings. Assuming that all operators maximized their number of allowed stock drives in both alternatives, the negligible to minor short-term effects of stock drives on trail or road stability and conflicts with other users would be half those described in Alternative 2.

Alternative 2 and 3 –Non Wilderness Analysis Unit

Cumulative Effects

The actions and effects related to trails in Alternatives 2 and 3 are so similar, due to the extremely low use and potential effects in areas outside of HDRAs and on stock drives, that there would be no discernible difference in the cumulative effects between these alternatives caused by the addition of the other described actions. For this reason, the cumulative effects are described for both alternatives.

The primary past, present and future actions that, when combined with actions in this alternative, may have cumulative impacts related to transportation include:

- Past activities such as mining or logging which originally established trails or roads;
- Other recreational visitors either using the transportation system or traveling off-trails;
- Increasing development of urban areas near the trail systems;
- Trail and road maintenance activities of the Forest Service;
- 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses FEIS;
- Ongoing “Region Five Route Designation” planning effort to determine motorized status of routes; and,
- Management actions of contiguous agencies

Many of the routes currently used in the non-wilderness areas were initially formed for non-recreational purposes—most commonly to access mining, logging areas, or grazing. For the most part, mining activities and logging in these recreational areas have ceased, leaving behind trails or roads no longer maintained for the original activity. Recreational users—including commercial equestrians—have adopted many of these where the routes also accessed destinations of interest. Some of these have been adopted into the Forest’s transportation system inventory, and are now maintained as recreational trails or roads. Those routes without desirable destinations have commonly naturalized, and currently may be difficult to travel or even follow.

In general, the current recreational use—including commercial stock at the levels anticipated in this alternative—requires a lower level of maintenance than the original purpose. For instance, a logging or mining route that had large trucks or tracked vehicles required a much larger initial investment and ongoing maintenance than would now be required for hikers and equestrians. The Horton Creek Road/Trail and the Pine Creek Trail are good examples of mining roads that currently require relatively low maintenance to adequately serve the needs of hikers and equestrians.

Since there were great potential financial benefits reaped by developing and maintaining such roads, it was common for a company to develop elaborate and costly structures and nearly continuous ongoing repairs in order to keep such roads open, despite substantial terrain and climatic obstacles. Examples of this include the routes serving the tungsten mines and mill at Morgan Creek, above the Pine Creek Pack Station. In the years since the mining operation closed, the route has rapidly degraded, and structures necessary for supporting the road have completely failed. Without the finances (formerly reaped from mining revenues) needed to maintain such routes adequately, and with the comparatively low use remaining on such routes, it is likely that these routes will degrade to the point that they may not serve as recreational trails for public or commercial use. This would ultimately affect the operator's ability to provide rides or access to certain wilderness areas.

In general, commercial stock makes up a very small portion of the total use of trails and low-development roads in the non-wilderness areas of the Inyo National Forest. More prevalent activities include mountain biking, private equestrian use, hiking, angler access, and motorized recreation (mostly motorcycles and ATVs). These users tend to segregate themselves where either direct conflict occurs or where the prevalent use affects the trail system in a way that makes the other activity less enjoyable. Motorized vehicles tend to have direct social conflicts with non-motorized trail users—especially equestrians. Conversely, motorized travel tends to be hindered by high levels of other use types—including equestrians, due to speed and safety concerns.

Trails which have been heavily used by stock tend to have looser tread surface, and may be more difficult to travel on bicycles or even by foot. This has gradually caused either the development of trails that serve specific uses or displacement of different user types to other existing trails. Commercial stock use continuing at the authorized levels on just specified trails in these alternatives will assure that there is no further displacement. This will likely have a minor beneficial effect by reducing further development of non-equestrian trails by other recreational users.

Most commercial equestrian use in non-wilderness occurs on a small number of the total available routes. In very densely used recreational areas, such as the Mammoth Lakes Basin, there has been a great deal of overlap of trail uses, with the exception of motorized use. More than equestrians, hikers tend to cut across trail switchbacks or take a direct route to destinations, instead of staying on the trail, resulting in added erosion and damage to trail structures. In some cases, multiple trails serving the same basic destinations have formed. This is especially evident in areas near campgrounds and lakes, where visitors take the most direct route between campsites or lake shores and desired destinations. In the Mammoth Lakes Basin this combination of many campgrounds and lakes has created multiple webs of “trails of desire” that circle lakes and connect to hundreds of different destinations. Since these are not affected by commercial stock use, this activity is likely to continue unchanged. The area disturbed and compacted by non-commercial recreationists is vastly greater than the total disturbed area of the authorized commercial stock trails in these alternatives. There would be a negligible additive effect by authorizing commercial stock use.

Certain areas near trails have experienced rapid growth of development during the past decade, and this trend appears to be continuing. The most notable locations with some impact to trail and

recreation use are near the Town of Mammoth, June Lake, and Crowley Lake. While this has potential to increase the number of competing recreationists and trail users, the greater impact when combined with commercial equestrian use is one of displacing commercial stock use—especially in the case of stock drives. In June Lake, stock was formerly driven on a dirt road north of the lakes, but this road is now paved. Stock drives along old Highway 395 near the town of Crowley Lake had formerly gone through areas that have recently been covered with new homes. This has displaced stock drives to other roads east and north of Crowley Lake. While the growth is likely to continue, it is unlikely that further displacement will occur on the stock drives approved in these alternatives in the near future.

Heavy maintenance and reconstruction projects have been periodically conducted on many trails in the project area during the past 20 years. Because of the relatively high demand by hikers and equestrians and because roughly 65% of all trails on the Forest are in designated wilderness, most of these larger projects occur in wilderness or on the trails accessing wilderness. In recent years, heavy maintenance and reconstruction have occurred on the Pine Creek Trail, Bishop Pass Trail, Cottonwood Lakes Trail, Little Lakes Valley, Strawberry Meadows Trail, John Muir Trail, Southern Minarets Trails, Kearsarge Pass, Pacific Crest Trail. Work continues on the Pacific Crest Trail into 2007. The McGee Pass Trail is expected to be reconstructed in 2008. Smaller repair projects have occurred on short segments of other trails in the Forest – mostly in wilderness areas. Segments of non-wilderness trail between the pack stations and wilderness boundaries were also typically repaired.

These larger projects generally make the trails more stable for the anticipated use, reduce the off-trail resource effects, and typically also make the trail somewhat easier and safer for trail users (including commercial stock) than in its previous substandard condition. Well-designed reconstruction work reduces the need for maintenance over the long-term. Recurring maintenance also protects the trail infrastructure and reduces trail and resource damage in the trail corridor. With trail use authorized in Alternatives 2 and 3 on trails reconstructed in the past decade, there is likely to be negligible to minor effects at the local level. Trails which have not been adequately maintained may have minor to moderate effects at highly localized areas.

As maintenance and reconstruction budgets have declined, fewer trails in the project area are slated for reconstruction, leading to potential for trail and resource instability. Over the long-term, there is potential for moderate localized adverse effects on the stability of trails used by commercial stock, and minor effects at the project area scale. This could result in reduction of trails available to commercial stock, if resource conditions are substantially affected, or the need to rely more heavily on maintenance performed by the operators themselves.

A hydroelectric project in the Pine Creek Canyon area near the Pine Creek Pack Station may affect the trail and trailhead for Pine Creek. This project, if implemented, would infringe on the current footprint used for parking at the trailhead. The trailhead would be moved a short distance north of its current location, and a new trail (approx 1/3 of a mile) would be constructed along the north side of Pine Creek. A substantial bridge would also be constructed to connect the trail to the existing trail above the pack station. The existing trail leading from the pack station corrals would

remain to serve the needs of the station. This work would be funded by the project proponent, so initial costs would not be borne by the Forest. Future maintenance of the bridge and trail would be necessary, and would be negligible over the short-term and minor at the local level over the long-term, as the structures age. Effects on trail maintenance needs at the Forest level are negligible over the long-term.

The 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses FEIS selected alternative (Alternative 2 – Modified), restricted commercial stock to specific system trails and use trails, and prohibited cross-country travel except in very few areas and situations in the AAW and JMW. Trails and use trails with the greatest potential for instability under recurring pack stock use were prohibited to commercial operations. This will greatly minimize the extent of effects on trails and resources in the trail corridors, and reduces the extent of potential effects off trails from cross-country travel. Combined with the actions in these alternatives, which also restrict use to approved routes in most areas traveled by the commercial operators, there will be a minor to moderate net beneficial effect to trail stability and reduction of off-trail resource effects throughout the planning area. Alternative 3 limits commercial stock travel to a greater extent than Alternative 2 (though it does so in areas with very low use), so if combined with the actions in the 2005 FEIS, there would be a slightly higher level of potential resource benefit than described in Alternative 2.

Since the selected alternative in the 2005 FEIS had the effect of restricting commercial operators from some areas of the AAW and JMW, this has the potential to increase use and the incentive for operators to access more destinations in the non-wilderness areas of the Forest. Both Alternative 2 and 3 would allow for continued use on most trails that are currently used by operators, which would ensure that commercial pack stock use displaced from the AAW and JMW can be absorbed in the non-wilderness areas of the Forest. Alternative 2 allows for a relatively high degree of flexibility outside of HDRAs, as well as a slight growth in herd size, with a potential minor growth in trail use in and out of HDRAs. Combined with the restrictions in the 2005 FEIS, Alternative 2 provides opportunity for commercial stock use expansion outside of the AAW and JMW. Alternative 3 also provides for continued use of most routes currently used by the operators, but allows for less flexibility and expansion of use, so it would limit the extent to which non-wilderness areas would absorb potential displacement of commercial stock use from wilderness areas.

Some destinations and trails in the AAW and JMW were prohibited to commercial pack stock in the 2005 FEIS. Where these are directly accessed by non-wilderness trails, with no viable destinations outside of the wilderness, these access trails were affected by the designations in the 2005 Trail Plan FEIS. Non-Wilderness trails directly accessing a wilderness trail that was previously designated Not Suitable for Commercial stock have not been approved for commercial stock in Alternative 3 in any non-wilderness area or in Alternative 2 if in HDRAs. It is unlikely that commercial operators would have used trails that lead only to the wilderness boundary without an approved wilderness destination, but this combined action will provide greater predictability about the commercial stock use of these non-wilderness trails. This will have a minor beneficial effect on trail

stability and maintenance costs on the specific routes not approved for commercial stock, and a negligible effect on trail stability and costs at the analysis unit scale.

Very little motorized use occurs in areas or on trails used by the commercial operators, with the exception of roads also used for stock drives, so there is generally not a combined effect of these activities on individual trails. The increase in motorized use, however, has created an expansion of trails and roads that serve motorized needs. The presence of commercial stock on the routes approved in this alternative would likely have no additive effect on increasing such motorized trail expansion.

The Pacific Southwest Region is undertaking a region-wide effort to inventory and designate routes as to their availability to motorized travel. This Travel Management Rule is known as the Region Five Route Inventory and Designation process, and should be complete by the end of 2008. It will determine which routes will have various types of motorized use, and may affect some of the routes currently used by commercial operators. At this time, it is unknown which routes will be off-limits to motorized use, or how it could affect stock drives or other commercial stock operations. It is likely that most motorized use patterns would not change substantially from current patterns. There is a potential beneficial effect in reduction of user conflicts and displacement of other non-motorized and motorized recreationists when the route designation process is implemented.

Stock drives occur almost entirely on maintained roads and motorized routes, where motorized activities often occur year-round. The effects of motorcycles, ATVs, SUVs and passenger vehicles on these routes have substantially greater effects on stability and maintenance needs on the network of roads than do the effects of horses and mules. While stock may have a slight temporary loosening effect on the surface of a road, the repeated travel of vehicles tends to counter this by compacting the surface almost immediately. Stock drive routes commonly travel to and through cattle grazing range. Cattle do not regularly use the roads, other than for short stretches, but commonly graze and travel along the same corridor that is used by the horses and mules during the stock drives. This disturbance of soil and vegetation in the route corridor likely has a similar type of effect, but at a much greater overall level than the passing of the horses and mules. Since ongoing road maintenance would occur based on the substantially higher demands of motorized use, there would be no change in maintenance needs with the addition of commercial stock drives at the levels described in both Alternative 2 and 3.

No specific management actions of other contiguous agencies are currently proposed which would create an additive effect to the actions in this alternative. Commercial operators use routes for stock drives which often start or travel through areas managed by contiguous agencies or private land. Current authorizations for use of lands and transportation systems for stock drives are subject to the permit terms and conditions of these other agencies. The authorizations for stock drives in these alternatives are not expected to create additive effects beyond those currently considered by the management of those non-Forest entities.

3.2.3.3 Montgomery Pass Wild Horse Viewing Area

Affected Environment

Two permittees, Frontier Pack Trains and Rock Creek Pack Station, have historically offered trips into the Montgomery Pass Wild Horse Viewing Area (MPWHVA) for viewing Wild Horses. Frontier bases their camps out of the Truman Meadows area, while Rock Creek Pack Station uses Pizona Springs. Camps used in these areas are accessed and supplied by vehicles. There are no system trails in the viewing areas, though commercially-guided clients use existing roads and cross-country routes to get within viewing range of the wild horses. Camp access follows native-surface roads to both camp areas. At least one well-defined non-system trail leads along a riparian zone near Truman Meadows, then connecting to roads on the dry uplands above. This route has received minimal maintenance — primarily brushing to keep the trail open—by either past cattle permittees or the current operator, or other recreationists. This route has some existing problems due to proximity to the riparian area.

Along the eastern edges of the horse territory, there are two routes used for trips not directly related to wild horse viewing. Following power line roads, Red's Meadow Pack Station (RMPS) offers a wagon ride between the Benton area and Bodie. Only about ten miles of this route is on Forest Land. Rock Creek Pack Station also offers rides in the same general area, following native surface roads between Benton and the Mono Lake area. Only about five miles of this trail are on Inyo National Forest land.

Environmental Consequences

Alternative 1 – MPWHVA

Direct and Indirect Effects

In this alternative, no commercial stock operations would be permitted in the Montgomery Pass Wild Horse Viewing Area. This would reduce the presence of commercial equestrian riders by approximately 900 service days from current levels. Due to the relatively low level of riders, as compared to the wild horses, it is likely that there would not be a noticeable or measurable change in user-created trailing effects by the complete removal of commercial operations from the wild horse area. At highly localized areas, such as routes in the immediate vicinity of camps, these minor effects would likely be somewhat greater than in the outlying viewing areas.

Cumulative Effects

The primary past, present and future actions that, when combined with actions in this alternative, may have cumulative impacts related to transportation include:

- Historic Cattle Grazing
- Presence of Wild Horses
- Other recreation on existing routes

Historically, this area was grazed by cattle and sheep, though the allotments have not been used by cattle since 1978. Trails that had likely been created by cattle or ranchers still remain, and have

continued to be used by the wild horses and commercial and private equestrians, especially where they access water sources. When cattle stopped using some of the wild horse area, maintenance of some of the enhanced water sources ceased, so some of them are not viable water sources any longer. This has changed the distribution of the animals and the resulting trailing. This has likely been leading to a minor increase in disturbance to natural springs and seeps in the area, as the smaller number of natural springs become the sole source of water for the wild horses. This effect will continue regardless of the presence of commercial operations. In general, commercial operations do not utilize the natural springs, so removal of the operations will have no or negligible beneficial effect.

In the Montgomery Pass Wild Horse Territory, the greatest trail-related impacts are those caused by the wild horses themselves. The last census showed that there are just over 100 wild horses in the area. Over the past decade, there have been as many as 250 wild horses counted. The animals are present year-round, and tend to frequent the very few springs and water sources in the area. This travel pattern has created well-defined paths in the areas commonly used by the horses, and more dispersed paths in the open range. Disturbance to springs and seeps by the wild horses is moderate in some areas. Compared to the wild horse impacts, the short-term use of the trails at Pizona Springs and Truman Meadows by commercial operators are negligible to minor and of a short duration. Removal of commercial operations would thus have a negligible to minor beneficial effect when combined with existing wild horse use in this area.

A series of native surface roads traverses the area, and are lightly used by four-wheel drive and OHV vehicles. There is little evidence of expansion of off-road motorized trailing in this area, though some of the more defined paths have some risk of off-road trespass by unauthorized all-terrain vehicles or motorcycles. It is evident that some of the roads are being used less than in past years, and some of the roads are reverting to a more primitive condition. The historical and existing use of these roads appears to have negligible to minor effects on road stability and expansion of additional routes; and these effects appear to be declining slightly over the long-term, as some of the original purposes of the roads have changed. There is some possibility that this use will increase over time as increasing numbers of motorized traffic utilizes the overall system. Since commercial stock and vehicles make up such a small amount of the use of these roads and routes, removing commercial operations from this area will not have a measurable additive effect on the transportation system when combined with the current activities of other recreationists.

Alternative 2 – MPWHVA

Direct and Indirect Effects

As proposed in Alternative 2, up to 500 service days each would be approved for two operators. This is approximately equal to the level of use which has occurred here during the past two years. Without defined trail networks, the use would continue to be highly dispersed over a wide area and the effect of this travel is slight. Due to the substantially greater quantity of wild horses present in the area

year-round, the relatively limited number of trips and service days of commercial users is anticipated to create no notable trailing concerns. The effects on trailing and resources in the travel corridors by authorizing wild horse viewing at the levels described in this alternative are likely to be unnoticeable to minor.

Direction in this alternative includes the ability to address current and future resource impacts caused by transportation in these areas by prohibiting routes with resource impacts and/or approving routes which are more stable. Over time, there will likely be a minor to moderate net beneficial impact—especially at highly localized areas, such as routes in riparian corridors.

Approved routes following existing roads between the wild horse areas and Mono Lake and Bodie would continue to receive low levels of use by commercial operators in this alternative. Since these routes follow power line roads and other primitive motorized roads, the effects of this anticipated use on the road surface or related resources will likely be negligible.

Alternative 3 —MPWHVA

Direct and Indirect Effects

Actions and effects related to transportation in the Montgomery Pass Wild Horse Territory are identical to those described in Alternative 2. Moving the base camps at Pizona Springs and Truman Meadows may have some very minor effects on current trailing patterns. That is, trails which are currently being used to access the camps—either at the initiation of a trip, or those branching out to viewing areas—will change over time. It is assumed that the areas where the camps would be located would tend to be in drier, more stable areas, so routes used by the permittees in the immediate vicinity of the camps would also likely be more stable than those currently used. This would produce minor beneficial effects at highly localized areas and slight to unnoticeable effect at the analysis area scale.

Alternative 2 & 3 - Cumulative Effects- MPWHVA

The primary past, present and future actions that, when combined with actions in this alternative, may have cumulative impacts related to transportation include:

- Historic Cattle Grazing
- Presence of Wild Horses
- Other recreation on existing routes

The actions and effects related to trails in Alternatives 2 and 3 are so similar, due to the extremely low use and potential effects, that there would be no discernible difference in the cumulative effects between these alternatives caused by the addition of the other described actions. For this reason, the cumulative effects are described for both alternatives.

Historically, this area was grazed by cattle and sheep, though the allotments have not been used by cattle since 1978. Trails that had likely been created by cattle or ranchers still remain, and have continued to be used by the wild horses and commercial and private equestrians, especially where they access water sources. When cattle stopped using some of the wild horse area, maintenance of

some of the enhanced water sources ceased, so some of them are not viable water sources any longer. This has changed the distribution of the animals and the resulting trailing. This has likely been leading to a minor increase in disturbance to natural springs and seeps in the area, as the smaller number of natural springs become the sole source of water for the wild horses.

In the Montgomery Pass Wild Horse Territory, the greatest trail-related impacts are those caused by the wild horses themselves. The last census showed that there are just over 100 wild horses in the area. Over the past decade, there have been as many as 250 wild horses counted. The animals are present year-round, and tend to frequent the very few springs and water sources in the area. This travel pattern has created well-defined paths in the areas commonly used by the horses, and more dispersed paths in the open range. Disturbance to springs and seeps by the wild horses is moderate in some areas. Compared to the wild horse impacts, the short-term use of the trails at Pizona Springs and Truman Meadows by commercial operators are negligible to minor and of a short duration. The effects of wild horse use, non-commercial use and commercial use combined will continue to have minor to moderate effects at seeps and springs from trailing.

A series of native surface roads traverses the area, and are lightly used by four-wheel drive and OHV vehicles. There is little evidence of expansion of off-road motorized trailing in this area, though some of the more defined paths have some risk of off-road trespass by unauthorized all-terrain vehicles or motorcycles. It is evident that some of the roads are being used less than in past years, and some of the roads are reverting to a more primitive condition. The historical and existing use of these roads appears to have negligible to minor effects on road stability and expansion of additional routes; and these effects appear to be declining slightly over the long-term. Due to minimal use of these roads and routes during authorized operations, the actions authorized in Alternatives 2 and 3 will not have a measurable additive effect when combined with the activities of other recreationists.

3.2.3.5 Ansel Adams and John Muir Wildernesses

The Trail and Commercial Pack Stock Management Final EIS (2005) described the affected environment and environmental consequences for the portions of the Ansel Adams and John Muir Wildernesses that are within the project area considered in this EIS. That analysis is incorporated into this document by reference. A description of the affected environment for Trails and Use Trails can be found in Chapter 3, on pages III-49 to III-82 of the Final EIS. An environmental consequences discussion of commercial pack stock use in the AA/JM Wildernesses for Trails can be found in Chapter 4, on pages IV-153 to IV-223.

The 2005 AA/JM ROD selected 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% 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.

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.

This alternative has the highest level of consistency of trail management 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 is 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% 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 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.

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.

3.2.3.5 Golden Trout and South Sierra Wilderness Analysis Unit

Affected Environment

There are approximately 270 miles of system trail in the Golden Trout Wilderness (GTW) and South Sierra Wilderness (SSW). Another 30 miles of non-wilderness trail and road provide access from trailheads to the wilderness boundary from the east and from Monache Meadows area. Forty miles of the Pacific Crest National Scenic Trail (PCT) traverses the eastern side of the GTW and SSW, from Sequoia National Forest boundary in the south to Sequoia National Park to the north. Most trails in the area are on moderate terrain, and are designed adequately to remain stable with minimal maintenance at current use levels. There are very few risk factors present in a combination that could affect trail stability—such as a combination of steepness of trail and terrain, erosive soils, connectivity to hydrology, and riparian habitat. There are many areas where trails traverse along or through meadows, but this typically occurs where the meadows are very low angle, so the trails have generally remained stable.

Commercial operators typically utilize approximately half of these trails on a recurring basis, generally at low levels or even less than annually on many trails. Additionally, there has been no restriction on off-trail use in the relatively moderate terrain of these wilderness areas, so pack trains occasionally access more remote camps using cross-country routes or well-developed non-system trails.

Because most trails and camps in this area are accessible earlier in spring than most other wilderness areas on the Inyo NF, much of the use occurs during early spring, when the meadows and trails may still be very wet—even pooled or running water may be in some trails and meadows. Some poorly-located trails may have substantial issues with early season water flows, while uplands a short distance away may be relatively dry.

Because of the relatively mild terrain and typically soft, sandy trail tread, this area is very popular among private equestrians. While hikers still outnumber equestrians on the trail system, there is a much higher ratio of stock to hikers in the GTW/SSW than in other wildernesses on the Inyo National Forest.

The area has a long history of commercial cattle grazing, and this use continues on a large part of the wilderness, mainly in the Mulkey Meadow and Monache Meadow areas. Allotments in the Big Whitney and Templeton Meadows are currently rested, and will remain so until at least 2010. The use of trails by cattle and the cattle wranglers has probably been the highest single use on many trails in the Golden Trout Wilderness during at least the past century. For this reason, a well-developed network of system trails accesses most of the key grazing areas. Less-visited areas also have faint or even well-defined use trails. Since cattle roam at will from one meadow to another—often along streams and bottoms of drainages—cattle trails have formed as a secondary network of transportation. These have commonly been used to access more remote areas in the wilderness by cattle permittees and other recreationists, including to a lesser extent commercial packers.

Horseshoe Meadows and northern Golden Trout Wilderness

Currently only one operator, Cottonwood Pack Station (CPS), has base facilities at trailheads accessing GTW/SSW trails. This operation is based out of Horseshoe Meadow Trailhead. CPS generally operates annually on just over 100 miles of trails in the northern Golden Trout Wilderness. The primary trails used by this operator are the Cottonwood Lakes Trail leading north from the pack station into the John Muir Wilderness, Cottonwood Lakes Trail, Trail Pass Trail, the Pacific Crest Trail, and trails leading to Mulkey, Tunnel, and Templeton Meadows. Trails from Horseshoe Meadows are also used to access Sequoia National Park—most commonly over Cottonwood Pass, and following the PCT into the Park just east of Siberian Outpost. Mount Whitney Pack Trains (MWPT) also uses the Horseshoe Meadows trailhead for ingress or egress for certain GTW trips.

The GTW boundary is very close to the roads, campgrounds, and pack station at Horseshoe Meadows, so there is very limited opportunity for operations in non-wilderness. For this reason, and due to the remoteness of the pack station and trailhead (25 mountain driving miles from the nearest small town), CPS has historically done very few non-wilderness day rides, and has not historically used specific non-wilderness day-ride trails. In contrast to other operators, the vast majority of day rides is longer than two hours, and uses various trails in the Golden Trout Wilderness. On average, 90% of the day rides are either ½ day or full-day rides. In the last few years, these rides average approximately 100 day rides per year. For short day rides, CPS utilizes a combination of trails that roughly encircle the Horseshoe Meadows area.

Southern Golden Trout Wilderness and South Sierra Wilderness Area

The main commercial pack station operating on the southern part of the GTW and SSW is Mount Whitney Pack Trains (MWPT). The operation is jointly owned by Rock Creek and Reds Meadow Pack Stations, and does not have its own base facilities providing access to the GTW/SSW. When operating as MWPT, they must truck their stock to trailhead—most commonly the Olancha Pass Trailhead at Sage Flat. MWPT occasionally uses the Horseshoe Meadows Trailhead to start or end trips. Glacier Pack Trains (GPT) also has historically operated a small number of trips on the South Sierra Wilderness, over Olancha Pass and Haiwee Pass trails.

MWPT typically runs trips on less than 100 miles of the 300 miles of system trails leading to and within the GT/SSW on a somewhat regular basis. Trails most commonly used by MWPT include Olancha Pass Trail, Pacific Crest Trail, Monache to Strawberry Trail, and Templeton to Mulkey Trail. When using Horseshoe Meadow Trailhead, MWPT uses Trail Pass and occasionally Cottonwood Pass Trails. Trails that are used less frequently include Haiwee Pass, and other trails accessing the GT/SSW from the Monache Meadows area.

Since MWPT does not have a pack station in this area, they do not technically run day rides, except as clients may ride from camps in the wilderness. MWPT also does not run traditional “stock drives”, where they push their own horses and mules between winter and summer holding areas. They do participate in cattle drives, assisting cattle permittees in driving the herd to allotments in the GTW. These cattle drives typically follow roads in the Owens Valley, leading to trails historically

used by cattle permittees. In the case of the Olancha Pass Stock Drive Trail, sections used by the cows are so steep and rugged, that MWPT clients ride the Olancha Pass recreation trail that is stable, well-graded, and relatively easy for equestrians. The remainder of the cattle drive follows roughly along the Olancha Pass Trail, descending into Monache Meadows, where use is dispersed.

MWPT offers trips in which clients accompany the cowboys who are driving the cattle herds over Olancha Pass to Monache Meadow and the Golden Trout Wilderness. The route used by cattle east of Olancha Pass is exceedingly steep and potentially risky for most equestrians, so the clients stay on the primary system trail over the pass. As they descend west of the pass, the clients, like the cattle, follow a wide swath that is often not limited to the actual trail.

Additionally, some other packers have occasionally operated in this area on a case-by-case basis—often driven by heavy snow conditions in their normal operating areas or responding to special requests. Overall, the commercial use is very low in this area—especially relative to the vast acreage and many miles of trail in the Golden Trout Wilderness.

Environmental Consequences

Alternative 1 – Golden Trout and South Sierra Wildernesses

Direct and Indirect Effects

Since no commercial stock would be permitted on Golden Trout and South Sierra Wilderness trails in this alternative, there would be no direct or indirect effects to the trail system from authorized activities of commercial operators. Compared to the current levels, there would be a reduction in overall use of the trails. It is likely that trails in the immediate vicinity of pack station facilities would see a substantial reduction in use, while trails in the outlying areas would still receive a great deal of recreational activity by non-commercial users, including private equestrian use, so use in these areas would only reduce slightly if at all from current levels. Trails most commonly used by Cottonwood Pack Trains, such as Cottonwood Lakes Trail, Cottonwood Pass Trail, and Trail Pass Trail, would have the greatest reduction in equestrian use. Trails used most heavily by Mount Whitney Pack Trains (Olancha Pass Trail, Pacific Crest Trail) would see a modest reduction in equestrian use. This would have minor to moderate beneficial effects on localized areas and a negligible to minor reduction of erosion and soil movement on the remainder of the trails. It would have a negligible to minor beneficial effect on the need for short-term and long-term trail maintenance.

Cumulative Effects

Other actions in this area which have effects and potential combined effects with commercial pack stock authorizations are described in detail in Alternatives 2 and 3. Because the current effects of commercial stock on the transportation system in the GTW/SSW are negligible to minor, the removal of these commercial activities would have nearly immeasurable consequences when added to the other actions described in this area. There is a very slight potential for the gradual loss of certain

trails currently used by commercial operators that have historically also been used by cattle operations that are no longer operating in the Golden Trout wilderness. This would be due to the changed purpose of the trails and the resulting reduction in use and demand for the trails, combined with the need to focus limited trail maintenance funds on trails with relatively higher use.

Overall, compared to the cumulative effects described for Alternatives 2 and 3 (below), there would be a negligible to minor reduction in the scale of effects. In most cases, these would be immeasurable, with the exception of trails in the immediate area surrounding Horseshoe Meadows, the Cottonwood Pass Trail and on the Pacific Crest Trail north of Cottonwood Pass.

Alternative 2 –GT/SS Wildernesses

Direct and Indirect Effects

In this alternative, the two historical operators (CPS and MWPT) would be permitted to operate and use trails in roughly the same way that they have in the past. The outfitter guide Three Corner Round (TCR) would also be authorized to operate on all trails in the GTW/SSW. TCR is authorized for 100 service days in this area. Additional pack station operators could request use in the GTW/SSW on a case-by-case basis at limited numbers.

This alternative allows for resource-based restrictions on the use of specific trails and when driven by resource issues, requires commercial operators to stay on designated trails and out of wet meadows until after range readiness dates (for grazing) have been reached. In general, after range readiness is reached, operators would be allowed to travel cross-country as in the past, except in areas with identified concerns.

Cottonwood Pack Station would be authorized to use specific wilderness and non-wilderness trails for day rides in the Horseshoe Meadows area. The designated trails that the operator would be required to use have generally been stable and with few risk factors, so impacts resulting from the small number of authorized day rides are expected to be minor to negligible. Additionally, it is highly unlikely that there would be a substantial increase in the demand for day rides and resulting growth of this activity in this area. Effects to trails and related resources in this area from day rides are anticipated to be minor and isolated.

As described in the introduction above, the current levels of use are having very minor effects on trails in and accessing the Golden Trout and South Sierra Wildernesses. Authorizing use at the levels prescribed in this alternative will likely have negligible to minor short-term effects on trail stability and resources in the trail corridor, comparable to the current effects from existing use.

Limiting use to dry trails and away from wet meadows during early season (prior to range readiness “on-dates”) should have a minor to moderate beneficial effect on trails and related resources compared to the current situation. At highly localized areas, such as particularly soft meadow soils, there could be localized minor to moderate beneficial effects by the prevention of new use trails and potential headcuts and other damage prior to readiness dates.

Alternative 3 – GT/SS Wildernesses

Direct and Indirect Effects

Transportation-related actions and effects related to trails in the Golden Trout and South Sierra Wildernesses are identical to those described in Alternative 2.

Alternatives 2 and 3 – Cumulative Effects– GT/SS Wildernesses

The actions and effects related to trails in the GTW/SSW area in Alternatives 2 and 3 are identical and there would be no discernible difference in the cumulative effects between these alternatives caused by the addition of the other described actions. For this reason, the cumulative effects are described for both alternatives.

The main activity occurring in the GTW/SSW that affects trails when combined with commercial pack stock activity is continued cattle grazing—including the driving of cattle herds along system trails. As described in the affected environment section above, this use has been the predominant use and the primary impact on the trail system for most of the century. Cattle have their greatest effect on trails when being driven in a large herd through a trail corridor. When the animals crowd through tight spaces or descend directly down open slopes across trails, there are substantial effects on the trail and surrounding resources. Rock walls are disturbed and undermined; the excavated trail tread can be almost completely removed, and replaced with a braided pattern of cattle trails. Soils in the corridor are disturbed each fall and spring, crushing vegetation and preventing the establishment of seedlings and larger vegetation.

On steeper slopes, the loosened soils become susceptible to erosive forces, leading to massive soil movement and sedimentation. The effects of this are most evident on the Olancha Pass stock drive trail climbing directly up the drainage from Sage Flat to Olancha Pass. This route has historically been used by multiple cattle permittees to access Monache Meadows and the Whitney and Templeton Allotments. Due to the steepness and route location, even complete removal of cattle from this driveway would not correct the problems; and would only slow the rate of soil movement and vegetation damage. Since MWPT accompanies existing authorized cattle allotments on this route, and generally uses the main Olancha Pass recreation trail for clients, instead of the cattle drive trail, there is no measurable additive effect for the type and level of activities approved in Alternatives 2 and 3.

Once the cattle disperse into the grazing range, the effects are also more dispersed, but are generally greatest along stream banks and wet meadows where the animals leave lasting trails while moving between grazing areas. Where cattle wander in a parallel path to system trails, the braided cow trails often create confusion for recreationists attempting to follow the system trail. Since use has been taken off of the Whitney and Templeton Allotments, use and detrimental effects to some of these trails has been slightly reduced. The effects of cattle on trails and resources in the trail corridor are minor to moderate at the wilderness scale; with locally moderate to major impacts on certain trails.

Cattle have not grazed the Whitney and Templeton Allotments since 2000. This has had a notable beneficial effect on certain system trails and related resources. This is primarily evident in the narrow corridors along riparian zones near Strawberry and Templeton Meadows and along Golden Trout Creek near Little Whitney Meadows and below Big Whitney Meadows. Past cattle travel had created multiple use trails paralleling the system trails between Strawberry and Templeton Meadows, causing trampling, erosion, water diversions, and confusion for trail users. Trails in the Golden Trout Creek area, where terrain is steeper and rockier, had been heavily damaged, requiring frequent repairs—primarily from the undermining of retaining walls and structures by uncontrolled cattle travel. Since cattle have not been in these trail corridors, the trails are more stable, there are fewer off-trail disturbances, and cattle trails appear to be naturalizing. Trail structures require less repair and maintenance. Commercial pack stock use, which remains primarily on trail ways, would not have the same effects as uncontrolled cattle travel, and at use levels proscribed in this alternative, would have negligible or unnoticeable effect on these trails. It is anticipated that trails and related resources in these rested allotment areas will continue on a gradual upward trend in condition with anticipated types and levels of use authorized for commercial pack stock in these alternatives.

Any of the operators authorized to use the Golden Trout and South Sierra Wildernesses could potentially access the Sequoia National Park by way of two primary trails – the Pacific Crest Trail (PCT) north of Cottonwood Pass and the Siberian Pass trail. Cottonwood Pack Station could also access the Park over New Army Pass in the John Muir Wilderness. The PCT is a very well-developed and maintained trail both in the Park and on the Forest, and is capable of withstanding the use levels proscribed in these alternatives. There is little possibility that maintenance levels would be substantially change on the PCT, regardless of increases or decreases in commercial pack stock use. The Siberian Pass trail is rarely used to access the Park by the commercial operators currently, and is a relatively low-standard trail on both sides of the pass. Commercial use levels would continue to remain low on this trail, and effects on the Park trail system from use of the trail at levels anticipated in these alternatives would likely be negligible to minor.

The Sequoia NP is expected to develop Wilderness guidance in this area during the next five years. It is possible that this could slightly change the use levels or use patterns of the pack stations. This could change commercial trail use slightly, but would likely have minimal or no noticeable effect on trails or resources in the immediate trail corridor in both the Park and the Forest when combined with actions in these alternatives.

The Golden Trout and South Sierra Wilderness Areas have had a long history of recreational use—primarily by equestrian travelers. The current use of this area by hikers and equestrians is much lower than its peak in the early-mid 1900s, when cabins served the many tourists who were packed around by many small commercial pack stations. The trail system was fairly well-developed for heavy stock use, despite some poor alignments following the line of least resistance along streams or meadows. With today's reduced recreational and grazing use, the trail system is generally stable. The effects of non-commercial equestrian and hiker recreation on the trail system are minor at the wilderness scale, and generally minor to moderate at the local scale. Authorizing commercial stock

use of trails at the levels described in these alternatives would have only negligible to minor additive effect to trails or expansion of routes.

Wildfires – sometimes very large – have historically affected some trails in the Golden Trout and South Sierra Wildernesses, due to the relatively heavy timber and vegetation here. In 2003, the McNally Fire burned roughly 20,000 acres in the Nine Mile Creek (Jordan Hot Springs and Redrock Meadows area) of Golden Trout wilderness. Approximately 20 miles of trail were in high-severity burn areas, and received immediate treatments to prevent erosion and watershed damage. During the following two years, additional treatments and removal of fallen trees was done to keep the trails open. Annually, between 100 and 200 substantial trees are falling on or across these trails, and are expected to do so in high numbers for the next decade. During 2006, some sections of trail were not cleared fully, and due to limited trail maintenance budgets, this may continue, making the trails temporarily impassable to stock.

In order to prevent trail damage and erosion from bypass trails, commercial operators are not allowed to bypass obstacles on trails; so even though all trails in the Golden Trout and South Sierra are technically available for commercial use, trails in areas with large amounts of post-wildfire deadfall would indirectly be closed to operators until cleared. This could potentially affect the two pack stations that operate in the GTW, if clients desired to travel to these locations. However, no commercial stock use has been reported on these trails during at least the past five years, and it is anticipated that extremely low commercial demand will continue here, due to the remoteness from base facilities and trailheads. Private equestrians, though inconvenienced by downed trees, could technically bypass the logs, creating additional erosion and minor trail damage. Since commercial stock would not be allowed to do this, there should be no added effect. The additive effects of anticipated commercial pack stock use and wildfires in this particular area are expected to be negligible.

Roads and trails in the Monache Meadows area receive moderate to heavy use by four-wheel drive and off-highway vehicles (OHV) during about two months every summer. Certain motorized roads and trails in the Monache area have developed resource instability because of heavy use in some areas with risk factors. Many of the most susceptible sections have been rerouted, repaired and maintained, so are generally stable. Trails and roads in the areas used by commercial pack station operators (mostly on the east side of Monache Meadows) are generally dry and stable due to relatively low grades and generally well-located alignments. There is no measurable additive effect of commercial stock on these roads because commercial pack stock rarely use these roads.

Reduced funding levels for maintenance and reconstruction through the years have left certain trails somewhat substandard. This is most evident in the overgrowth of vegetation on some trails and fallen logs sometimes not being removed for multiple years on some trails. This has the potential to cause some disturbance outside of the trail tread as hikers or stock bypass obstacles. In the terrain that is typical in the GTW/SSW, however, these effects tend to be relatively low, since the slopes are of moderate grade, and the bypasses are easy, short, and do not deteriorate as much as in steep loose terrain of other wilderness areas on the forest. Since use levels on many of the more remote trails in

the GTW/SSW are so low, the use itself often does not keep trails open and evident. With reduced budgets, these low-use trails are also the least likely to receive priority maintenance, so there is a possibility for the gradual loss of certain trails over the long-term. The effects of low levels of maintenance on the trail system and associated resources in this area are likely to be negligible to minor at the wilderness scale, and minor to moderate at localized areas on specific trails.

3.2.4 Heritage Resources and American Indian Concerns

Heritage Resources

Introduction

Heritage resources, sometimes called cultural resources, are the material cultural remains left by human activities. They include archaeological sites, historic buildings, cultural landscapes, objects, and environmental features that inform us about human activities. With few exceptions, the basis for treatment of a particular heritage resource is whether it is significant, that is, whether it is eligible for listing in the National Register of Historic Places (36 CFR §60). The National Register considers research value, commemoration of important events and people, examples of unique or outstanding properties, and/or intrinsic elements of an on-going traditional cultural system. A determination of significance may be made at any time; however, NEPA actions trigger Section 106 of the National Historic Preservation Act (NHPA) which requires federal agencies to consider the effects of their actions, such as permitting pack stock operations, on heritage resources that may be eligible for the National Register. These eligible resources are called “Historic properties” and are defined in the implementing regulations of the NHPA (36 CFR §800.16.1[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.” All unevaluated heritage resources are considered potentially eligible until they are formally evaluated.

American Indian tribes, communities, organizations and individuals all have a constitutionally derived role in federal land management (Reynolds 1996b). American Indian Concerns include many historic properties among other sociocultural concerns.

The Ansel Adams and John Muir Wildernesses analysis unit is addressed in *Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses FEIS, December 2005*. Analysis of the effects of the various alternatives and compliance with Section 106 and American Indian concerns for both that FEIS and the current effort was done under 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 & Sierra National Forests* (Strategy). The Strategy was developed in consultation with the Tribes, interested parties, the California SHPO and the ACHP. Treatment of historic and potentially historic properties will be done under the stipulations of the *Programmatic Agreement among the Pacific Southwest Region, USDA Forest Service, California State Historic Preservation Officer, Nevada State Historic Preservation Officer and the Advisory Council on Historic Preservation Regarding the Identification, Evaluation and Treatment of Historic Properties within the Area of Potential Effect of Pack Station and Outfitter Guide Operations on the Inyo and Sierra National Forests, California and Nevada* (PA). The PA will exist for the life of the

permits and will guide the management of historic values and provides for the development of Historic Properties Management Plans (HPMP) for each pack station and outfitter guide operating area.

The following discussion is divided into an affected environment section and an environmental consequences section. The affected environment begins with a discussion of all the analysis units. It contains a description of analysis elements and indicators, followed by an overall discussion of area history, prehistory and Native American concerns. Analysis unit specific discussions will add specific details where needed.

The environmental consequences are only discussed on an entire project area scale, not by individual analysis units. The sensitive nature of heritage resources information means that specific sites cannot be disclosed. Because of this, and because the effects are similar by analysis unit and do not change based on location, it would be redundant for analysis to be completed by analysis unit. A brief synopsis of the affected environment and environmental consequences in the AA/JM Wildernesses is included here. This document incorporates the AA/JM FEIS by reference.

3.2.4.1 Affected Environment

All Analysis Units

Analysis Elements/Indicators

Analysis Elements: Within the broad definition of historic property, there is a sub-set of properties that may be impacted by the particular activities. These are the Resources of Interest (ROI). For this analysis, ROI are those heritage resources that may be impacted by packing and outfitter guide operations.

A multi-year monitoring program involving over 300 heritage resources in the Ansel Adams and John Muir Wildernesses on both the Inyo and Sierra National Forest was designed to determine the types of impacts that occur from pack station operations on historic or potentially historic properties. It was found that impacts from pack station operations are confined to certain resource types (Reynolds and Kerwin 2002, 2003; USDA 2005). Further analysis on the Sierra National Forest involving non-wilderness operating areas has expanded these findings (Miller, personal communication, 2006). For purposes of this analysis, these findings have been extrapolated to burro based operations and to the other operating areas on the INF.

Indicators: Indicators of impacts to ROI are those which can measure the presence/absence of historical properties, their integrity and the condition of property constituents, and the condition of properties and their constituent parts.

Each of the ROI listed in Table 3.11 has helped to shape the modern landscape of the Area of Potential Effect (APE), and each has left distinctive remains, from Paleoindian projectile points to modern pack stations. The remains, the “historic properties” as defined above, are important because they are representative of broad patterns of human history, commemorate important events and people, provide examples of property or are the only remaining example, and because often at remote

historic sites and always at prehistoric sites they are the sole repositories of information about human activities in these remote areas.

Within the proposed permit boundaries there are areas in which permitted activities occur which may impact heritage resources. Under Section 106 this is called the Area of Potential Effect (APE). For this analysis the APE consists of localities connected by roads, trails and stock driveways located throughout the permit area. These localities may then be further broken down into the four activity clusters with differing impacts on ROI.

1. Pack Station Permit Area: The pack stations' permit area including the footprint (i.e., administrative buildings and associated features including spike camps), fences, pastures and corrals;
2. Travel Corridors: Trails used by people on foot or stock, stock driveways, and stock loading areas;
3. Concentrated Use: Campsites, lunch stops other stopping areas, stock holding areas and watering sites; and
4. Dispersed Use: open grazing and open riding areas.

Table 3.11 Heritage Resources of Interest

ROI Type	Indicator
Pack Station Permit Areas	Presence/absence of contributing features, historic character of contributing features, integrity of association.
Historic era trash dumps	Presence/absence of diagnostic artifacts, ability to derive historical data, horizontal/vertical integrity of deposit.
Historic era drift fences	Presence/absence.
Historic era linear features such as railroad grades, water ditches, etc.	Structural integrity.
Pack stations and associated features	Presence/absence of contributing features, integrity of features and association.
Historic & prehistoric rock structures	Structural integrity.
Prehistoric obsidian and other stone tool quarries and workshops	Presence/absence of diagnostic artifacts, ability to derive scientific data, horizontal/vertical integrity of deposit.
Sparse lithic scatters	Horizontal/vertical integrity, ability to derive scientific data.
Prehistoric habitation sites	Horizontal/vertical integrity of deposit, structural integrity, presence/absence of diagnostic artifacts, ability to derive scientific data.

Based on current knowledge, there are a total of 272 ROI throughout the APE: 92 in the Ansel Adams/John Muir Analysis Unit, 11 pack stations and 94 others in the Non-Wilderness Analysis Unit, seven in the MPWHVA Analysis Unit, and 68 in the Golden Trout/South Sierra Analysis Unit.

Heritage Resources

Human history takes place alongside environmental history. When the first evidence of human activity in the Sierra Nevada appears, approximately 7,500 years ago, the passes had long been deglaciated and the region supported big game (Stevens 2002, Jackson and Jackson 1977, Jackson

and Morgan 1999, Theodoratus et al. 1984). The front country and Montgomery Pass area were occupied much earlier, perhaps as early as 13,000 years ago, as evidenced by the presence of Paleoindian projectile points and other tools associated with long vanished wetlands (Basgall 1987; Basgall and McGuire 1988; Burton 1996; Davis 1963, 1965; Enfield et al. n.d.; Hall 1990; Hillebrandt 1971; Reynolds and Woolfenden 1993). More precise dating cannot be given at this time because published dates have not been recalibrated to reflect advances made in radiocarbon calibration curves for the late Pleistocene/early Holocene period (Blackwell et al. 2006; Reimer et al. 2004).

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. A significant environmental factor throughout the span of prehistoric human activity in the APE has been the periodic eruptions from the Inyo-Mono Craters which blanketed much of the APE, causing localized disruptions in use (summarized in Jackson and Morgan 1999; see also Bettinger 1991). Information about past environments may be found in fens, meadow soils, tree rings, *Neotoma* sp. middens, tephra deposits, and archaeological sites.

The APE remained relatively untouched during the Spanish and Mexican periods but with the discovery of gold, “The World Rushed In” (Holliday 1981), drastically disrupting indigenous lifeways. This occurred toward the end of the Little Ice Age, a cooler and wetter time than today. The earliest documented non-Native Americans in the eastern Sierra Nevada were the Jeddah Smith party sometime in the 1820s; the expeditions of Joseph Walker into the Owens Valley between 1833-1834 and, as guide for the Chiles Company, in 1844; the expedition of Lt. Treadwell Moore who saw Mono Lake in 1852; and the punitive expedition of Capt. Davidson up Owens Valley to the Owens River Gorge in 1859 (Chalfant 1933, Wilke and Lawton 1976).

Settlement began in earnest with the discovery of gold in the Bodie Hills and the Sierran canyons in 1959 and silver in the Coso Range in 1860 (Billet 1968, Caldwell 1990). Tungsten, a strategic mineral, has been mined in Pine Creek and other locations around Mt. Tom. Closely following the miners were the settlers with domesticated crops and animals, and the rise of a timber industry (e.g., Chalfant 1933; Sawyer 1986). This had a devastating effect on the indigenous Paiute and Shoshone people. Irrigation ditches from Round Valley to Owens Valley to George’s Creek were taken over by settlers and cattle put out to pasture on irrigated lands (Lawton et al. 1976). Pinyon pines were cut down (Reynolds 1996a), people were evicted from their homes, and traditional lifeways which had involved relatively free movement across the landscape to needed resources disrupted by American land ownership practices. After the Owens Valley War of 1862-1863, a policy was enacted that would remove the people to Ft. Tejon on the Tule River. Although many of the native inhabitants of Owens and Long Valleys were rounded up and force marched out of the valley, most who survived returned and the goal of depopulation was never fulfilled. This was due not only to the resistance of the people themselves but also because of their economic importance to the non-Indian settlers (Chalfant 1933; Walton 1993).

In the late 19th century the area became a recreation destination. Wilderness areas on the Forest came under Federal land management beginning in 1893 with the creation of the Sierra Timber Reserve. The Forest itself was created in 1907 in order to protect the watershed of the Owens River for Los Angeles (INF Forest History Files). Water appropriation for hydroelectric, municipal and irrigation use has shaped regional history (Kahrl 1976; Walton 1993). Links with the southland were further strengthened when as the movie industry developed and made use of eastern Sierra locals and many people associated with the industry established summer homes here. Research in many scientific fields is an important historic element and the area has world-wide attention in topics ranging from the ancient bristlecone pine to glaciology to human prehistory.

Packing History

A thematic historic of pack station operations on the INF has been prepared and all the pack stations individually researched and recorded (Woolfenden 2006). See Appendix G for a discussion of packing history, the packing sub-culture, and brief synopses of the history of individual pack stations. Here we provide a brief summary.

Mule pack trains were the primary carriers during the Spanish and Mexican administrations, during the Gold Rush. There was a resurgence in the latter part of the 19th century with increasing attention given to the Sierra Nevada by the United States government, military, scientists, commercial enterprises, hydroelectric development and recreationists. Recreational packing began in Yosemite Valley in 1855 (Farquhar, 1925, 1965). The towns of Visalia in the San Joaquin Valley and Lone Pine in the Owens Valley became the west and east trailheads for mountaineers, hunters, fishermen, explorers, and recreationists taking pack trains into the high country. (Farquhar, 1965: Dilsaver and Tweed, 1990; Jackson, 2004).

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). After World War I there was a depression during which 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.

During the Great Depression, there was also work for packers to haul tools, materials, and equipment to Civilian Conservation Corps (CCC) camps. The Works Project Administration (WPA) and Emergency Conservation Work (ECW) 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). 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 (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.

After WW II, with 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). 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.

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 some of the pack stations supplement their income by offering saddle day trips to tourists, organized horse drives in the Long Valley and Mono Basin areas, and trips to view wild horses. 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.

Table 3.12 presents a summary of human history in the project area.

Table 3.12 Summary of Area History and Prehistory		
Ansel Adams/John Muir	Non-Wilderness & MPWHVA	Golden Trout/South Sierra
Paleoindian/Pre-Archaic Period ~13,000 – 7000 Years Ago		
-no direct evidence of human activity	-Few archaeological sites; -Land-use concentrated in the lowlands; -Highly mobile, nomadic populations. -Some milling equipment.	-no direct evidence of human activity
Early Archaic ca. 7500 – 3500 BP*		
<u>Taboose Pass Sites</u> -Earliest use. <u>Bishop Creek Site</u> -Earliest use. <u>Rush Meadow District</u> -Use begins and becomes frequent by ca. 5500 BP -Obsidian tool making. <u>General High Sierra</u> -Hunting	-Multifunctional large and small sites in the lowlands. -High degree mobility with a 12,500km ² territory. -Sporadic hunting forays into uplands.	-Sporadic hunting forays onto the Kern Plateau after 5950 BP.
Middle Archaic ca. 3500 – 1350 BP		
<u>Taboose Pass Sites</u> -Greatest procurement of obsidian by west-side groups. <u>Bishop Creek Site</u> -Use well established. -Obsidian tool making. <u>Rush Meadow District</u> -Use well established. <u>General High Sierra</u> -Greater use of Sierra. -Abundant obsidian workshops along travel routes.	- Functionally differentiated sites; -Greater use of the uplands with plant and animal exploitation; -Centralized villages in the lowlands with movement primarily north/south; -Trans-Sierran trade; -Peak in biface production at the major quarries	-Use by both eastside and west side groups; -First appearance of milling equipment.
Late Archaic ca. 1350- historic contact		
-introduction of the bow and arrow <u>Taboose Pass Sites</u> -Initial occupation of complex sites similar to the White Mtns. -Decreased use of limited-use trading or hunting sites. <u>Bishop Creek Site</u> -use continues, then declines & <u>Rush Meadows District</u> -Use continues <u>General High Sierra</u> -Intensive-use sites near major passes and travel routes -Decline in limited use hunting sites. -Introduction of bow and arrow	-Intensification of pinyon use. -Introduction of bow and arrow -More intensive use of marginal environments -Decline in upland hunting forays. -Inception of alpine village pattern in the White Mountains. -Decline in obsidian production at all major quarries. -Intensification of pinyon use. Further decrease in seasonal mobility, with territorial demarcation of "district" boundaries; -Irrigation in Owens Valley;	-Introduction of the bow and arrow -Large, seasonal villages. -Continued use by peoples from both sides of the Sierra.
Historic Period~150 Years Ago to Present		
-Massive disruption of indigenous lifeways through invasion, introduced disease and confiscation of aboriginal lands. -Introduction of domesticated plants and animals. -Rise of market economy focused on extraction of resources (minerals, timber, water). -Incorporation of indigenous peoples into market economy. -Focus on recreational opportunities. -Rise of land and resource management. -Area becomes a focus for the film industry. -Area established as a major research area for the cultural, biological and earth sciences. -Establishment of reservations for majority of indigenous peoples. -Rise of the environmental movement and reversal of some landscape degradation.		

American Indian Issues and Concerns

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, Big Pine Indians of Owens Valley, Utu Utu Gwaitu Paiute, Bridgeport Indian Colony, Fort Independence Paiute, Lone Pine Paiute-Shoshone, Timbisha Shoshone, and the Walker River Paiute.
- Tribes in the process of seeking federal recognition: Mono Lake Indian Community, and the Kern Valley Indian Community.

Many American 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. may remain. Protection of remaining sites, access to sites and traditional use areas, and the protection of places of tribal value is important. Contemporary concerns in the operating area include access to traditional resources such as pinyon pine nuts, piñon, and basketry material; protection of the sites on the ground that are part of their cultural history, and the protection of burials, both modern and ancient.

Non-Wilderness Analysis Unit

Heritage Resources

This analysis unit is a very long one, stretching along the Sierran front from the Mono Lake Basin to south of Mt. Whitney and east into the Great Basin. More so than the other areas, it is an area of tremendous vertical relief and vegetative diversity with great biotic and botanic variability within a relatively small area. Taken as a whole, an east to west transect provided prehistoric peoples with a variety of environments from which to get their groceries. The following information is taken from the Forest Heritage Resource files in addition to the citations throughout.

A unique element of this analysis unit, one which contributes a large chapter the prehistoric story, is the volcanic landscape. It one is rich in tool stone quality obsidians that were used throughout human history and into the present day. Well known sources located in the analysis unit are Casa

Diablo, Mono Craters, and Mono Glass Mountain. The Truman/Queen source in the MPWHVA will be discussed here as well. This unit is one of the major foci for the study of obsidian procurement world-wide.

The Casa Diablo source is the glassy members of the resurgent dome of the Long Valley Caldera. The source is not to be confused with Casa Diablo Mountain, located approximately 15 miles southeast of the southernmost of the Casa Diablo quarries. The quality of the obsidian is generally very high. It appears that most of the material was taken from the surface or outcrops but evidence of mining is found in the form of shallow pits at three localities (Reynolds et al 1994). The diagnostic artifact types are debitage (flakes) and the core stones they were struck from. The size, type and other characteristics of flakes and cores provide information about what type of reduction technology was used and what type of tools were being formed. Associated artifacts are hammer stones and abraders (soft pumice stone used to roughen up a flake's edge in preparation for working).

Artifacts have been made from Casa Diablo glass since Paleoindian times (Basgall 1987, 1989; Hall 1990). Casa Diablo obsidian is widely distributed along the Sierran front from Mono Basin south to Owens Valley and east into the White-Inyo Mountains, Deep Springs Valley and Fish Lake Valleys. Great quantities are found on the west side of the Sierra Nevada and to a lesser extent in other far-flung localities (e.g., Basgall 1983, 1994; Goldberg et al. 1990; Hall 1993; Jackson *et al.* 1994).

Mono Glass Mountain is the highest point on the Glass Mountain Ridge, which forms part of the eastern boundary of Long Valley. It consists of a series of rhyolite flows extruded between 800,000 and 2,100,000 years ago (Metz and Mahood 1985). As the name suggests, the source contains vast, highly visible obsidian outcrops. Quarries are found in ash flows and fluvially redeposited material located the canyons east and west of Glass Mountain itself. A survey of the source and determination of source boundaries have yet to be done.

Mono Craters are the northern portion of the Inyo-Mono Craters located in Mono Basin south of Mono Lake. As with Mono Glass Mountain, its use seems to have been localized.

The Truman/Queen source is a widely dispersed Tertiary volcanic field with primary deposition is in the vicinity of Truman Meadows and redeposition throughout Queen Valley and into northern Benton Valley (Halford 1997; Ramos 2000). Unlike Casa Diablo, Truman/Queen was moved primarily to the east (Hughes and Bennyhoff 1986).

Another unique feature this analysis unit shares with MPWHVA is the pinyon-juniper woodland and the associated complex of historic properties, artifacts and features. Prehistoric exploitation is a regional research topic tied closely with the understanding of Great Basin prehistory and ethnography as well as the study of hunter-gathers in general. Major work has been done in this area to develop the existing models. Remaining sites in the APE contain important data to contribute to the on-going study of pinyon-juniper woodlands

Throughout its range, the pinyon pine nut was reported to be the most important food resource for Great Basin folk (Steward 1938). Fowler (1986:65) described the complex as follows:

Small harvests were carried down to the valley in baskets by women and in skins by men. Large harvests were cached: Cones were stored in pits on sunny hillsides that were lined with rocks and

covered with needles, boughs and more loose rocks; loose seeds were stored in grass-lined and covered pits. Wooden mortars found in the pinyon groves in eastern California indicate that they were used--with pestles--in addition to stone manos and metates (Coville 1892; Reynolds 1991; Steward 1933; Reynolds and Woolfenden 1988). Other uses of pinyon include the use of the pitch as mastic and as waterproofing in baskets (Beling 1986); wood in house and cache construction (Steward 1933); and for fuel (Lanner 1981).

Recently a variety of pinyon management practice, including the pruning of limbs, pinching of buds to make the produce more, and "whipping" pinyon tress have been described in depth by Fowler (1994) for the Timbisha Shoshone. Reynolds (1997a) reports similar accounts from elders of the Owens Valley Paiute Tribe and Bridgeport Indian Colony. One elder in particular insisted that there are not as many pine nuts as formerly because "the Indians aren't taking care of them like they used to". This person also used pine nuts to bless a place, casting them about in the same way other traditionalists use tobacco (Ruth Brown, personal communication, 1994). It would seem that the effect of these practices at the very least would be to protect and maintain individual trees and groves.

The sacred nature of pinyon is indisputable. An interesting historical note is provided by John Muir who reported that the Mono Lake Paiute were peaceful and did not participate in the Owens Valley War or any other form of resistance until miners from Bodie started logging the pinyon. At that point, the people fought back, according to Muir because of the sacred nature of the tree.

The outstanding historical ROI in this analysis unit are the pack station operating areas. All 11 pack stations are ROI, although their eligibility for the National Register of Historic Places has not yet been determined. See Operations (Section 3.2.5.1) and Appendix G for a discussion of this ROI.

Current Conditions

Of 376 miles of trails approved for stock use and stock driveways, 321 (85%) have been inventoried. All 11 pack station permit areas (100%) have been inventoried. There are nine camps and two identified lunch spots. Three of the camps (33%) have been inventoried and one (50%) of the identified lunch spots. Of 27 corrals and pastures, 21 (78%) have been inventoried.

There are approximately 1000 recorded heritage resources within boundaries of this large operating area; of these approximately 849 are ROI. Under the proposed alternative and current use patterns, 83 of the ROI are known to be within APE impact areas. These include ten along day use trails, 64 along stock driveways, seven in or near corrals and pastures, and two near packer camps. Three of the sites in pastures are not being impacted by operations.

Because of the time depth of occupation of this analysis unit and its ecological variety, it contains a wide variety of ROI (Table 3.11). Many changes in land-use patterns have occurred, some so large that vast landscapes and data from many sites are needed to determine the full extent of them, as, for instance, the range of land covered by semi-nomadic peoples in the Early Archaic. The scientific evidence available in the prehistoric remains here, including type, ratio of tool types, location of sites types, etc. are a rich source of information on past lifeways. Three ROI stand out: obsidian quarries and workshops, pinyon procurement and processing sites, and pack station

operating areas. The first two are important for their scientific data, the pack stations because of their association and representation of one of the broad patterns of western history.

Table 3.13 Non-wilderness Analysis Unit Resources of Interest

Site# 0504-	Description	Activity type
54-0035	Historic & prehistoric site with milling equipment, obsidian flakes & bifaces, historic foundations & debris including purple glass.	corral
51-0011	Obsidian flaked stone scatter with BRM.	stock drive
51-0016	Prehistoric camp site with obsidian debitage, bifaces, edge modified flakes, a drill, one DSN & metate fragments.	stock drive
51-0021	Obsidian flake scatter.	pasture
51-0112	Small obsidian flake scatter.	stock drive
51-0211	Eligible obsidian debitage & biface scatter with depth of 120 cm. Mostly small pressure flakes, Elko & Humboldt series projectile points.	stock drive
51-0590	Eligible obsidian debitage scatter with a relatively light surface manifestation & undetermined depth.	pasture
51-1149	Eligible obsidian flake & core scatter with 70+ cm depth. The subsurface deposit contains charcoal & small, non-human bone fragments.	stock drive
51-0251	Historic era dump site possibly associated with construction on the Los Angeles Aqueduct. Contains household debris along with a number of prehistoric obsidian flakes.	stock drive
51-0380	Dense obsidian flake scatter with bifaces. Midden possible.	trail
51-0477	Prehistoric site. Site record not relocated.	trail
51-0479	Light density scatter of obsidian debitage, one core, & a biface fragment.	trail
51-0490	Obsidian debitage, unifacially modified flakes, biface fragments, one Elko & one Cottonwood series projectile points. Test units to 50 cm. without hitting culturally sterile soil.	pasture
51-0070	Extensive quarry/workshop of the Casa Diablo obsidian source.	stock drive
51-0250	Obsidian debitage, tools, beads, projectile points, depth to 200+ cm. BRM station is located along creek.	stock drive
52-0004	Eligible prehistoric site. Site record not relocated.	stock drive
52-0016	Obsidian flake scatter with two BRM stations & metates.	stock drive
52-0037	Prehistoric site. Site record not relocated.	stock drive
52-0070	Small obsidian flake scatter.	stock drive
52-0071	Small obsidian flake scatter.	stock drive
52-0074	Two dense loci of obsidian debitage of a wide range of sizes.	stock drive
52-0079	Obsidian flake & biface scatter.	stock drive
52-0081	Obsidian flakes, cores, & two bifaces.	stock drive
52-0286	Dense obsidian flake scatter.	stock drive
52-0369	Small obsidian flake scatter.	stock drive
52-0499	Prehistoric site. Site record not relocated.	stock drive
52-0908	Eligible prehistoric site with a dense obsidian flaked stone tools & a bedrock milling feature at the base of Obsidian Hill, part of the Casa Diablo obsidian source.	stock drive
52-0059	Dense obsidian flake scatter, rock shelter, milling stations.	stock drive
52-0108	Sparse lithic scatter.	stock drive
52-0167	Light obsidian debitage scatter with one biface found. No apparent depth.	stock drive
52-0927	A large multiple use site along Little Hot Creek where redeposited cobbles of Casa Diablo obsidian were quarried & reduced. Site also contains mano & metates.	trail
52-0933	Complex prehistoric site to 250 cm. depth with obsidian quarry, chert flakes, a hunting blind, bifaces & Pinto, Elko Rosegate, & DSN projectile points.	stock drive
52-1163	Obsidian debitage with scrapers noted.	stock drive

52-1168	Obsidian flakes, a chert scraper, & unidentified projectile point.	stock drive
52-xxxx	Prehistoric site. Site record not yet completed.	pasture
53-0022	Four rock rings. One yielded a radiocarbon date of 1300 BP.	stock drive
53-0023	Rutabaga Hill site. Obsidian debitage & tools, Rosegate & Desert series points, milling equipment, stone & glass beads, OVB potsherds. Approximately 100 cm depth with developed midden.	stock drive
53-0191	Prehistoric site. Site record not relocated.	stock drive
53-1520	Obsidian flakes, metates, & possible midden.	stock drive
53-1521	Obsidian flake scatter.	stock drive
52-0065	Small obsidian flake scatter with one biface midsection.	trail
52-0936	BRM complex with associated obsidian flake & unifacial tool scatter.	trail
52-0005	Sparse lithic scatter with milling slicks & one BRM.	trail
52-0898	Eligible prehistoric site. Site record not relocated.	stock drive
53-0197	Prehistoric site. Site record not relocated.	stock drive
53-0239	Pinyon camp with one rock ring & one crescent rock alignment, DSN & Cottonwood points, obsidian & chert flakes & tools, OVB potsherds, manos, tuff disc.	stock drive
53-0240	Obsidian debitage & biface scatter.	stock drive
53-0276	Pinyon camp with six rock rings, two Gypsum Cave projectile points, a DSN, obsidian flakes & tools, OVB potsherds, scraper of petrified wood.	nearby camp
53-0474	Small obsidian flake scatter.	stock drive
53-0523	Pinyon camp with eight rock rings, BRMs, basin metate, obsidian flakes & tools, Elko & Cottonwood series projectile points.	stock drive
53-1417	Small obsidian flake scatter.	stock drive
53-1418	Obsidian flakes & tools, a Rosegate projectile point.	stock drive
53-1428	Obsidian flake scatter.	stock drive
53-1504	Small obsidian flake scatter & one finished tool.	stock drive
53-1510	Obsidian flake & biface scatter with a Rose Spring projectile point, mano & bedrock metate.	stock drive
53-1516	Small obsidian flake scatter.	stock drive
53-1529	Obsidian flaked stone & tool scatter.	stock drive
53-0282	Pinyon camp with rock rings, obsidian flakes & tools, & one BRM milling station.	stock drive
53-0300	Pinyon camp with two rock rings, BRMs, Elko, Rosegate, & DSN projectile points.	stock drive
53-0301	Pinyon camp with two rock rings, metate, obsidian flakes & tools, one Elko point.	stock drive
53-0371	Pinyon camp with rock rings, bedrock mortars, metates, & obsidian flakes & tools including Pinto, Rosegate, & DSN projectile points.	stock drive
53-0372	Pinyon camp with two rock rings, metates, small tuff mortar, OVB potsherds, hammer stone, mano, obsidian flakes & tools, Elko, Humboldt, Rose Spring & DSN projectile points.	stock drive
53-0403	Pinyon camp with rock rings, obsidian flakes & tools, & OVB potsherds.	stock drive
53-1314	Prehistoric site. Site record not relocated.	stock drive
53-1315	Prehistoric site. Site record not relocated.	stock drive
53-1316	Prehistoric site. Site record not relocated.	stock drive
53-1327	Prehistoric site. Site record not relocated.	stock drive
53-1377	Possibly historic trash scatter.	trail
53-1382	Prehistoric site. Site record not relocated.	trail
53-1435	Obsidian flakes & projectile points. Points include Fish Slough, Great Basin Stemmed, & Cottonwood.	stock drive
53-1436	Obsidian flakes & projectile points. Points include Fish Slough, Great Basin Stemmed, Elko, & Rosegate.	stock drive
53-0526	Obsidian flakes & tools: Great Basin Stemmed, Pinto, Elko, Rosegate & DSN projectile points, OVB & steatite potsherds; mano.	stock drive
53-0531	Obsidian & chert flakes; Obsidian Pinto & Cottonwood points, & a chert graver.	stock drive

53-0010	Mining debris & some features.	stock drive
53-0006	Prehistoric site. Site record not relocated.	stock drive
53-0095	Light obsidian debitage & tool scatter distinguished by the presence of many edge modified flakes.	stock drive
53-1441	Obsidian flakes, a Humboldt projectile point, & on bedrock metate.	stock drive
53-1443	Potentially eligible prehistoric site with obsidian, chert & basalt flakes & tools; milling, OVB, & fire affected rock. Excavated in 2000.	corral
53-xxxx	Historic foundation, etc. Not formally recorded.	pasture
53-xxxx	Foundation of an old ranger station. Not formally recorded.	camp
53-xxxx	Prehistoric site. Site record not yet completed.	stock drive

American Indian Issues and Concerns

This area encompasses the traditional territory of the following tribes and communities:

- Federally Recognized Tribes: The Bishop Paiute Tribal Council, the Big Pine Indians of Owens Valley, the Utu Utu Gwaitu Paiute, Fort Independence Paiute, and the Lone Pine Paiute-Shoshone.
- Tribe in the process of seeking federal recognition: Mono Lake Indian Community.

In addition to protection of archaeological sites, the primary issues in this operating area are access to traditional use areas, including continuation of traditional walks over Bloody and Mono Passes. Protection of and access to the following resources is important: the Pandora moth population, traditional piñon collection sites, viability of the pinyon woodlands, and other traditional collection areas.

Montgomery Pass Wild Horse Viewing Area

Heritage Resources

The prehistory of this analysis unit is similar in time-depth to the Non-Wilderness operating area, without the environmental variability. It is pinyon-juniper woodland with the full complex of pinyon associated sites, features and artifacts. It also contains the Truman/Queen Quarry.

The historic era has touched this area through grazing, mining, Federal land management, and recreation—unfortunately an openly admitted pastime being “arrow head hunting”.

The MPWHVA is unique among the operating areas on the INF in that it has received very little formal heritage resources management work and yet a great deal is known about it in general due to poorly reported work done in the 1960s and 70s (Davis 1963; Hillebrandt 1972; Enfield et al. n.d.). There are two camps with corrals, both of which have been inventoried. There are known 43 ROI with some level of recordation within the APE (Table 3.14). Of these, six are six known along dirt roads that may be used and one is located in one of the camps.

The obsidian and pinyon sites in this unit are important for the reasons cited above. Because of the constant depredation from artifact thieves, and the lack of formal study, the remaining resources are particularly valuable to the study of prehistory.

Table 3.14: MPWHVA Resources of Interest

Site# 0504-	Description	Activity type
51-1204	Obsidian debitage & tools, Humboldt & Elko point bases, OVB, turtle back scraper, mano.	trail
51-1414	Obsidian debitage & tools, projectile points from Pinto through Rose Spring, chert flakes, milling.	trail
51-1415	Obsidian & chert flakes & tools, points include Pinto, Rose Spring, & Cottonwood, OVB.	trail
51-1601	Obsidian debitage, tools & many obsidian projectile points: Great Basin Stemmed, Pinto, Elko. Chert bifaces.	trail
51-1603	OVB rim, obsidian DSN, obsidian flakes, chert drill.	trail
51-1605	Obsidian flakes & tools, chert, Elko & Rose Spring projectile points, rock rings.	trail
51-1608	Obsidian debitage, milling equipment, hunting blind.	Camping on an area that may be part of site, or re-deposited from nearby sites

American Indian Concerns

The tribes whose traditional territory falls within this operating area are:

Federally Recognized Tribes: The Utu Utu Gwaitu Paiute and the Walker River Paiute.

Of these, only the Utu Utu Gwaitu of Benton, California, has indicated any interest in the area. They are concerned about the on-going illegal collection, and maintaining the health of and access to the pinyon groves.

Ansel Adams & John Muir Wildernesses

Heritage Resources

The Trail and Commercial Pack Stock Management Final EIS (2005) described the affected environment and environmental consequences for the portions of the Ansel Adams and John Muir Wildernesses that are within the project area considered in this EIS. That analysis is incorporated into this document by reference. A description of the heritage resources affected environment can be found on pages III-83 to III-89 of the Final EIS. An environmental consequences discussion of commercial pack stock use in the AA/JM Wildernesses for heritage resources can be found on pages IV-224 to IV-232.

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 were big game hunting and procurement of obsidian for tool making from the volcanic landscape of the eastern Sierra by individuals or small task groups. As meadow systems developed, whole communities 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. 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; Hindes, 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.)

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. L. Jackson, 2004). With wilderness designation, certain activities have been reduced or eliminated.

Current Conditions

Of 498 miles of designated trail and approved user trails, 436 (88%) were surveyed. Of 57 designated camps on the INF, 49 (86%) have been inventoried.

There are 92 known ROI on the INF side of this analysis unit. Of these, 21 are not being impacted by pack station operations. Twenty two are in existing packer camps, 33 are in or along trails, 11 in dispersed grazing, and two are near day use and camping.

Prehistoric ROI in this operating area include hunting camps, seasonal habitation sites, and obsidian workshops. Of special note is the National Register eligible Rush Meadow Archaeological District. Historic ROI comprise foundations, drift fences, and trash scatters. As a group and regardless of type, these ROI are of particular importance because of the lack of systematic scientific and historical analysis that has been conducted in this unit.

American Indian Concerns

The INF portion of this analysis unit 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, and the Fort Independence Paiute.
 - Tribes in the process of seeking federal recognition: Mono Lake Indian Community
- Bloody Canyon, the Mono Trail, Piute Trail, Taboose Pass, and Kearsarge Pass are all the location of traditional walks by contemporary Native Americans. In the case of Bloody Canyon, there are ROI and mythological localities associated with the trail.

Golden Trout & South Sierra Wildernesses

Heritage Resources

Although quite a bit of inventory has been done in this analysis unit, there has been little analytical work. The following information is taken from McGuire and Garfinkle (1980) and the INF Heritage

Resources Files. The time-depth here is similar to the more northerly wildernesses, i.e. the earliest evidence of human presence on the Kern Plateau is from the Early Archaic, although a bit later in time, ca. 6000 years ago, and represents sporadic forays by hunting parties into upland areas in search of large game. Obsidian trading or procurement parties traversed this unit on their way to the Coso Volcanic Fields on the modern China Lake Naval Weapons Station. And, as further north, users came from east and west sides. Use generally increases through time.

It is in the Late Archaic where a divergence takes place and the settlement pattern begins to resemble that of the western slope rather than the alpine and sub-alpine areas of the eastern Sierra. Seasonal village sites with structures, midden, and a wide variety of artifacts develop. There was the same transition to the smaller arrow points as is seen in the other operating areas at this time. Manos and milling stones continued to be used, with BRMs and cobble pestles added to the milling equipment list. Stone beads (disks manufactured from steatite, serpentine and talc) enter artifact assemblages. Olivella Spire-lopped beads are also present, but rare. Owens Valley Brownware pottery is found on the latest sites and the number of stone beads increases. Freshwater mussel shell (now absent from the South Fork Kern River drainage) have been found in these site. After historic contact, new items appear in sites, such as arrow points made of manufactured glass, indicating that this was an area where traditional life ways were less immediately disrupted than in the Non-Wilderness operating area.

The Historical Period of the Kern Plateau is summarized in Cutts (1997). Two important historical trails cross it, the Jordan and Hockett trails (see Reynolds 1988 for a discussion of the Jordan Trail and history of Jordan Hot Springs). The earliest documented use of the area for grazing was by sheepmen from the Central Valley, soon to be joined by cattle drovers who eventually won dominance of the area through creation of the Forest Reserves in which largely eliminated sheep from the Sierra in general. Today there are historic “cow camps” throughout the operating area and other stock management features such as drift fences and corrals (Theodoratus et al. 1984). Logging was conducted on a commercial scale in the upper Kern to support east side mining operations (Chalfant 1933) and on a smaller scale at Jordan Hot Springs (Reynolds 1988). The area became a popular recreation location beginning in the late 19th century and has remained so to this day.

Current Conditions

Of 315 miles of trails and roads, 269 (85%) have been inventoried. Because camping is not restricted in the Golden Trout Wilderness, theoretically camps and holding areas could be created anywhere, however, there are traditionally used areas. Of 30 campsites currently requested by commercial pack stations, 16 (53%) have been inventoried.

There are 200 heritage Resources of Interest in the GT/SS of which 68 are located in the APE (Table 3.15). Nineteen are located along trails, 44 within restricted camping zones, two near material borrow pits, and two are being impacted by camping.

On both prehistoric and historic levels, this analysis unit presents interesting cultural landscapes. Like the Ansel Adams and John Muir, very little work has been done on the prehistoric ROI, in fact,

there has been no systematic study of the prehistoric record. Many regional research questions can be addressed there. In particular, the use of the landscape in the latest prehistoric period is a complex pattern that needs to be investigated. More work has been done with the history of the area and we do have a good understanding of past land use patterns and respectable inventories of the landscapes associated with recreational use, commercial grazing, government activity, and commercial logging. Formal evaluations need to be conducted at the cow camps and associated features, of what remains of land management structures, and of the logging landscape.

Table 3.15 lists the known resources of interest in the GT/SS Wilderness Analysis Unit.

Site# 0504-	Description	Activity
54-0082	Sparse obsidian flake scatter with a Pinto projectile point & a biface.	Borrow pit.
54-0086	Cabin complex with 20th century trash.	Trail.
54-0225	Sparse obsidian flake scatter.	Trail.
54-0326	BRM station.	Trail.
54-0327	BRMs & obsidian flakes.	Trail.
54-0148	Historic ring & two glass fragments, one obsidian flake & one biface.**	Camping Zone
54-0149	Historic trash associate with an old corral. Artifacts include purple glass.**	Camping Zone
54-0150	Small obsidian flake scatter, one finished tool.**	Camping Zone
54-0217	BRMS, obsidian flakes & bifaces.	Camping on site.
54-0412	BRMs & a milling slick, manos, obsidian flakes & tools, including an unidentified projectile point.	Camping on site.
54-0854	BRM & flaked stone.	Camping on site.
54-0142	Sparse obsidian flake scatter with one basalt flake.**	Camping Zone
54-0143	Sparse obsidian flake & tool scatter & historic trash dump.**	Camping Zone
54-0145	Sparse lithic scatter**	Camping Zone
54-0146	Prehistoric seasonal village site with obsidian flakes & tools & BRMs.**	Camping zone, camping on site.
54-0147	Prehistoric seasonal village with milling stations, midden, obsidian flaks & tools, two chert flakes & two quartz crystals**.	Camping Zone
54-0151	Small obsidian flake scatter with one biface & one possible Pinto point.**	Camping Zone
54-0152	Small obsidian flake scatter with one biface & one Sierra Concave Base or Pinto point.**	Camping Zone
54-0153	Flaked stone debitage & tools over a large area. Unusual in that it is 60% basalt instead of obsidian.**	Camping Zone
54-0313	Sparse obsidian flake scatter.	Camping Zone
54-0314	BRM station.	Camping Zone
54-0315	Sparse obsidian flake scatter.	Camping Zone
54-0316	Seasonal village site with BRMs & obsidian & basalt debitage.	Camping Zone
54-0317	BRM station.	Camping Zone
54-0318	BRM station.	Camping Zone
54-0319	BRM station.	Camping Zone
54-0320	BRM station.	Camping Zone
54-0321	BRM station.	Camping Zone
54-0322	BRM station.	Camping Zone

54-0323	BRM station with obsidian & basalt flakes.	Camping Zone
54-0324	BRM station.	Camping Zone
54-0336	Rock shelter with midden, obsidian debitage, pot sherds, Rose Spring & DSN projectile points.**	Camping Zone
54-0382	BRMS with obsidian & basalt flakes.**	Camping Zone
54-0393	Obsidian flakes & projectile points.** Site record not found.	Camping Zone
54-0420	Seasonal village site with midden, BRMs & obsidian debitage.**	Camping Zone
54-0421	Seasonal village site with midden, BRMs, obsidian & chert projectile points.**	Camping Zone
54-0492	BRMs & milling slicks, mano, OVB potsherds, one Rose Spring projectile points, three Cottonwood fragments.**	Camping Zone
54-0494	Sparse obsidian flake scatter.**	Camping Zone
54-0495	Sparse obsidian & basalt scatter**	Camping Zone
54-0501	Light lithic scatter with unidentified projectile point**	Camping Zone
54-0502	Sparse obsidian flake scatter.**	Camping Zone
54-0503	Sparse obsidian flake scatter.**	Camping Zone
54-0504	Seasonal village site with midden, BRMs & milling slicks, manos & obsidian flakes.**	Camping Zone
54-0505	BRM station.**	Camping Zone
54-0506	BRM station.**	Camping Zone
54-0507	BRM station with a mano & obsidian flakes.**	Camping Zone
54-0508	Bedrock milling slicks, midden, and obsidian flakes.	Camping Zone
54-0509	Large obsidian flake scatter, one Rose Spring projectile point.**	Camping Zone
54-0621	Prehistoric site. Site record not relocated.	Trail.
54-0622	Prehistoric site. Site record not relocated.	Trail.
54-0141	BRM, obsidian flakes, one chert flake, two manos.	Trail.
54-0600	Obsidian debitage.	Trail.
54-0619	Obsidian debitage, basalt debitage, two manos, metate, obsidian DSN.	Trail.
54-0101	Obsidian flakes, cores, hammer stones, & a mano fragment.	Trail.
54-0105	Sparse obsidian flake scatter with one Silver Lake projectile point & one biface.	Trail.
54-0136	BRMS, obsidian flakes, metate fragment.	Trail.
54-0219	BRMs, obsidian debitage.	Borrow pit.
54-0335	Obsidian cobbles & flakes.	Trail.
54-0405	Two rock rings, milling station, modern fire place.	Trail.
54-0451	Obsidian flakes, "small" projectile points.	Trail.
54-0456	Obsidian flakes & bifaces.	Trail.
54-0460	Obsidian flake & core scatter.	Trail.
54-0477	Obsidian flake scatter with seven possible BRMs.	Trail.
54-0483	Very sparse obsidian scatter with bifaces, a quartzite flake & a quartz crystal.	Trail.
54-0486	Obsidian flakes, a metate fragment, & an obsidian Cottonwood projectile point.	Trail.
54-0419	Sparse lithic scatter with possible house pit.	Camping zone.
54-0436	Obsidian flakes, bifaces, freshwater clam shell.	Trail.
**Potential NRHP archaeological district.		

American Indian Issues and Concerns

The tribes whose traditions territory is in this operating area are:

- Federally Recognized Tribe: The Lone Pine Paiute-Shoshone.
- Tribe in the process of seeking federal recognition: The Kern Valley Indian Community.

Particular concerns here are the protection of rock art and burials; however, there is no evidence that pack stock operations affect them.

3.2.4.2 Environmental Consequences

All Analysis Units

Introduction – General Effects

Within the proposed permit boundaries there are areas in which permitted activities occur which may impact heritage resources. Under Section 106 this is called the Area of Potential Effect (APE). For this analysis the APE consists of localities connected by roads, trails and stock driveways located throughout the permit area. These localities may then be further broken down into the four activity clusters with differing impacts on ROI.

1. Pack Station Permit Area: The pack stations' permit area including the footprint (i.e., administrative buildings and associated features including spike camps), fences, pastures and corrals;
2. Travel Corridors: Trails used by people on foot or stock, stock driveways, and stock loading areas;
3. Concentrated Use: Campsites, lunch stops other stopping areas, stock holding areas and watering sites; and
4. Dispersed Use: open grazing and open riding areas.

Effects are classified as either ambiguous (minor) or potentially adverse (moderate to major).

Ambiguous effects are actions which, regardless of their duration, do not appear to have an adverse effect on ROI, however, the current state of knowledge is not sufficient to positively state that such is the case. A monitoring program has been developed to allow adaptive management if adverse effects do occur (Appendix I).

Potentially adverse effects are those actions that directly impact ROI. A direct impact to a ROI is one that diminishes or removes those characteristics that make or may make it significant. A one time impact may be moderate. For instance, the destruction of a minor feature such as a water trough from a significant pack station would not necessarily lead to a loss of significance; however, the incremental loss of features over time would constitute an irretrievable loss of significance and the station would lose its eligibility rating. Similarly, the trampling of a few flakes within an obsidian tool making workshop may only slightly diminish the analytical value of the deposit, but over time repeated impacts may lead to irretrievable loss of scientific data. In other cases, a direct impact is a major effect, either because of the cumulative weight of previous effects or because in and of itself the action leads to an irretrievable loss of historic values.

Table 3.15 provides a summary of the effects of particular pack station operations on ROI.

Where potential adverse effects to ROI occur, measures to less or mitigation the activity will be employed. These include:

1. Relocating or redirecting activities and programs causing impacts;
2. Capping or covering sites with earth, rock, plants and/or other appropriate materials that hold the soil and discourage
3. Monitoring disturbance and intervening to halt, limit, or correct any disturbance;
4. Monitored deterioration without intervention;
5. Educational and interpretive use consistent with the Wilderness Act;
6. Law enforcement;
7. Stabilization; and
8. Data recovery. Where potential adverse effects to sparse lithic scatters in the California portion of the operating area are found, the Forest may make use of the CARIDAP: California Archaeological Resource Identification and Data Acquisition Program: Sparse Lithic Scatters (Jackson et al. 1988)

Table 3.16: Effects of Pack Stock Operations on ROI

APE Element	Activity	Effect
Pack Station Permit Area	Pack Station Operations and Maintenance; SUP requirements.	<i>Potentially Adverse Effects:</i> Loss of structures or alternation of historic structures; introduction of non-historical elements that lessen integrity; loss of integrity of association.
Travel Corridors	Trail use (impact area 15 m either side of the trail)	<i>Ambiguous Effects/Potential Adverse Effects:</i> Continued use in and of itself does not appear to be an adverse effect over and above the initial impact, all other variables being equal. 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.
	Stock Drives (impact area 61 m either side of the road)	<i>Ambiguous Effects/Potential Adverse Effects:</i> trampling of surface artifacts may cause destruction; however, it is not clear whether additional use will cause further damage than currently
Concentrated Use Areas	Lunch stops, etc.	<i>Potential Adverse Effects:</i> illegal collection of artifacts, trampling of artifacts.
	Campsites	<i>Potential Adverse Effects:</i> illegal collection, introduction of foreign carbon and other deposits, disruption of surface and subsurface relationships, removal of structural elements from nearby historic and prehistoric structures to make fire rings, seats, etc.
	Stock Holding Areas	<i>Potential Adverse Effects:</i> trampling of surface artifacts may cause destruction; trampling has been shown to disturb the upper layers of soil disrupting stratigraphy.
	Watering Areas	<i>Potential Adverse Effects:</i> trampling effects as above.
Dispersed Use Areas	Dispersed grazing	<i>Ambiguous Effects:</i> it has not been demonstrated that dispersed grazing of pack stock causes any impacts.
	Cross Country Travel	<i>Ambiguous Effects:</i> it has not been demonstrated that cross country travel <i>per se</i> causes any impacts; however, where riders bunch up there is the potential for trampling, and people are drawn to visible sites the dishonest few will steal artifacts.

Because of the sensitive nature of heritage resource information, specific site locations will not be given. ROI in the APE have been described as to type above, along with which APE element they

may be impacted by. Specific details are in the project files (INF Heritage Resources Report #R2005050401128) and will be provided in the HPMPs on a need to know basis.

Although 100% inventory of all the APE elements has not been completed to date, sufficient information is known for each analysis unit to determine the effects of proposed activities on ROI. Additional work as needed will be completed according to the stipulations of the PA.

Alternative 1 –All Analysis Units

Direct and Indirect Effects

Heritage Resources

Pack Stations: Under Alternative 1, 11 ROI (the pack stations) could have permanent, major adverse effects that would not occur under Alternatives 2 and 3. Removal of pack stations would constitute a major impact to the historic property values contained in the pack station permit areas and associated features on the landscape. The physical properties themselves would be lost to future generations, although this loss could be lessened or mitigated through appropriate data recovery techniques. The forest-wide contextual history (Woolfenden 2006, see Appendix G) has established the argument that pack stations, as a thematic grouping, are associated with events that have made a significant contribution to the broad patterns of our history; that is, with the historic development of recreation in the Sierra Nevada (National Register of Historic Places Criterion A). Thus, they are associated with an important historic context.

While packing services and the pack stations from which they operate are commercial ventures, they have additional dimensions. Packers can be viewed as representing a distinctive, slice of American culture that is anchored in tradition. As a cultural group, they share a largely specialized set of traditional skills. Pack stations, as headquarters for commercial packing operations, are comprised of a set of distinguishing and prerequisite structural elements, including corrals, tack rooms, packing docks and hitching rails. Moreover, experienced packers possess a variety of distinguishing and prerequisite skill sets, most of which have been learned and honed from other packers, including packing, backcountry cooking and horse camping, stock shoeing, and basic stock doctoring, husbandry and training. That this group is valued by the larger society is demonstrated by the interest in packing operations. It is no accident that *Mule Days*, a tribute and exhibition of packing and related skills, has enjoyed 37-years in Bishop. If, however, the reality of the pack stations themselves were removed along with the day to day operations, the tribute would become a Disneyland approximation of a bygone era. (Conners 2006.)

In the MPWHVA and GT/SS Wildernesses, there are corrals and troughs associated with the packing landscape. Removal of these sites may be mitigated through data recovery, and therefore there would be no adverse effect to these ROI. However, while the loss of individual landscape elements may be mitigated, the effect of loss of all the elements would result in the loss of the physical cultural remains of an historic landscape.

In the AA/JM, there are no pack station permit areas. Associated drift fences over 50 years old will be mitigated prior to removal; therefore, there will be no effect on the individual ROI.

Travel Corridors: Impacts to historic properties from use of travel corridors are for the most part negative and minor, so removing them may constitute a minor improvement. Currently, 100 known ROI have potential adverse effects from commercial pack stock use of travel corridors. Of these, 72 are in the Non-wilderness Analysis Unit, 7 are in the MPWHVA, and 21 are in the GT/SS Wildernesses. (Table 3.17). All of these would have potential adverse effects from commercial pack stock removed. The current negative effects include those listed in Table 3.17, and include ambiguous and potential adverse effects. Removal of use should mainly reduce the potential for negative effects, although it could cause minor, local beneficial effects to some resources. It will not allow for improvement of resources that have already been trampled or otherwise damaged. It will allow for minor, local reduced erosion on some trails, which will prevent adverse effects to ROI at those sites. It will also prevent any future off-trail use caused by trailing around obstacles, or any new trail creation. This will prevent trampling of surface artifacts and their possible destruction. See Table 3.17 for the number and types of sites that could have reduced potential adverse effects due to removal of commercial pack stock use.

Impacts to ROI in the GT/SS associated with borrow pits used for trail work on trails used by pack stock may be mitigated by avoidance; therefore, there will be no effect.

Concentrated Use Areas: The moderate and major negative impacts from camping and holding stock (listed in Table 3.16) on and adjacent to ROI will be removed. Of the known ROI in the project area, 52 are currently affected by concentrated use, which includes campsites, corrals, stock holding areas, lunch stops, watering areas, and other areas of concentrated pack stock use (Table 3.18). Of these 52 sites, 5 are in the non-wilderness, 1 is in the MPWHVA, and 46 are in the GT/SS Wildernesses. All of these sites would have removal of commercial pack stock use. While some of these areas, particularly campsites, might remain in use by other users, most of the sites would either be reduced in size, or eventually obliterated, and therefore there would allow long-term, beneficial moderate to major effects to ROI.

Dispersed Use Areas: Impacts to historic properties from these uses are for the most part minor negative impacts, so removing them may constitute a minor, long-term improvement. Of the 180 known ROI in the project area (outside of the AA/JM), none currently have potential adverse effects from dispersed pack station operations. Dispersed uses include dispersed grazing and cross-country travel. No ROI are currently known to have potential adverse effects from either. With removal of commercial pack stock use, the potential for impacts to ROI would be removed, but there would be no actual effect.

American Indian Concerns

Pack stock is used by infirm elders on their traditional walks. Removal of commercial pack stock operations would curtail access to traditional use areas and participation in traditional activities.

Private stock could be available for use by some people, although it would be more difficult to procure private stock.

Cumulative Effects – Alternative 1 - All Analysis Units

For heritage resources, the past effects are considered for 13,000 years, the time of human history in the Eastern Sierra area. This considers natural effects on artifacts that could have been deposited up to 13,000 years ago. On top of the natural attrition, there are historic era effects. The historic effects considered have occurred within the past 150 years. These include things such as picking up an arrowhead to erosion caused by cattle grazing. For historical features, the cumulative effects on them can only go back about 150 years. Unlike other resources that are often renewable, archaeological resources are non-renewable. Once most archaeological resources are damaged, the damage cannot recover. Once they are removed, they are gone from their original site and context forever. Any past action that occurred any time after deposition or construction of heritage resource may currently be having an effect. Natural and human effects have occurred for about the past 150 years, and those effects will be considered. Impacts of reasonably foreseeable future actions were not included beyond 2030, because the effects related to this action cannot be predicted beyond 20 years.

Spatially, cumulative effects are considered on a site-specific as well as regional scale. At some sites, only the site boundaries were considered, to determine cumulative effects over time on that site. Heritage resources were also considered on a historic, prehistoric, and ethnographic landscape scale. Each historic or prehistoric feature or site of cultural significance is a part of the entire landscape, and something that in and of itself is not important can contribute to the historic landscape. The bounds of the historic and prehistoric landscape are roughly from the Sierra Crest to the eastern edge of the Great Basin, including the Inyo National Forest and the nearby valleys. This area is generally referred to as the “Eastern Sierra”, the Kern Plateau, Adobe Valley and Hills, and in some cases, the White and Inyo Mountains. These are areas that were near enough the resources of interest affected by this project that they are part of the same cultural region. The ethnographic landscape is within the Piute-Shoshone, Western-Mono, and Tubatulabal traditional territories. Through consultation with contemporary members of the groups, they indicated their area of interest and concern related to each individual group.

A number of historic era activities have had cumulative adverse effects to ROI. These include dam construction, cattle and sheep grazing, pack stock grazing, fire suppression, construction and maintenance of facilities, trail work and maintenance, the whole range of recreation activities from hiking to off-highway vehicle use to fishing to cross country skiing, vandalism, illegal collection of artifacts, features and human remains, rangeland improvement, logging and personal wood cutting. Each of these activities has effects particular to it, and cumulatively has led to the loss of historic properties and scientific data. This is not to say that continuation of use always means a continuation of impact, for instance, it is generally accepted that if a trail goes through a ROI in the same way that it always has, continued use does not constitute an adverse effect. On the other hand, continued operation of a water impoundment continues to impact the sites along the shore.

Removal of pack stations would constitute a major impact to the historic landscape by removal of an important historical element of eastern Sierra history as a whole. It would in some cases adversely affect the integrity of setting and association of other historic properties within the vicinity. Under Alternative 1, eleven pack stations, which are ROI, would have increased major potential adverse effects. At the pack stations, the adverse impacts of past actions, such as alteration or loss of historical structures, and introduction of non-historical elements, would be totally overshadowed by this action, which would remove all structures. Across the analysis area, this would be a small contribution to overall loss of historic properties.

For non-pack station ROI, this action would not have a cumulative effect because the minor beneficial effect would be subtractive, and would help reduce the loss of historic and scientific information overall.

Alternative 2 — All Analysis Units

Direct and Indirect Effects

Heritage Resources

Indirect effects to heritage resources arise from biophysical processes and direct human behaviors. They also affect more than the ROI that are directly affected by permitted activities. Many natural occurrences have the potential to adversely affect heritage resources and in some cases human activity may cause and/or exacerbate the effects of natural processes. For instance, vegetation loss may lead to aeolian deflation and erosion which in turn can lead to loss of artifacts and stratigraphic integrity. More directly is what happens when people come to an area and deliberately vandalize structures, remove rocks from historic and prehistoric structures to build fire rings, and collect historic and prehistoric artifacts. All of these activities have been reported from the entire study area. Certainly, it is impossible to assign blame for these illegal acts to any one user group, nevertheless, it must be considered as a potential indirect effect, therefore, the HPMPs will include an educational component. Most operators are well aware of the value of historic resources. They will be provided with educational materials and assistance from Forest personnel.

Pack Stations: Significant pack station permit areas will be maintained under Historic Property Management Plans to preserve historic values therefore there will be no effect. Relative to alternative 1, this would protect 11 pack station ROI that would have major adverse effects under Alternative 1.

Travel Corridors: It is assumed that there may be minor potential adverse impacts to ROI through use of travel corridors from pack stock operations and stock drives. Because use will occur in most of the same locations as today, the same known ROI should be affected. Table 3.17 includes the specific types of resources of interest that would have potential adverse or ambiguous effects due to actions in Alternative 2. Of the 180 known ROI in the project area (excluding AA/JM), 100 would have potential adverse effects from travel corridor use from commercial pack station operations. Of those, 72 would be in the non-wilderness, 7 would be in the MPWHVA, and 21 would be in the GT/SS Wildernesses.

Table 3.17 Travel Corridors – Resources of Interest with potential adverse effects

Resource of Interest	Non-Wilderness	MPWHVA	GT/SS Wildernesses
Lithic Scatter (sometimes with tools)	33	6	12
Bedrock Mortar/Milling Station	0	0	2
Bedrock Mortar/Milling Station + Lithic Scatter	7	0	4
Prehistoric Obsidian Quarry/workshop	3	0	0
Prehistoric Site-unspecified	15	0	2
Prehistoric habitation sites	11	1	0
Historic Feature	3	0	1
Total	72	7	21

A monitoring program has been developed to allow adaptive management if adverse effects do occur (Appendix I). Alteration of travel corridor use is one of the listed management options to mitigate or lessen the impact.

Concentrated Use Areas: Under this alternative moderate and severe potential adverse impacts to 52 ROI would occur from concentrated commercial pack stock use (Table 3.18). Of these ROI, 5 would be in the non-wilderness, 1 would be in the MPWHVA, and 46 would be in the GT/SS Wildernesses. Not all of the ROI listed in the GT/SS would definitely be affected by commercial pack stock use, but it is possible. All of these effects would be due to camps or restricted camping zones. Not all of the 80 camps requested by applicants would be used regularly. About 20 camps are currently regularly used, and about the same number is expected to be used under Alternative 2. Table 3.18 below assumes all requested camps might receive some commercial pack stock use.

Table 3.18 Concentrated Use Areas – Resources of Interest with potential adverse effects

Resource of Interest	Non-Wilderness	MPWHVA	GT/SS Wildernesses
Lithic Scatter (sometimes with tools)	0	0	18
Bedrock Mortar/Milling Station (no lithic scatter)	0	0	10
Bedrock Mortar/Milling Station + Lithic Scatter	1	0	7
Prehistoric Obsidian Quarry/workshop	0	0	0
Prehistoric Site-unspecified	0	0	0
Prehistoric habitation site	2	1	8
Historic Feature	2	0	3
Total	5	1	46

Any adverse effects will be mitigated or lessened through application use of CARIDAP or other management options listed above.

Dispersed Use Areas: It is assumed that there may be minor negative impacts to ROI through dispersed uses. No known ROI would be affected by dispersed commercial pack stock use. Under Alternative 2, current impacts to ROI would continue. The effects are ambiguous effects to 358 ROI, because it has not been demonstrated that dispersed grazing or cross-country travel does cause effect.

A monitoring program has been developed to allow adaptive management if adverse effects do occur. Grazing use alteration is one of the listed management options to mitigate or lessen the impact (Appendix I).

American Indian Concerns

Pack station operations do not seem to be contributing to a problem that arises when the sacredness of some areas and access by traditional users may be affected by too many visits and activities by the general public. In addition to sites, there are traditionally used plants and collecting areas and spiritual/cultural use areas impacted by current non-commercial pack stock uses. Pack station operators have had beneficial effects, because commercial pack station has been used to assist access for traditional activities in the Ansel Adams and John Muir Wildernesses.

Cumulative Effects - Alternatives 2 - All Analysis Units

A number of historic era activities have had cumulative adverse effects to ROI. These include dam construction, cattle and sheep grazing, pack stock grazing, fire suppression, construction and maintenance of facilities, trail work and maintenance, the whole range of recreation activities from hiking to off-highway vehicle use to fishing to cross country skiing, vandalism, illegal collection of artifacts, features and human remains, rangeland improvement, logging and personal wood cutting. Each of these activities has effects particular to it, and cumulatively has led to the loss of historic properties and scientific data. This is not to say that continuation of use always means a continuation of impact, for instance, it is generally accepted that if a trail goes through a ROI in the same way that it always has, continued use does not constitute an adverse effect. On the other hand, continued operation of a water impoundment continues to impact the sites along the shore.

Under Alternative 2, 11 pack stations, which are ROI, would have either neutral or beneficial effects from continued use. Other ROI would have negligible to minor, long-term potential adverse effects. At the pack stations, the adverse impacts of past actions, such as alteration or loss of historical structures, and introduction of non-historical elements, would have a minor subtractive effect from this alternative, and past loss of historic value could be stemmed. Across the analysis area, this would be a small contribution to overall protection of historic properties.

For non-pack station ROI, this action would have a cumulative, minor adverse effect because it and could have a minor addition to the loss of historic and scientific information. Where existing impacts from pack stock operations are allowed to continue there is a potential downward trend in heritage values, e.g., site integrity, data potential, character, etc. Of special concern is the projected increase in population and recreation use; inevitably, when more people come to an area more and more historic values are lost through on-going effects and the increase in vandalism and illegal

collection. A potential positive effect will be mitigation or lessening of this over-all recreation impact through education of pack station employees and customers and conformance with the Historic Property Management Plans.

If moderate and major impacts from concentrated use are mitigated or lessened through use of the management measures, there will be no cumulative impacts from these activities. If mitigation through data recovery is done, it will end all effects from all users.

Alternative 3 – All Analysis Units

Direct and Indirect Effects

The effects of Alternative 3 are almost the same as Alternative 2, except in a few locations. Alternative 3 would have 4% fewer stock at pack stations, would have less use in the GT/SS Wildernesses, different pasture management that would rest three pastures not rested under Alternative 2, and move two camps in the MPWHVA out of riparian areas.

Generally, the minor differences in use levels and stock numbers should not affect heritage resources. Uses would still occur at the same locations, and even 20% less use under Alternative 3 should not have noticeable on-the ground effects to ROI. The two changes that could make a difference to ROI effects are the resting of 5 pastures and the movement of Pizona and Truman Camps in the MPWHVA. Therefore, only those differences will be discussed here.

Pack Stations: There would be no differences at pack stations between Alternatives 2 and 3, because the facilities at each pack station would remain the same. Significant pack station permit areas will be maintained under Historic Property Management Plans to preserve historic values therefore there will be no effect.

Travel Corridors: There would be little difference between the effects to ROI from commercial pack stock use of travel corridors. Under Alternative 3, two stock drives rather than 4 would be authorized. It is unclear whether additional use would cause further destruction of ROI along stock drive routes, because these existing roads already have some stock drives and also other uses, such as motor vehicle use.

Concentrated Use Areas: The effects from concentrated commercial pack stock use would be the same under Alternative 3 as under Alternative 2, except in the MPWHVA and in non-wilderness pastures. There would be no difference in actions at campsites or other stock holding areas outside of the MPWHVA. Under Alternative 3, the base camps at Pizona and Truman Meadows would be moved out of riparian areas. If the base camp in Truman Meadow is moved to nearby areas there is a high probability of creating direct, major impacts to ROI that would not occur under Alternative 2. Because the area has such a high concentration of ROI, it is likely that any new site would contain ROI, and they would have major, local, negative impacts from campsite creation.

The other difference in concentrated effects would be from a difference in pasture management between Alternatives 2 and 3. Under Alternative 3, five pastures would be rested to grazing that would be open under Alternative 2. Direct impacts to these 5 ROI would be lifted at least until the

subject pastures recover and are reopened to grazing. At that point monitoring will be instituted to determine whether effects are occurring and adaptive management changes will be made as needed.

Dispersed Use Areas: The effects of dispersed commercial pack stock use would have minor improvements relative to Alternative 2. Under Alternative 3, cross-country travel would not be allowed in the non-wilderness analysis unit, where it was allowed under Alternative 2. This would have a potential minor beneficial effect to ROI. It has not been demonstrated that cross-country travel per se causes any impacts; however, where riders bunch up there is a potential for trampling, and cross country travel allows people to see a greater number of visible sites. The dishonest few will steal artifacts. Under Alternative 3, this use would not occur. This would be more of a preventive action than allowing current resource degradation to improve. This is because there is very little true cross-country use occurring presently, and so removal of that use would have no to negligible effects.

Cumulative Effects – Alternative 3 - All Analysis Units

The cumulative effects to most of the project areas would be the same as under Alternative 2. The differences in actions should not affect overall cumulative effects. In the MPWHVA, some cumulative effects will be different. Those are discussed below.

The MPWHVA is widely known to be visited by illegal artifact collectors. Because of the constant depredation from artifact thieves, and the lack of formal study, the remaining resources are particularly valuable to the study of prehistory. If the base camp in Truman Meadow is moved to nearby areas there is a high probability of creating direct, major impacts to ROI. Because this is an area widely known to be visited by illegal artifact collectors, additional impacts from pack station operations will have major adverse effects on ROI. It would be another negative, major, but local reduction in the extent of ROI in the area.

3.2.5 Socioeconomics

3.2.5.1 Operations

Introduction

This section will examine the effects of the three alternatives on the operations of the twelve permitted pack stations and one outfitter/guide. To assess the effects of the alternatives on pack station operations, a team consisting of special use permit administrators and auditors analyzed all known records of commercial pack stock use and operations data, including use and operations data provided by the operators (tally sheets and other sources). The team then determined an array of indicators that would adequately display effects to operations and revenue. Auditors on the team determined these indicators would be the most reliable in displaying the substantial effects to business operations with the least error. The resulting array of indicators is discussed below. Effects to revenue (expected increase, decrease, or no change) were estimated based on analysis of the same array of indicators.

Determination of Baseline Operations for Analysis Purposes

The affected environment descriptions of individual pack stations in this section, and therefore, the baseline point for comparison of effects between alternatives, was set as the period of the last valid term permit prior to 2002. Term permit length varied between 10 and 20 years.

The “No Action” alternative, which in this case is to not issue permits, is traditionally the baseline against which all alternatives are compared. For this analysis, this cannot be used because there is no basis for revenue comparison. With the No Action alternative there is no revenue and only the one time expense of facility removal.

The baseline for comparison of the effects of the alternatives was set at the pre-2001 Wilderness Plan level since the primary destinations of desired overnight services are within the wilderness. Not all aspects of the 2001 Wilderness Plan were implemented as the injunctive relief ordered by the Court in January 2002 superseded many of the 2001 Plan’s management tools. The court order had very diverse effects on the pack station operations. Comparing the effects of the alternatives to the period of the court order does not give a level point of comparison of the effects of the alternatives on the recent historical service and economic potential of the business. It is appropriate to go back to the period of the last valid permit in effect prior to 2001 for the point of comparison. Thus the basic question was “How does the proposed action affect the operation and economy of the business as it was under the previous permit?”

Methodology

Indicators

The following indicators are measures of the difference between alternatives in their effects to commercial pack stock operations in terms of costs and revenue. These indicators are collectively referred to as “operations” and /or “business operations” in some sections of this document.

1. Number of employees, including these main factors (Personnel Costs):

- Workers’ Compensation
- Wages
- Charges to Client

2. Number of stock, including these main factors (Stock Costs):

- Feed
- Training
- Veterinarian care and animal health and welfare
- Shoeing
- Stock related facilities
- Tack

3. Resources needed to maintain facilities, including (Facilities Costs):

- Buildings
- Trails
- Fences
- Camp facilities at assigned camps

4. Resources needed for feed and/or grazing (Grazing Restriction Costs):

- Cost of feed based on availability of pasture grazing

Expected effects to revenue are also displayed in the effects table. In this analysis, revenue is the amount of money (gross) taken in by the pack stations.

In order to compare the effects each alternative would have on commercial pack stock business operations, it was determined that the following main components would drive the major operational variations. The first three components relate to the non-wilderness operations and within the Golden Trout and South Sierra (GT/SS) Wildernesses. The last component is site specific direction brought forward from the 2005 AA/JM ROD, and is included to complete the picture for each pack station operation.

1. Environmental Protection Measures (elements in the alternatives include the maintenance of fences and trails and prohibition of use in some areas).
2. Type of Service(s) and Amount of Use Authorized including the GT and SS Wildernesses (elements in the alternatives include herd size, number of trips, case-by-case authorization, and travel management).
3. Amount of Grazing Authorized (elements in the alternatives include range readiness standards and allowable utilization standards).

4. Site specific direction for the AA and/or JM Wildernesses (elements in the 2005 AA/JM ROD include destination quotas, stock at one time, party size, designated stock camps, party size and trail suitability.).

Analysis of AA/JM Wilderness use, including effects to operations, was completed in the 2005 AA/JM ROD. A complete description and comparison of the components included in the three alternatives and can be found in Chapter 2, particularly Table 2.2.

Intensity

The intensity of the effects considers whether the effect is negligible, minor moderate or major. Negligible effects are considered non detectable to the business and therefore not expected to have a discernable outcome. Minor effects are slightly detectable though not expected to have much of an outcome in regards to cost or revenue. Moderate effects would have appreciable effects on either the cost or revenue stream for the operator. Major effects would have substantial, highly noticeable effects on the costs, or revenues of the operation.

Duration

The duration of the effect considers whether the effect would occur for a short or long term period. A short term effect would be less than one operating season. A moderate term effect would occur over the course of the 2-4 operating seasons, and a long term effect would have lasting effects on the operator.

Extent

The number of packstations affected would be a measure of extent of the effect.

Ansel Adams and John Muir Wildernesses

Affected Environment

Common to all pack stations

The Trail and Commercial Pack Stock Management Final EIS (2005) describes the affected environment and environmental consequences for the AA/JM Wildernesses that are within the project area considered in this EIS. That analysis is incorporated into this document by reference. The effects are discussed in the cumulative effects sections. In summary, commercial packing operations began with early California emigration in 1846, picked up again with the discovery of gold in the Sierra Nevada foothills, and continued with military use in the 1890s. Recreational packing operations began in Yosemite Valley in 1855 and peaked in the early 1900s with the Sierra Club High Trips. In the mid 1940s, both the Agency and the packers recognized the integrity of the wilderness environment as a vital issue. Profitable business operations ebbed and flowed with various outside influences, including war, improved vehicle access and the 1964 Wilderness Act. Today, there are 12 pack stations and one pack stock outfitter and guide permitted by the Forest, from a high in 1935 of

22. A complete description of the operations affected environment can be found on pages III-2 – III-19 of the 2005 AA/JM FEIS. The majority of the traditional packing services such as spot and dunnage and all expense trips are conducted in the wilderness. Although day riding is an important component of the total pack station business, most of this day riding occurs outside the AA/JM Wildernesses.

Environmental Consequences

Common to All Pack Stations

Alternative 1 –Direct and Indirect Effects

Cessation of all activities within the wildernesses would have a major effect on business operations and revenue because under Alternative 1 of this permit issuance decision there would be no other NFS lands on which to operate, effectively closing the businesses. That segment of the public desiring or requiring pack stock services will no longer be served.

Other administrative agencies that contract many services with the commercial pack stations will not have that service available to accomplish their work.

Alternatives 2 and 3

Direct and Indirect Effects

The 2005 Trail and Stock Management Plan for the Ansel Adams and John Muir Wilderness will be implemented under both Alternatives 2 and 3, so the effects are evaluated relative to baseline operations. An environmental consequences discussion of commercial pack stock use in the AA/JM Wildernesses for operations can be found on pages IV-233 – IV-258 of the 2005 AA/JM ROD. In summary, the decision provides for some modest opportunities for growth in pack station revenue, but also implements a number of controls that will likely increase costs to pack stations providing commercial services in the AA/JM Wildernesses. Authorized use is expected to be similar to current level of use (except for Rock Creek Pack Station whose all expense trip allocation is reduced from recent reported use). Cost increases are likely minimal to moderate and likely to last the term of the permit, up to 20 years. This will likely push the cost of operations higher, increasing price of commercial pack stock supported trips higher than their current levels as rising costs are passed along to the customer.

Personnel costs: Implementation of the Trail Management Plan for the Ansel Adams and John Muir Wildernesses will continue to allow pack stock activities in the wildernesses at approximately baseline levels, but employee costs are expected to increase at seven of the thirteen operations, mostly because of changes in trail management and grazing restrictions.

The Trail Management Plan designates trails available for use by the packers, eliminating the use of some trails currently used. These trail restrictions may have a minor to moderate increase in costs related to employees and stock where previously used short cut routes may be prohibited thus requiring longer days worked, increasing the likelihood of injury and overtime costs. Grazing

restrictions may require more intensive management of stock and more stock, and personnel, to carry feed into the wilderness.

Pack stock use monitoring will be accomplished, in part, through commercial pack stock operators tally sheet reporting (Appendix I). No increases in costs are expected with this, as tally sheets are currently required. This administrative function will not affect revenue.

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.

Stock costs: The trail restrictions causing longer trail time would also cause a minor to moderate increase in stock injuries, increasing veterinary costs. Stock costs are expected to increase at six operations because of the wilderness decision.

Facilities Costs: Five operations may have increased facilities costs, mostly fencing of wilderness resources.

Grazing Restrictions: A moderate long term increase in cost is expected for seven pack stations that operate all expense trips in the wildernesses due to grazing management direction. Some meadows that have been grazed in the past may be rested or a limitation has been set on grazing (stock night limits), resulting in the need to pack supplemental feed or using appropriate alternate meadows. This could result in minor to moderate increases in the cost for some pack stations. The cost of additional feed may be passed on to the customer, increasing the cost of services to the degree that it becomes cost prohibitive to the average customer, thereby reducing revenue. Those pack stations not grazing, or grazing in areas where management restrictions are not as severe, will be affected less.

An increase in feed costs may occur for these same pack stations that operate higher number of all expense trips in the wildernesses as a result of certified weed free feed requirements, which is expected to be implemented in the near future. Revenue increase or decrease will vary by pack station depending on the amount of overnight holding of stock that is occurring in areas where limitations exist. Pack stations that operate a high number of all expense trips holding stock in the wilderness, and who use supplemental feed when grazing is not an option, can expect an increase in costs associated with feed/grazing as weed free feed is more costly. Generally, hauling additional feed requires additional stock and employees, adding to costs. The cost of weed free feed may be passed on to the customer, increasing the cost of services to the degree that it may become cost prohibitive to the average customer. If this happens, there could be a reduction in revenue.

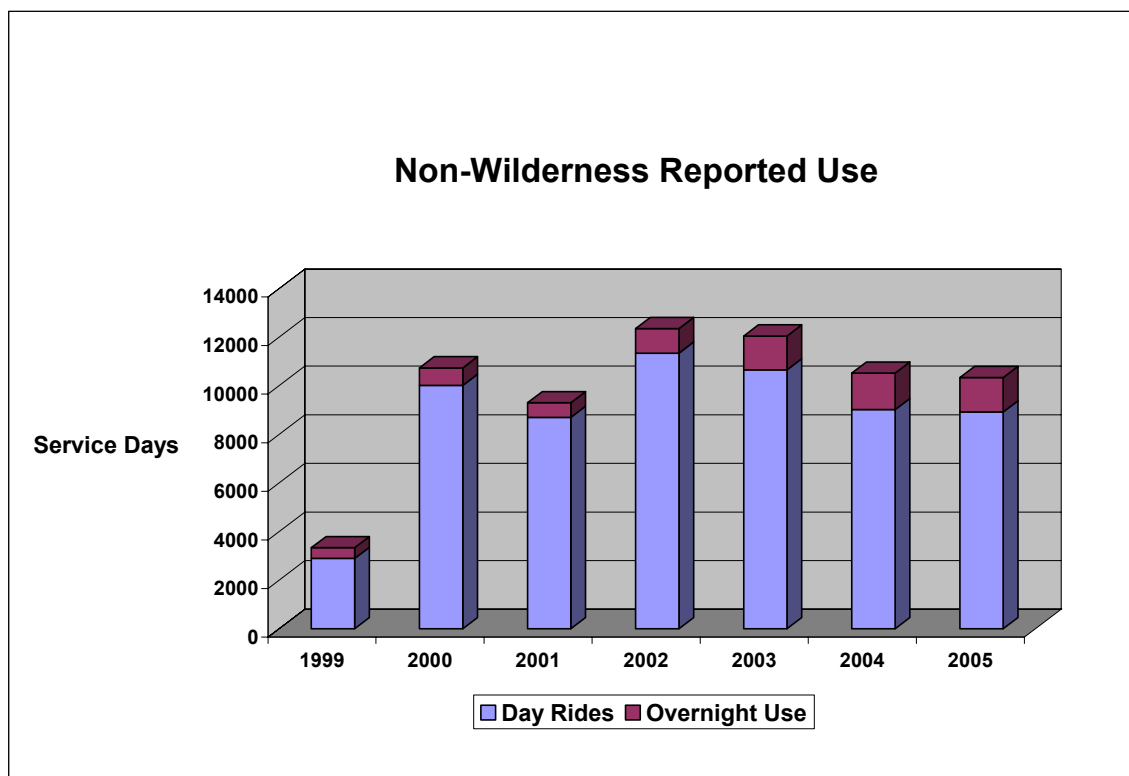
Revenue: Expected changes in revenue due to the 2005 AA/JM ROD vary by operation. Restricted destinations may cause revenue at five packstations to decrease. The revenue is not expected to change or is unknown for three operations, and five may experience an increase in revenue if all authorized use is actually realized.

Non-Wilderness, Montgomery Pass Wild Horse Viewing Area, and Golden Trout and South Sierra Wildernesses Analysis Units

Affected Environment

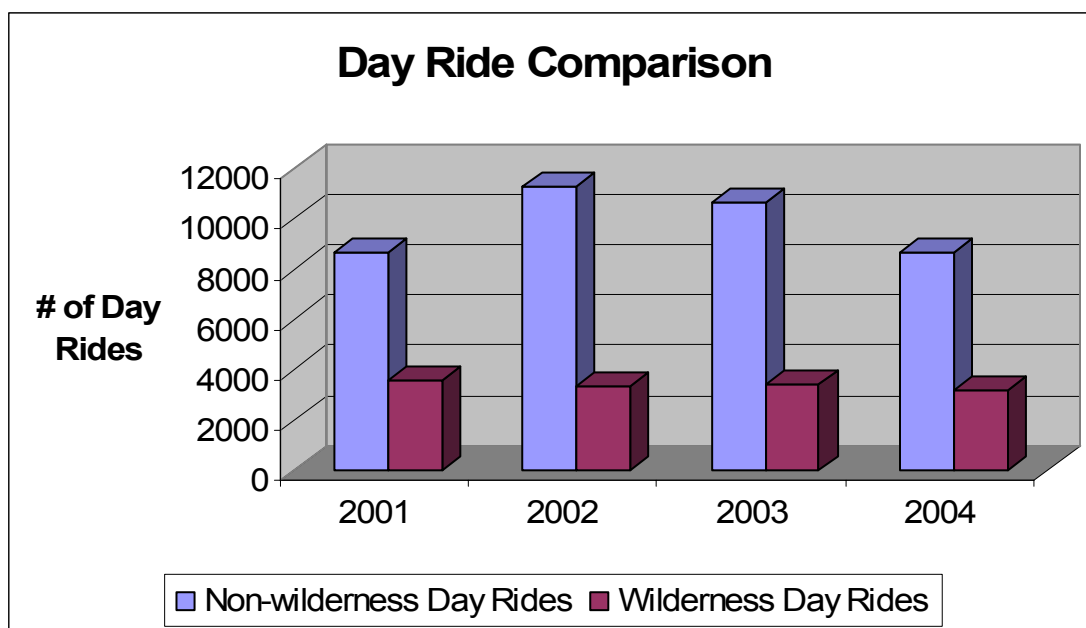
Pack station facilities are located in areas referred to as concentrated recreation areas of NFS lands, which typically include campgrounds, other resorts, trails and interpretive sites. Pack station operations are a small component of the total recreation experience within these areas (See section 3.2.2.3 Recreation– Affected Environment). Business operations within non-wilderness areas of the project area include all activities and infrastructure necessary to maintain base facilities, as well as day ride and overnight services originating from base facilities. More complex operations may provide services in areas not adjacent to their facilities, such as mustang viewing and stock drives. Specific operation descriptions can be found in the Affected Environment for Individual Pack Stations section below. The majority of non-wilderness activities are day ride services. Figure 3.5 displays the self-reported use for both day rides and overnight use, measured in service days that occurred in non-wilderness.

Figure 3.5. Total pack station reported use 1999-2005 in non-wilderness areas of the project area. (*Data is incomplete for the years 1999 and 2001, but still demonstrates day use as the primary non-wilderness activity.)



Day ride use is by far a greater component of non-wilderness business operations as compared to reported wilderness day ride use (Fig. 3.6). Non-wilderness areas afford operators alternatives for providing services in the shoulder seasons, during heavy snow years when wilderness destinations are unavailable in the spring or in years of early snowfall that close operations out of the high country earlier in the fall. Opportunities to offer day ride services and to expand services are appropriate in these non-wilderness areas of the forest where developed recreational activities are concentrated. As land management decisions have limited expansion of services in wilderness areas, operators have looked for additional non-wilderness business opportunities, such as various length day rides, stock drives or all expense camp services, to complement their traditional services and to create a successful, long term business. In non-wilderness areas, the majority of the reported day use is provided by less than ½ of the pack stock permittees (5 of 13).

Figure 3.6. Comparison of number of day rides in the non-wilderness and wilderness (all analysis areas are included).



The Kern Plateau has enjoyed a very long history of pack stock and livestock use. The Golden Trout and South Sierra Wildernesses provide excellent equestrian experiences with rolling forested peaks and large open meadows. As recently as 1982, seven pack stock outfitters were permitted to operate in the Golden Trout Wilderness. Today, only two operators (Cottonwood Pack Station and Mt. Whitney Pack Trains) out of those seven continue to provide routine service. One other operator has consistently provided pack stock support for hunting parties. Other operators have operated infrequently with case-by-case approval of specific itineraries. The South Sierra Wilderness has seen even less use, with just 250 service days allocated to all commercial users. As displayed in Table 3.3, actual use is 28% of authorized use.

The consequences for each of the analysis units is similar for each alternative, thus the commentary below applies to all analysis units.

Environmental Consequences

Alternative 1

Direct and Indirect Effects

Alternative 1 would not permit commercial pack stock operations and all facilities associated with the operations would be removed from NFS lands. No revenue would be generated from the operations; this would be a major long term effect. A large one-time expense to remove facilities would be incurred by the pack station permittee. The historic component of pack station business operations would be gone. The professional level skills necessary for safe pack stock supported recreation would be severely diminished as the general public does not typically possess stock handling skills. In addition, a very specific segment of the population that require pack stock to support their trips because of physical and/or age limitations would no longer be able to enjoy these areas. Those who find encountering stock and/or their impacts degrade their experience may find their recreational experience enhanced.

Commercial guides, including the pack stations, provide a valuable extension of Forest Service policy in the areas of interpretation of the natural environment, education on appropriate camping techniques (Leave No Trace[®]), and basic information to forest visitors. By removing the pack stations these services would be reduced.

There may be an effect on the other outfitters and guides, similar organizations (such as the Sierra Club), and Native Americans who lead trips on the National Forest. Many of these groups rely on pack stock to support their trips. Consequently their ability to serve their customers would be restricted to non-pack stock supported activities thus reducing the various recreational opportunities and participation in their activities.

Currently, the Forest Service and other governmental agencies, such as the National Parks and California Department of Fish and Game, depend on commercial pack stock to support trail maintenance, wilderness management projects and emergency evacuations of injured visitors. While the Forest Service still maintains a herd of working stock, the number of animals has been significantly reduced over the past several decades. If commercial pack stock were not available at an economically practical price, many of the trail maintenance and wilderness management projects would be significantly delayed or not occur at all. Pack stock is consistently used to provide transportation to persons with non-life threatening injuries. Without available stock to aid in the evacuation, a victim's condition may worsen.

Cumulative Effects - Alternative 1

This cumulative effects analysis for pack station operations and revenue includes all National Forest System lands where authorized use has occurred and where proposed use will occur within the Inyo

and Sierra National Forests. The area where authorized use occurs varies by operator and the complexity of their business. For example, Glacier Pack Train runs a low complexity operation that primarily operates in the Big Pine Lakes drainage, which is bound by topography that prohibits use into other areas of the John Muir Wilderness, whereas Rock Creek Pack Station runs a highly complex operation with authorized uses occurring virtually forest wide. One must consider the entire operation of each individual pack station to determine cumulative effects.

In assessing cumulative effects for operations and revenue, impacts of past actions were included for actions implemented in the past that still have effects. Some of these actions, such as the development of hydroelectric facilities in close proximity to the pack station, occurred over 50 years ago, but continue to have an effect on the operations. Impacts resulting from reasonably foreseeable future actions were not included beyond 2027 because the special use authorizations will likely be in effect for up to 20 years. Beyond that, actions and their effects cannot be predicted. The same bounds will be used for all alternatives.

Typically, there is more than one developed recreation facility in an HDRA. Removal of one business, in this case the pack station, may reduce clientele for an adjacent recreation service provider. Once pack station facilities are removed it is likely that economics and lack of public support will mean that they will not be replaced in the future.

Alternative 2 and 3

Direct and Indirect Effects

The environmental consequences of implementing Alternatives 2 and 3 are essentially the same for operational activities in all analysis units and are not considered to have any meaningful effects differences.

Personnel Costs: Because the services would continue at approximately the same level, personnel costs would not likely increase. For two operations, personnel costs may increase, and for two others the effects are unknown.

Stock Costs: Stock costs would be similar to current levels, although at three operations, they may increase.

Facilities Costs: Fencing and removal of pit toilets are the main source of expected facility cost increases at eight of the operations.

In both alternatives, use of the commercial cattle facilities within the Golden Trout and South Sierra Wildernesses will be prohibited. It is expected that this action may add a layer of inconvenience to trip logistics, but will have negligible long term effect on operations and revenue because appropriate alternative camp sites are nearby.

Alternative 2 will require the eventual removal or proper abandonment of pit toilets (outhouse) to align more closely with Inyo County Environmental Health standards. This will affect those operators who currently utilize an outhouse. At the minimum, proper abandonment and replacement of the outhouse with a chemical toilet is likely to represent negligible to minor long term effects to operational costs for toilet rental and pumping. If an operator chooses to install a vaulted toilet or

septic system, the effects are likely to moderate to major in the short term for construction and negligible to minor in the long term for subsequent maintenance.

Grazing Restriction Costs: Pastures reduced in size to allow recovery of resources (streambanks, fens) may cause increases to costs at seven operations, with unknown effects at one other, particularly in Alternative 3.

Revenue: The slight increase in use allowed may cause increases in revenue for eight operations in Alternative 2 and increased restrictions in Alternative 3 reduces the number expecting increases to three operations. For the other operations, revenue is expected to remain static or is unknown, except for Alternative 3, where decreases in revenue are expected at three operations.

Overall the effect of these alternatives is converse of Alternative 1. Alternatives 2 and 3 would permit the commercial pack station operations to continue in a manner similar to the present with some minor modifications to their operations. All the services and recreational experiences lost in Alternative 1 would continue to be available to the public. Publics needing the help of commercial pack stock would be able to experience the forest, including designated wilderness.

Alternative 2's case by case itinerary approval in the Golden Trout and the South Sierra Wildernesses may have a beneficial effect to revenue for those who request use. Use in the southern Sierra can extend the length of the operating season for packers whose high country access is delayed during heavy snow years, adding a bit of flexibility to operations by providing service outside their traditional operating area. Alternative 3 would limit business flexibility to areas of current operations.

The traditional and historical pack stock uses in these areas would be preserved because the experiences and knowledge people gain from observing and using pack stock related services would continue under both Alternatives 2 and 3. The pack stock operators would continue to be valuable recreation service partners with the Forest Service, providing interpretive, educational and informational benefits to the public.

Other outfitters and guides and service organizations would continue to be able to enhance their programs with stock supported trips.

The Forest Service would have available the ready support of stock to accomplish trail maintenance, wilderness management projects and emergency evacuation of injured parties, which result in benefits to many recreational users.

Cumulative Effects - Alternative 2 and 3

Revenue: Overall for operations, relevant past actions include the implementation of various elements of management plans that have affected business operations decisions. Most recent relevant management plans include the programmatic direction in the 2001 Wilderness Plan and the 2005 AA/JM ROD.

The 2001 Wilderness Plan management direction changed the way the pack stations ran their operations. Components of this plan that most affected pack stock operations include trailhead quotas, commercial use allocations adjustments, management of the wilderness permit system, restrictions of commercial pack stock to existing and approved trails, and elevational fire closures.

Pack stations were no longer able to self issue wilderness permits; this reduced their flexibility to serve the walk in business and made it more difficult for those pack stations without telephone service to obtain permits for their guests. As the trailhead quotas were phased in, the packers found it more difficult to accommodate clients in peak periods. The 2001 Plan also limited them to designated trails and approved routes, which removed their use of “short cut” routes that saved time on the trail and also limited the ability to deliver customers to some of their desired destinations. The January 2002 court ordered injunctive relief further affected pack station operations and revenue by reducing client party size and number of stock per party. The injunction coupled with the 2001 Plan required the operators to make moderate to major changes to their operations which has likely caused moderate to major increases in operational costs.

Implementation of the 2005 AA/JM ROD meadow suitability and closure determinations reduced wilderness grazing opportunities and allowable stock nights.

Past trail maintenance and construction designed to improve stock travel has allowed pack stock operations to continue. However, as funding has diminished over the more recent years, trail maintenance has been more difficult to accomplish. Deteriorating trail conditions have affected stock health and welfare as trail conditions exacerbate injury such as arthritis and ring bone. In addition to veterinary costs, operators may have to spend more time and money maintaining trails used in their operations. This is likely to increase costs associated with stock and employees.

Outside economic factors that are beyond the control of pack stock operators include fuel prices and feed prices. Recent increases in both have had moderate short term effects to costs with moderate effects expected to continue for the long term. It is likely that rising fuel prices have affected the regional economy, making travel more expensive for the general public, who, in turn, choose to vacation closer to home.

All operators rely on Los Angeles Department of Water and Power (LADWP) leased pasture and ranch lands for their winter stock operations. It is expected that LADWP ranch management plans currently being imposed on the holders will increase costs associated with those leases as fees increase and available grazing is restricted to levels less than currently allowed.

For those pack stations who operate in Sequoia and Kings Canyon NP, it is expected that future development of grazing management strategies will affect operations. The effects of this are unknown at this time. It is likely that restrictions will be imposed that will have a varying degree long term effect ranging from negligible to minor on operators that rarely operate in the Park to moderate to major for those with a predominant business component in the park.

Beginning with the early cattlemen, high mountain lakes were stocked with fish, mainly for a supply of food for the summer grazing months. As the fish increased in the lakes, so did the desire for recreational fishing. This contributed a steady stream of clients for the packers.

More recently, mountain yellow-legged frog habitat restoration carried out by the California Department of Fish and Game has affected nearly every operator. Effects of the continuing habitat restoration activities, including fish eradication and fish enhancement, on pack station operations and revenue are not entirely known at this time. Fish eradication at certain lakes has changed the use

patterns within specific drainages, but has not diminished fishing opportunities Sierra wide. Included in the management objectives is the enhancement of fishing opportunities at lakes in close proximity to lakes with restored habitat.

The most relevant foreseeable action is the full implementation of site-specific components of the 2005 AA/JM ROD (Appendix D), which are brought forward into this decision. They include management by destination quota, “Stock at One Time” limits in the wilderness and use trail authorizations. It is likely that the programmatic management direction set forth in the 2005 decision combined with site specific implementation of this permit issuance decision would, cumulatively, have a negative impact on commercial pack stock operations and revenue. Each operational change is expected to increase operational costs, which are then passed along to clients in the form of increased service rates. Increased service rates are likely to be cost prohibitive to more potential clients, who then choose to not take a pack trip, thereby reducing revenue.

Other reasonably foreseeable actions include the outcome of site specific route use decided through the Inyo National Forest route designation process (affecting the non-wilderness trails) and the continued implementation the Sierra Nevada Forest Plan Amendment. The effects of these are not known at this time.

Several operators could be impacted in the future by continued development of the smaller communities of June Lake, Mammoth Lakes, Crowley Lake and other communities in the Owens Valley. As increases in numbers of visitors and different types of use (horse, bike, foot, motorized) occur on the same trail/road systems in non-wilderness recreation areas, pack station operations may be altered again. This development may have direct or indirect effects on the operating areas where non-wilderness pack stock activities occur. Conversely, increased development of smaller communities may lead to an increased customer base through direct population increase and tourism services and the consequent increase in revenue.

In Summary, individual components of each action described above may not affect considerable change to operations costs; however, each operational change represents an increase in costs (and not necessarily an associated revenue increase), and when added together represent moderate to major effects that will continue to last for the long term. Many of the costs are likely to be passed on to the customer through higher trip pricing which may cause fewer people to book services; in turn, lowering pack station revenue.

Individual Pack Stations - Affected Environment and Operational Effects

Frontier Pack Train

Affected Environment

The base station for Frontier Pack Train (FPT) is located on the June Lake Loop Road adjacent to Silver Lake at the base of Carson Peak, Mono County (Section 8, T2S, R26E). The permit covers 3.50 acres. Base facilities are authorized at this site only. A detailed listing of the facilities can be found in Chapter 2, Section 2.3.3.6 under Frontier Pack Train. Authorized facilities include corrals,

loading docks, tack sheds, a temporary travel trailer for employees, feed storage bins, utilities and sewage system. The pack station has been in operation since 1935 and has been owned and operated by the current permit holder since 1993. Current facilities are sufficient to handle the current authorized herd size of 110.

Frontier runs a moderately complex packing operation (see Appendix B for description of complexity). There are two non-wilderness day ride trails from the pack station. A half-hour trail ride exists on an old trail paralleling the June Lake Loop Road. An old access road provides a one or two hour trail ride known as the Rush Creek ride. The average number of day ride clients on the Rush Creek ride during the use period analyzed is 1,336. Frontier operates half-day rides on the Parker Bench Trail averaging 481 riders per year for 2000 to 2005 (Front Country Pack Stock Use Data 1999-2005).

Non-wilderness activities include commercial stock drives to and from winter pasture and pack station facilities, cattle drive operations in conjunction with valid livestock permits and wild horse observation base camp trips within the Montgomery Pass Wild Horse Territory (MPWHT), with the base camp near Truman Meadows. Use levels averaged 384 service days between the reporting periods of 1999 to 2005. Meals are provided for customers at the base facilities prior to the pack trips and on the trails. Services may be advertised specific to fishing, photography or hiking. However, the majority of the packing activities and operations take place within the Ansel Adams Wilderness.

With case-by-case approval, FPT has recently operated trips in the Golden Trout Wilderness in the spring during high snow pack years (1-2 trips).

There is only one major trailhead (Rush Creek) available from the pack station facility accessing the Ansel Adams Wilderness and Yosemite National Park. Frontier Pack Train offers a range of packing opportunities for the clients including one-way spot trips and two-way spot and dunnage trips. Spot and dunnage trips averaged 45-50 trips per season from 2000-2004. Full service traveling trips into Yosemite National Park and the AA/JM Wildernesses are provided by the pack station, averaging 30-35 trips from 2000-2004 (INF Tally Summary Data 2001-2004). Their typical area of operation includes destinations in the AA Wilderness including Alger Lakes, Parker Bench, Rush Creek and Upper Rush Creek, Clark Lakes, Upper San Joaquin Drainage and areas south into the John Muir Wilderness.

Unique to Frontier Pack Train are all expense trips based in designated assigned stock holding sites throughout the Rush Creek drainage. Two sites are paid fee sites (Assigned Sites) exclusively for the use of FPT. During the 2000 through 2004 operating season, FPT ran an average 471 clients, using 1387 service days and 867 pack animals into the wilderness. Frontier has historically grazed three areas in the Ansel Adams Wilderness including Spooky Meadow, Marie Lakes and Davis Lakes, and Alger Lakes Drainage (INF Tally Summary Data 2001-2004). Total grazing nights reported by FPT are: 2001:874 (stock nights); 2002:665, and 2003:485. On occasion, FPT will graze in the upper Middle Fork of the San Joaquin Drainage, also in the wilderness. Frontier Pack Train has two non-wilderness pastures authorized in conjunction with the pack station operations, Rodeo (31 acres) and

Evans (17 acres) totaling 48 acres. Both pastures have been approved since the pack station has been in operation for 50 AUMs annually.

Environmental Consequences

Table 3.19. Comparison of the effects of all alternatives on Frontier Pack Station operations in terms of the indicators identified descriptions of methodology at the beginning of Section 3.2.5.1.

Alternative 1 effects are not displayed because under Alternative 1, no new permit would result in complete loss of all business opportunities and revenue.

Pack Station	Effect on operational cost and revenue:									
	# of Employees		# of Stock		Facilities Maintenance		Feed/Grazing		Revenue	
	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3
Frontier Pack Train										
Environmental Protection Measures	–	–	–	–	↑	↑	↑	↑	–	–
Type & Amount of Use Authorized	–	–	–	–	–	–	–	–	↑	↑
Amount of Pasture Grazing Authorized	–	–	–	–	–	–	–/↑	↑	–	–
2005 AA/JM ROD	–	–	–	–	–	–	–	–	–	–

Predicted Effects: ↑ = increased cost/revenue; – = no change in cost/revenue; ↓ = decrease in cost/revenue; –/↑ = static/increase cost/revenue; –/↓ = static/decrease cost/revenue; ↑/↓ = unknown effects

Alternative 1 – Direct, Indirect, and Cumulative Effects- Frontier Pack Train

No new permit would result in complete loss of all employees, stock and business opportunities on NFS lands. All facilities would be removed. No revenue would be generated from this operation, this would have major, long term effect on operations and that portion of the public desiring or requiring stock services will not be served. SCE will no longer have pack stock services available for the maintenance of wilderness facilities.

Alternative 2 –Frontier Pack Train

Direct and Indirect Effects

New actions or mitigations proposed specific to Frontier Pack Train that will affect operations include changes to the authorizations for the Evans and Rodeo Pastures as outlined in Chapter 2, Alternative 2 Proposed Action.

Personnel Costs: No change is expected in costs related to the number of employees as a result of the prescribed environmental protection measures proposed in Alternative 2 because the work is expected to be accomplished with existing employees.

No change is expected in costs associated with number of employees as a result of proposed services and uses outlined in Alternative 2, because the proposed non-wilderness use levels will allow the permittee to maintain the recent historic level of operations.

Pasture management is not expected to affect costs related to numbers of employees because employee numbers are not dependent on available pasture grazing.

Stock Costs: No change is expected in costs related to the number of stock as a result of the prescribed environmental protection measures proposed in Alternative 2 because additional fencing required to protect riparian resources does not require addition to or reduction in the number stock.

No change is expected in costs associated with number of stock as a result of proposed services and uses outlined in Alternative 2, because the proposed non-wilderness use levels will allow the permittee to maintain current herd size. Pasture management is not expected to affect costs related to numbers of stock because stock numbers are not dependent on available pasture grazing.

Facilities Costs: An increase in costs related to the maintenance of facilities is expected with prescribed environmental protection measures. Additional fencing is likely to have a negligible to minor short term effect for additional construction materials and negligible effects in the long term for continued maintenance.

No change is expected in costs associated with number of employees, maintenance of facilities and feed/grazing as a result of proposed services and uses outlined in Alternative 2. This is because the proposed non-wilderness use levels will allow the permittee to maintain the recent historic level of operations.

Operations related to facilities maintenance is expected to remain the same as no additional structures are necessary for the amount of pasture grazing authorized.

Grazing Restriction Costs: The proposed pasture utilization levels for both Evans and Rodeo Pastures are likely to have a negligible effect on feed costs because the change represents a very small reduction in the amount of feed.

Revenue: No increase or decrease in revenue is expected as a result of environmental protection measures because these actions do not generate revenue. Allowances for slight increases in use, if fully utilized are likely to have minor to moderate beneficial effects to revenue over the long term.

Alternative 2's proposed travel management to restrict use to approved routes within the High Density Recreation Area (HDRA), with cross country travel permitted outside the HDRA, is expected to have negligible effects to current operation because current operations travel on existing routes within the June Lake High Density Recreation Area.

Since grazing does not generate direct income, no change in revenue is expected due to pasture management.

In summary, it is expected that the individual indicators described above may not cause significant change to costs or revenue; however, the additive effect of minor cost increases may be substantial to the total business. Increased costs are passed along to the customers in the form of increased service rates. Increasing rates are likely to lessen the number of potential customers that can afford the service, thereby reducing revenue.

Alternative 3 –Frontier Pack Train

Direct and Indirect Effects

The effects of Alternative 3 on operations and revenue are not considered to have any meaningful differences when compared with Alternative 2, except Alternative 3 proposes to rest Rodeo Pasture

until resource recovery occurs. Costs are expected to be slightly higher than Alternative 2, negligible to minor and long term, because the resting of Rodeo Pasture will reduce available forage, requiring the additional purchase of feed.

Cumulative Effects

Costs (All): No change is expected in the costs related to the number of employees, maintenance of facilities and feed/grazing as a result of site-specific authorized uses in the Ansel Adams Wilderness proposed in Alternatives 2 and 3. Current operations within the wilderness will generally continue uninterrupted and unchanged as destination quota management outlined in the 2005 AA/JM ROD generally continues current levels of use. Day use may increase with the control mechanism of total stock at one time in the wilderness rather than service days. Wilderness management components of Alternative 3 relevant to Frontier Pack Train's operation do not change from those in Alternative 2.

Revenue: Frontier Pack Train was established in 1935 prior the rapid growth of the June Lake area. The campgrounds, resorts and RV parks developed over the years, along with the future development of the town of June Lake will likely have negligible to minor beneficial effect, over the long term, on the operational revenue because increased visitors to the area, will likely provide the pack station with an increased client base, adding to business revenue. Also, the increase in the amount and varying types of recreation opportunities created through the development of the campgrounds and resorts has altered pack station use patterns by confining use to appropriate trails in the immediate vicinity of the pack station.

Rush Creek is controlled by three major dams built in the early 1920s by Southern California Edison (SCE) for the purpose of hydroelectric power generation. SCE is continually maintaining the dams and other ancillary facilities in the wilderness. Frontier Pack Train has been and will continue to work under contract, packing supplies and materials needed to accomplish this work. The effect on revenue is unknown and may vary from year to year depending on work to be done, but nevertheless will be a benefit to the business.

Red's Meadow Resort and Agnew Meadow Pack Station

Affected Environment

The base stations for Red's Meadow and Agnew Meadow Pack Stations (RMPS) are located in a concentrated recreation area within the Red's Meadow-Fish Creek Management Area (INF LRMP, 1988), on the Mammoth Ranger District within in the Middle Fork of the San Joaquin Drainage (Section 11, T4S, R26E, Red's Meadow and Section 15, T3S, R26E, Agnew Meadow), Madera County, covering a total of 25 acres. There are no other offsite facilities authorized. A detailed listing of the facilities can be found in the Alternative 2, Section 2.3.3.6 under RMPS. Generally they include corrals, employee bunkhouses, tack sheds, outbuildings and loading docks. Red's Meadow Resort also includes a store, restaurant, rental cabins and outdoor entertainment area. Red's Meadow has been in operation since 1932. Agnew Meadow Pack Station started operation in 1926. Current facilities are sufficient to handle the approved current herd size of 125.

With an operating area that offers the greatest opportunity to disperse trips into the Ansel Adams and John Muir Wildernesses, with nine different trailheads from the two base facilities, Red's Meadow Pack Station runs a complex packing operation. (See the glossary in Appendix B for description of complexity).

There are no non-wilderness trails identified for day rides. The wilderness boundary is within ½ mile of the pack station, limiting non-wilderness riding as all appropriate trails travel into the wilderness. All day rides entering the wilderness are under allocated service days totaling 1500. The primary trails used by RMPS link the facilities to the Pacific Crest National Scenic Trail (PCT), further connecting to AA/JM Wildernesses destinations within the Inyo and the Sierra National Forests and on into Yosemite National Park where use is authorized under an Incidental Business Permit issued by the Park. The typical area of operation includes the Minarets, Shadow Lake, Thousand Island Lake, and north to Yosemite National Park, Fish Creek to the Silver Divide, Upper Fish Creek to Tully Hole, Deer Creek, Purple Lake and Cascade Valley. On occasion RMPS will take extended all expense trips from Red's Meadow to the Golden Trout Wilderness via the PCT (average 10 days) or trips to the southeast entrance into Yosemite National Park via Isberg Pass, traveling up to Tuolumne Meadows and returning over Donahue Pass. RMPS has provided pack stock services wilderness-wide throughout its years of operations.

Red's Meadow Pack Station offers a comprehensive array of pack stock supported services and activities. Packing services include day rides, re-supply services, spot and dunnage services, base camps, packing schools and multi-day all expense trips in wilderness. Special trips for the disabled and educational trips for the inner city youth are also provided. Other non-wilderness activities include commercial stock drives to and from winter pasture and wagon rides on existing roads to the wilderness boundary at Boundary Creek. Services may be advertised specific to fishing, photography or hiking.

The majority of the activities and operations take place within the AA/JM Wildernesses. The average number of all expense trips reported from 2001 to 2004 equaled 34 trips servicing 211 clients with 512 stock. The spot and dunnage trip average from 2001 to 2004 were 532 clients served using 1220 stock (INF Tally Summary Data 2001-2004).

RMPS primary day ride operation is to Rainbow Falls located within Devils Postpile National Monument. The average number of clients served between 2001 and 2004 was 1430. Other wilderness day rides generally operate out of the Agnew Meadow Pack Station and travel on the PCT to Thousand Island Lake; the average number of client served annually from 2001 to 2004 was 185. Data show the changes in historical operation for RMPS from the traditional all-expense trips for an average of 5-10 days to more spot and dunnage type trips. Average pack trips are now 3 to 5 days in duration with shorter distances between camps preferred by clients.

RMPS has two pasture areas totaling 32 acres at Agnew Meadow (east and west) authorized in conjunction with the pack station operation. RMPS is approved for 30 AUM (Animal Unit Months) at the Agnew Meadow pastures. Two other areas, Johnston Meadow and Minaret Meadow had been approved for grazing over the years. However both are located in the Ansel Adams Wilderness and

will not be approved for use under the direction outlined in the 2005 Trail and Commercial Pack Stock Management Record of Decision. RMPS totals for all grazing in the John Muir and Ansel Adams wildernesses were, 2001:683 stock nights, 2002:447 stock nights, and 2003:460 stock nights.

The permittee of Red's Meadow is also co-owner of Mt. Whitney Pack Trains. See below for full description of Mt Whitney Pack Trains operations.

Environmental Consequences

Table 3.20. Comparison of the effects of all alternatives on Reds/Agnew Meadows Pack Station operations in terms of the indicators identified descriptions of methodology at the beginning of Section 3.2.5.1. Alternative 1 effects are not displayed because under Alternative 1, no new permit would result in complete loss of all business opportunities and revenue.

Pack Station	Effect on operational cost and revenue:									
	# of Employees		# of Stock		Facilities Maintenance		Feed/Grazing		Revenue	
	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3
Reds/Agnew Meadows										
Environmental Protection Measures	↑	↑	–	–	↑	↑/↓	–/↑	–/↑	–	–
Type & Amount of Use Authorized	–	–	–	–	↑	↑	↑	↑	↑/↓	–
Amount of Pasture Grazing Authorized	–	–	–	–	↑	↑	–/↑	↑	–	–
2005 AA/JM ROD	↑	↑	↑	↑	↑	↑	↑	↑	↓	↓

Predicted Effects: ↑ = increased cost/revenue; – = no change in cost/revenue; ↓ = decrease in cost/revenue; –/↑ = static/increase cost/revenue; –/↓ = static/decrease cost/revenue; ↑/↓ = unknown effects

Alternative 1 – Red's Agnew

Direct, Indirect, and Cumulative Effects

No new permit would result in complete loss of all employees, stock and business opportunities on NFS lands. All facilities would be removed. No revenue would be generated from this operation, this would be a long term effect that portion of the public desiring or requiring stock services will not be served. The many visitors to the Reds Meadow area not seeking pack supported recreation would not have the resort facilities available, including a store, cabins, and a restaurant.

Alternative 2 - Reds/Agnew

Direct and Indirect Effects

New action or mitigation proposed specific to Reds Meadow Pack Station (RMPS) that will affect operations include fencing for resource protection and the elimination of the availability of two wilderness pastures as outlined in Chapter 2, Alternative 2 Proposed Action.

Personnel Costs: Costs associated with the number of employees are not expected to change due to additional fencing requirements because work is expected to be completed with existing employees.

The current level of use will likely continue, so there would be no additional employees, and associated costs would remain more or less constant.

Stock Costs: Stock numbers are not a factor in the fencing mitigations, therefore, no change related to stock costs is expected. No increases in herd size would be allowed, so there would be no increased associated costs.

Facilities Costs: An increase in cost is likely for construction and maintenance of fences required for the protection of riparian resources located in both units of the Agnew Meadow pasture proposed in Alternative 2. This is expected to have minor, short term effects for additional construction materials and negligible to minor effects in the long term for continued maintenance of the fencing.

Grazing Restriction Costs: Proposed environmental protection measures will likely cause a minor increase in feed costs because the reduction in available grass will necessitate the purchase of supplemental hay to be hauled into the remote Red's Meadow area.

Amount of pasture grazing authorized in the Agnew Meadow pastures as proposed in Alternative 2 is likely to increase or maintain feed costs. This is because the utilization levels most likely represent less than has been used. This effect is expected to be minor and of long term duration. No change is expected in costs associated with the number of employees or stock as a result of the amount of grazing proposed in Alternative 2 as this reduction will not precipitate change for either. Cost of maintenance is likely to remain the same because no additional structures are required as a result of the amount of grazing authorized.

Revenue: No increase or decrease in revenue is expected specifically as a result of environmental protection measures because these actions do not generate revenue.

Non-wilderness use levels proposed will allow the permittee to maintain at least current levels of operations, however, if the holder maximizes potential, allowances for increase in non-wilderness use is expected to increase revenue. Proposed travel management is to restrict use to approved routes within HDRAs, with cross country travel permitted outside of HDRAs. It is expected that this will not change operations because all current stock operations utilize existing, approved routes. No change in revenue is expected as a result of utilization levels proposed because pasture use does not generate revenue.

In summary, it is expected that the individual indicators described above may not affect significant change to costs or revenue; however, the additive effect of minor cost increases may be substantial to the total business. Increased costs are passed along to the customer in the form of increased service rates. Increasing rates are likely to lessen the number of potential customers that can afford the service, there by reducing revenue.

Alternative 3 - Reds/Agnew

Direct and Indirect Effects

The effects of Alternative 3 on operations and revenue are not considered to have any meaningful differences when compared with Alternative 2, except Alternative 3 proposes to rest Agnew West Pasture.

Personnel Costs: No effects are expected in costs related to number of employees as a result of the amount of proposed grazing because there will actually be less fence and other structures to maintain.

If aggressive mitigations are implemented to hasten resource recovery, costs related to employees are likely to increase.

Stock Costs: No effects are expected in costs related to number of stock because allowable grazing does not dictate the number of stock used in an operation. No increase in herd size would be authorized under Alternative 3.

Facilities Costs: If aggressive mitigations are implemented to hasten resource recovery, costs related to facilities are likely to increase.

Grazing Restriction Costs: Costs are expected to be slightly higher than Alternative 2, negligible to minor and long term, because the resting of Agnew West Pasture will reduce available forage, requiring the additional purchase of feed. Trucking costs are higher to the remote Red's Meadow location.

Revenue: No change in revenue is expected as a result of utilization levels proposed because pasture grazing does not generate revenue.

In summary, the costs of implementing Alternative 3 are expected to be higher than those in Alternative 2, with increased costs passed along to the customers in the form of increased service rates. Increasing rates are likely to lessen the number of potential customers that can afford the service, thereby reducing revenue.

Alternatives 2 and 3 – Cumulative Effects – Reds/Agnew

Personnel Costs: Authorized uses in the AA/JM Wildernesses are expected to increase costs for employees because more employees will be needed to handle stock and do trail maintenance.

Stock Costs: Authorized uses in the AA/JM Wildernesses are expected to increase costs for stock, because severe reductions in available grazing will require more stock on the trail to pack feed.

Grazing Restriction Costs: Increased costs to buy feed in lieu of wilderness grazing are expected because severe reductions in available grazing.

Revenue: A mandatory shuttle bus into the Red's Meadow area has likely affected the number of day rides over the last five years. To compensate for the lower number of visitors, RMPS has raised the day ride rates, which has discouraged those who have paid to access the site and then pay for a day ride. The continued operation of the mandatory shuttle bus is likely to have long term negative effects to operations revenue with increasing additive costs making the service cost prohibitive to more people.

Other effects on the operation of RMPS day use are actions by Devil Postpile National Monument prohibiting commercial stock on the trail designated for viewing the Postpile. This directly affected the provision of one-hour rides, leaving only the offer of a two-hour ride to Rainbow Falls. Again, this action is having a moderate effect on the revenue of the pack station.

The recent and continuing development of the Town of Mammoth Lakes has increased visitor capacity to the area. It is likely that some of those increasing numbers will seek the services of the pack station.

Authorized uses in the AA/JM Wildernesses are expected to increase costs for employees, stock, maintenance and feed/grazing proposed in Alternative 2. Red's Meadow Pack Station currently provides the second highest number of all expense trips in the AA/JM. The 2005 AA/JM ROD limits the all expense trips to recent historic levels. All cost increases due to restricted grazing in the AA/JM Wildernesses are likely to result in rising trip prices, making packing services more cost prohibitive to more users, likely reducing revenue. Wilderness management components of Alternative 3 relevant to RMPS operation do not change from those in Alternative 2.

Mammoth Lakes Pack Outfit

Affected Environment

Mammoth Lakes Pack Outfit (MLPO) is operated out of the base facility in the Lakes Basin above the town of Mammoth Lakes, Mono County (Section 9, T3S, R27E) and is authorized to use and occupy National Forest System lands (15 areas) for the purpose of operating a resort including and retail sales. Facilities include residences, offices, bunkhouses, kitchen and dining building, public restrooms, packing sheds, grain sheds, loading docks, corrals, tack room, saddle sheds, and the sewer and water system. A detailed listing of facilities can be found in Alternative 2 under Mammoth Lakes Pack Outfit. The pack station has been in operation since 1925. Existing facilities are sufficient to handle the currently authorized herd size of 120.

Two wilderness trailheads are accessible from the MLPO base station: Duck Pass (also known as Coldwater Trailhead) and Mammoth Pass. Both trails access the John Muir Wilderness. There is a large network of multiple use trails in the Lakes Basin providing approximately 26.5 miles available for non-wilderness day rides. The typical area of operation includes the Coldwater drainage, Duck Lake, Purple Lake, Silver Divide, Upper Fish Creek, Cascade Valley, Crater Meadows and the Deer Lakes area. Occasional use occurs over Laurel pass.

Mammoth Lakes Pack Outfit runs a moderately complex packing operation. Services and activities include day rides, walk and lead rides, re-supply, spot and dunnage services, base camps, all expense full service trips, packing and horsemanship schools, wagon rides, lodging and meals for guests. Other non-wilderness activities include commercial stock drives to and from winter pastures and pack station facilities. The majority of MLPO's day ride operation takes place outside the wilderness within the Lakes Basin, with high of 6,729 day rides reported in 2002. The current allocation is 7,000 service days. Reported day rides averaged 6,567 during the period of analysis, 2001 to 2005. Reported walk and lead rides show a high of 857 rides in 2002 (Front Country Pack Stock Use Data 1999-2005).

Mammoth Lakes Pack Outfit has chosen to reduce the number of trips holding stock overnight in the John Muir Wilderness over the last five years due to grazing closures at Purple Lake and Cascade Valley and heavy snow pack on Duck Pass. The pack station began focusing more on the day rides in the Lakes Basin. Trends in public use show a desire for shorter trips with more

dunnage type services, as a result of hectic lifestyles, limited time for vacation and the increasing cost of service. The base operation is located in a high density recreation area.

Mammoth Lakes Pack Outfit does not have NFS lands available for pasture grazing. Hay and supplemental feed is brought in for the base operation and supplemental feed is packed into the wilderness when MLPO camps in areas closed to grazing.

Environmental Consequences – Mammoth Lakes Pack Outfit

Table 3.21. Comparison of the effects of all alternatives on Mammoth Lakes Pack Outfit operations in terms of the indicators identified descriptions of methodology at the beginning of Section 3.2.5.1.

Alternative 1 effects are not displayed because under Alternative 1, no new permit would result in complete loss of all business opportunities and revenue..

Pack Station	Effect on operational cost and revenue:									
	# of Employees		# of Stock		Facilities Maintenance		Feed/Grazing		Revenue	
	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3
Mammoth Lakes Pack Outfit										
Environmental Protection Measures	–	–	–	–	↑	–	–	–	–	–
Type & Amount of Use Authorized	↑/↓	–	–	–	↑	↑	–	–	↑	–
Amount of Pasture Grazing Authorized	–	–	–	–	–	–	–	–	–	–
2005 AA/JM ROD	↑	↑	↑	↑	↑	↑	↑	↑	–/↓	↓

Predicted Effects: ↑ = increased cost/revenue; – = no change in cost/revenue; ↓ = decrease in cost/revenue; –/↑ = static/increase cost/revenue; –/↓ = static/decrease cost/revenue; ↑/↓ = unknown effects

Alternative 1 – Direct, Indirect, and Cumulative Effects- Mammoth Lakes PO

No new permit would result in complete loss of all employees, stock and business opportunities on NFS lands. All facilities would be removed. No revenue would be generated from this operation, this would be a long term effect and that portion of the public desiring or requiring stock services will not be served.

Alternative 2 –Mammoth Lakes PO

Direct and Indirect Effects

New actions or mitigation proposed specific to Mammoth Lakes Pack Outfit include authorizing pack trips in the Glass Mountains (non-wilderness) and identifying the walk and lead trail in the permit with associated permittee required maintenance, for the operation as outlined in Chapter 2,

Alternative 2 - Proposed Action.

Personnel Costs: No changes are expected to cost and revenue associated with the number of employees as a result of environmental protection measures and amount of pasture grazing authorized proposed in Alternative 2 because no environmental protection measures are prescribed and pasture grazing is not proposed. (MLPO is not currently authorized any pasture grazing on NFS lands.)

Negligible increased costs are expected in relation to number of employees or number of stock as a result of authorized services and use proposed in Alternative 2 because general allowances for growth

outside the wilderness in the Lakes Basin and the addition of packing services in the Glass Mountains is expected be operated with existing employees.

Alternative 2 proposes to include the existing walk and lead trail as an approved route. It is expected that additional employees will be hired to bring the trail up to FS trail standard, which will have minor short term effects on facilities maintenance cost to complete the trail work. Once the trail work is completed, employee costs will lower again and long term maintenance costs are then expected to be minor over the long term.

Stock Costs: No change is expected to cost and revenue associated with the number of stock, grazing as a result of environmental protection measures and amount of pasture grazing authorized proposed in Alternative 2 because no environmental protection measures are prescribed and pasture grazing is not proposed. (MLPO is not currently authorized any pasture grazing on NFS lands.)

Costs associated with the number of stock are not expected to change as a result of the amount and type of services authorized because all trips can be supported with the existing number of animals.

Facilities Costs: No change is expected to cost and revenue associated with facilities maintenance and cost of feed/pasture grazing as a result of environmental protection measures and amount of pasture grazing authorized proposed in Alternative 2 because no environmental protection measures are prescribed and pasture grazing is not proposed. (MLPO is not currently authorized any pasture grazing on NFS lands.)

Grazing Restriction Costs: No change is expected in regard to grazing restrictions, since wilderness grazing has already been reduced and there are no pastures used by MLPO outside the wilderness.

Revenue: Increased revenue can be expected if use allocations are fully utilized. Alternative 2 restricts commercial stock use to approved routes within the HDRA. It is not expected that this will change operations, nor decrease or increase revenue, since the existing trail system in the Lakes Basin is currently used and no additional routes are needed to facilitate an increase in services.

In summary, it is expected that the additive effect of negligible cost increases described above may have a minor long term effect to the total business revenue and operations costs. Increased costs are likely to be passed along to the customer in the form of increased service rates. Increasing rates are likely to lessen the number of potential customers that can afford the service, there by reducing revenue.

Alternative 3 –Mammoth Lakes PO

Direct and Indirect Effects

The effects of Alternative 3 on operations and revenue are not considered to have any meaningful differences when compared with Alternative 2, except Alternative 3 caps use at the current levels. This will limit the potential for revenue growth through increased services in the Lakes Basin, but the limit on growth is not expected to affect operations.

Alternatives 2 and 3 – Cumulative Effects – Mammoth Lakes PO

Grazing Restriction Costs: Authorized grazing uses in the Ansel Adams and John Muir Wildernesses are expected to increase costs for employees, stock, maintenance and feed/grazing/pasture proposed in Alternatives 2 and 3. The 2005 AA/JM ROD reduces all expense trips below recent historic levels into the Silver Divide and Fish Creek areas. Severe reductions in available grazing wilderness wide will increase costs all around as it will require more stock to pack feed, more employees to handle the stock, more trail maintenance due to more stock on trail and increased costs to buy feed in lieu of wilderness grazing. Effects to operational costs are expected to be minor to moderate over the long term. All increases are likely to result in rising trip prices, making packing services more cost prohibitive to more users, likely reducing revenue.

Revenue: As the town of Mammoth Lakes has developed, visitor capacity has increased. It is likely that an increased number of visitors have taken advantage of the services of MLPO, thereby increasing revenue.

With growth has also come an increasing amount of varied public use on the trail system, roads and other recreation facilities in the Lakes Basin. Increased use has required the pack station to alter its operations to minimize conflict. The development of the mountain bike trail system will continue to have negligible effects to operations because a designated trail passes directly through the pack station yard. Transportation issues will continue to have minor effect on pack station operations.

Type and amount of services authorized in the wildernesses are expected to have negligible to minor effects on operations because the permittee currently disperses use as reflected in destination management quotas. Limits in use in one area are balanced with allowances at other destinations. Even though destination quotas should be less restrictive than the trailhead quotas for total number of trips available, the maximum number of stock in the wilderness at one time limit is likely to result in negligible operational changes.

Wilderness management components of Alternative 3 relevant to Mammoth Lakes Pack Outfit's operation do not change from those in Alternative 2.

McGee Creek Pack Station

Affected Environment

McGee Creek Pack Station (McGee) is located at the base of the McGee Creek drainage on the east side of the Sierra Nevada range. McGee is authorized a base facility on 5.5 acres (Section 5, T4S, R29E), Mono County, for packing and guiding services within the John Muir and Ansel Adams Wildernesses and other non-wilderness areas on the Inyo National Forest. Base facilities include a residence, a bunkhouse, corrals, saddle sheds, loading platforms, hay storage area and employee housing. A detailed listing of the facilities can be found in Alternative 2 under McGee Creek Pack Station. The pack station was started in the late 1920s and has been under permit to the same family

since 1979. Additional historical information for all pack stations can be found in Appendix G of this FEIS.

McGee provides outfitting and guiding services into the John Muir Wilderness, including spot trips, dunnage trips, and full service packing operations. One hour, two hour, half-day and day rides are also conducted. All services are conducted from the base facility. Trips into the Convict drainage require the transport of stock to the base of Laurel Canyon, riding up to the Laurel Trailhead and on into upper Convict drainage. The normal operating season is from June 15 through October 1, depending on the yearly snow pack. McGee has historically grazed the McGee Creek Drainage and Upper Fish Creek. Total stock nights reported are 2001:342, 2002:161 and 2003:40. The pack station reduced grazing over the last four years due to identified resource issues resulting in closures to wilderness grazing areas. McGee has reduced their wilderness grazing by 75%, supplementing with feed or limiting overnight stays on spot and dunnage services.

McGee runs a moderately complex packing operation. The pack station's primary operating areas include McGee Creek Canyon, Upper Fish Creek, Convict Creek and Hilton Creek drainages of the John Muir Wilderness. The three trails used include the McGee Creek Trail, Laurel Mine Road and trail accessing the upper Convict drainage and the Hilton Creek trail via old mining roads from the pack station to the trail. Trips into Convict drainage are spot and dunnage only and make up only 25% of the pack station's overall reported use. McGee operates with a total of 73 head of stock.

McGee provides overnight services in the wilderness for 225-250 clients annually, with 450-500 animal days between the years 2001 and 2004 (INF Tally Summary Data 2001-2004), primarily spot and dunnage services. Destinations in the McGee Creek drainage can be accessed in a single day. Any trip over McGee Pass requires a layover day (two day spot/dunnage trip) for the packers or an extremely long ride (10-14 hours). McGee's business operations have changed to adapt to new wilderness direction including packing feed, using lightweight equipment and minimizing the number of stock needed per trip.

Full day, half-day, and one and two hour rides in the John Muir Wilderness, between the years 2001-2004, averaged 1100-1250 clients (INF Tally Summary Data 2001-2004). One-hour rides take place outside the wilderness, traveling above the pack station along McGee Creek. A high of 583 non-wilderness day rides was reported in 2003. Average use over the reporting period analyzed is 399 people served on day rides (Front Country Pack Stock Use Data 1999-2005).

Commercial stock drives in the spring and fall, to and from winter pastures and the pack station facilities have been offered historically, but have decreased over the last 10 years to occasional trips due to lessening public demand. The routes used are from Independence (8 Mile Ranch) to the pack station along existing roads and trails on both BLM and DWP land with sections of the routes on Forest Service lands.

The permittee is authorized to graze the 45 acre pasture adjacent to the pack station (30 AUM of use annually). The pack station has grazed the pasture since 1947.

Environmental Consequences

Table 3.22. Comparison of the effects of all alternatives on McGee Creek Pack Station operations in terms of the indicators identified descriptions of methodology at the beginning of Section 3.2.5.1. Alternative 1 effects are not displayed because under Alternative 1, no new permit would result in complete loss of all business opportunities and revenue.

Pack Station	Effect on operational cost and revenue:									
	# of Employees		# of Stock		Facilities Maintenance		Feed/Grazing		Revenue	
	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3
McGee Creek Pack Station										
Environmental Protection Measures	–	–	–	–	–	–	–	↑	–	–
Type & Amount of Use Authorized	–	–	↑	–	–	–	–	–	↑	↑
Amount of Pasture Grazing Authorized	–	–	–	–	–	–	–	–	–	–
2005 AA/JM ROD	↑	↑	–	–	–	–	↑	↑	↑	↑

Predicted Effects: ↑ = increased cost/revenue; – = no change in cost/revenue; ↓ = decrease in cost/revenue; –/↑ = static/increase cost/revenue; –/↓ = static/decrease cost/revenue; ↑/↓ = unknown effects

Alternative 1 – McGee Creek PS

Direct, Indirect, and Cumulative Effects

No new permit would result in complete loss of all employees, stock and business opportunities on NFS lands. All facilities would be removed. No revenue would be generated from this operation; this would have major, long term effect on operations. That portion of the public desiring or requiring stock services will not be served.

Alternative 2 – McGee Creek PS

Direct and Indirect Effects

New actions proposed specific to McGee Creek Pack Station that will affect operation and revenue include overnight pack trips using the route used as Mammoth Lakes Pack Outfit in the Glass Mountains and authorizing a larger herd size for the operation as identified in Chapter 2, section 2.3.3.6.

Personnel Costs: No change is expected in costs related to number of employees as a result of environmental protection measures, the amount of pasture grazing, or services and use proposed in Alternative 2 because there are no changes to current pasture use proposed in Alternative 2, use levels will be maintained, and there are no prescribed environmental protection measures.

Stock Costs: No change is expected in costs related to number of employees as a result of environmental protection measures or the amount of pasture grazing in Alternative 2 because there are no changes to current pasture use proposed in Alternative 2, and there are no prescribed environmental protection measures.

Increased total herd size proposed in Alternative 2 will increase costs associated with the number of animals. It is expected that the increase will be negligible to minor over the long term. Additional stock will be made available for non-wilderness services such as day rides and pack trips in the Glass Mountains, and are expected to facilitate increased revenue.

Facilities Costs: No change is expected in costs related to maintenance of facilities as a result of environmental protection measures, the amount of pasture grazing, or services and use proposed in Alternative 2 because there are no changes to current pasture use proposed in Alternative 2, use levels will be maintained, and there are no prescribed environmental protection measures.

Revenue: No change is expected in costs associated with number of employees, maintenance of facilities and feed/grazing pasture as a result of services and use proposed in Alternative 2 because non-wilderness services and use levels proposed will allow permittee to maintain current operations. A negligible to minor, long term increase in revenue may be realized if the allowance for growth in non-wilderness use (including day rides and Glass Mountain pack trips) is maximized.

Proposed travel management is not expected to change operations because operations remain on existing routes within the McGee Creek HDRA.

Alternative 3 –McGee Creek PS

Direct and Indirect Effects

The effects of Alternative 3 are believed to be similar to those of Alternative 2, with the exception of effects caused by the smaller herd size. Potential revenue growth will be limited as compared to Alternative 2 with fewer animals to provide service.

Alternatives 2 and 3 –McGee Creek PS

Cumulative Effects

Personnel Costs: Full site specific implementation of the 2005 AA/JM ROD specified in Alternatives 2 and 3 as it relates to the amount of grazing available and authorized use in the wilderness is expected to increase costs related to employees as it will require more employees to handle the stock, do trail maintenance. Reductions will require longer days spent on the trails for stock and employees. A trip that typically took two moderately long days may now require a single very long day. More intensive stock management measures will be necessary to maintain critical habitat. Support costs will increase potential OWCP costs and increased salaries for longer hours worked for the employees. Wilderness trail suitability determinations will require longer days as certain “short cut” routes will be unavailable. Effects to operational costs are expected to be minor to moderate over the long term for this moderately complex operation.

Stock Costs: Full site specific implementation of the 2005 AA/JM ROD specified in Alternatives 2 and 3 as it relates to the amount of grazing available and authorized use in the wilderness is expected

to increase costs related to stock as more stock will be required to pack feed and longer hours on the trail may increase support costs for veterinary care and tack.

Facilities Costs: Costs associated with maintenance of facilities are expected to remain the same with the implementation of the 2005 AA/JM ROD.

Grazing Restriction Costs: Severe reductions in available grazing in the AA/JM Wildernesses will increase costs as it will increase costs to buy feed in lieu of wilderness grazing.

Revenue: All increases are likely to result in rising trip prices, making packing services more cost prohibitive to more users, likely reducing revenue.

Past actions that have affected packing operations in the McGee drainage are varied and long standing. Early cattle and sheep operations and mining enterprises have afforded the pack station with varying levels of business over the years. The California State Department of Fish and Game has been managing fish in McGee Canyon since at least 1930 with MCPS packing fingerling trout by mule string to plant in the lakes for increased fishing opportunities.

The Public Roads Administration built the McGee Creek Road as a mining access road to the Scheelore Mine up Baldwin Canyon in 1944. Improved road access allowed increased visitors to the canyon, many taking pack trips and day rides for the fishing opportunities. Vehicles were used in mine activities which had an affect on pack strings and riders sharing the road with vehicles. The mines ceased operation in 1955, but the roads left behind continue to be an important part of the operation for day rides.

McGee Cree Pack Station is located very near the Town of Mammoth Lakes and the community of Crowley Lake. Currently, both communities are experiencing explosive growth with the associated growth in visitors to the McGee Creek drainage, affording the pack station with an increased client base.

Wilderness management components of Alternative 3 relevant to McGee Creek's operation do not change from those in Alternative 2.

Rock Creek Pack Station

Affected Environment

The base station facilities for the Rock Creek Pack Station (Rock Creek) are located in the Rock Creek drainage. Facilities are authorized at two locations, the Pack Station (Section 1, T6S, R29E) and the Lower Corral (Section 31, T5S, R30E), Mono County. There are no other offsite facilities authorized. A detailed listing of the facilities can be found in Chapter 2, Section 2.3.3.6 under Rock Creek Pack Station. Authorized facilities include corrals, bunkhouses, tack sheds, outbuildings, an office, utilities, water and septic systems. The pack station has been in operation since 1919 and has been under permit to the current permit holder since 1947. Current facilities are sufficient to handle the current authorized herd size of 110.

There are four wilderness trailheads available from the pack station facilities including Hilton Lakes, Tamarack, Little Lakes and Mono Pass. There are relatively few trails available for non-

wilderness day rides from either the Lower Corral or the Pack Station. Rock Creek has provided pack stock services wilderness wide throughout its years of operations. Their typical area of operation includes Hilton Lakes, Tamarack Lakes/Bench, Little Lakes Valley, Mono Pass, Mono Creek and tributaries, non-wilderness areas of East Fork Rock Creek and the MPWHT near Pizona Springs.

Rock Creek runs the most comprehensive list of pack stock supported services and activities of any pack station on the forest. It is a complex business offering day rides, re-supply, spot and dunnage services, base camps, packing and veterinary instruction trips and multi-day all expense trips in wilderness and in non-wilderness areas. Other non-wilderness activities include commercial stock drives to and from winter pastures and pack station facilities, cattle drive operations in conjunction with valid livestock permits and wild horse observation base camp trips within the Montgomery Pass Wild Horse Territory. Meals are provided for customers at the Pack Station and on the trail. Services may be advertised specific to fishing, photography or hiking. The majority of the activities and operations take place within the AA/JM Wildernesses. Rock Creek offers the highest number of all expense trips within the AA/JM Wildernesses, reporting an annual average of 69 trips servicing an average of 317 clients (INF Tally Summary Data 2001-2004). Trips heading over Mono Pass will typically travel along the John Muir Trail as far south as Sequoia National Park (SEKI) and as far north as Yosemite National Park (YOSE) and operate under Incidental Business Permits with these Parks. Rock Creek has historically grazed, as authorized, in conjunction with their all expense trips. During the 2001 through 2004 use reporting period they serviced an average of 106 spot and dunnage trips serving an average of 346 people (high of 154 trips and 564 people reported in 2004) within the wildernesses. Wilderness day use reported during the same timeframe records a high of 411 clients served in 2001, with an average of 340. Rock Creek continues to provide support to various agencies including, but not limited to, the National Park Service, the Forest Service, tribal agencies and California Department of Fish and Game as well as to other commercial outfitter and guide permittees.

Non-wilderness use has steadily increased over the 2001 to 2005 reporting period. Rock Creek is currently permitted 500 service days in the MPWHA for wild horse observation. Their reported high is 8 trips with 254 clients served in 2004, with an average of 7 trips and 104 clients serviced. Reported day rides stand at a high of 196 (2005) clients served (average 193). Reported high of service days for stock drives is 212, with an average of 112 service days (stock drives are typically four days in length, two of which are on NFS lands (Front Country Pack Stock Use Data 1999-2005). Trails available for non-wilderness day rides include the Mono Pass Stock Trail to the JM Wilderness boundary, the Sand Canyon Trail, accessed from both sites, on the Tamarack Bench and a short ride (the Pond Loop) between the Pack Station and the JM Wilderness boundary to the west.

Rock Creek has two pastures authorized in conjunction with the pack station operations. One is adjacent to the Pack Station, approximately 7 acres permitted since 1952, and one is adjacent to the Lower Corral, approximately 25 acres permitted since 1947.

Rock Creek Pack Station has adapted their operations over time to meet changing wilderness regulations and client demands. They have continued to offer the traditional, multi-day, full service

stock supported vacations through these changes. Client requests have defined a significant portion of the Forest as within their area of operation. Anecdotal trends in public use show a desire for shorter duration trips, with more dunnage type services, as result of hectic lifestyles, commitments, children's school schedules and activities and the increasing costs of service.

The permit holders of Rock Creek Pack Station are also co-owners and permit holders of Mt. Whitney Pack Trains. See the Mt. Whitney Pack Trains section for a description of these operations.

Environmental Consequences - Rock Creek Pack Station

Table 3.23. Comparison of the effects of all alternatives on Rock Creek Pack Station operations in terms of the indicators identified descriptions of methodology at the beginning of Section 3.2.5.1. Alternative 1 effects are not displayed because under Alternative 1, no new permit would result in complete loss of all business opportunities and revenue.

Pack Station	Effect on operational cost and revenue:									
	# of Employees		# of Stock		Facilities Maintenance		Feed/Grazing		Revenue	
	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3
Rock Creek Pack Station										
Environmental Protection Measures	–	–	–	–	↑	↑	↑	↑	–	–
Type & Amount of Use Authorized	↑/↓	↑/↓	–	–	↑	↑	–	–	↑	–
Amount of Pasture Grazing Authorized	–	–	–	–	↑	–	↑	↑	–	–
2005 AA/JM ROD	↑	↑	↑	↑	–	↑	↑	↑	↓	↓

Predicted Effects: ↑ = increased cost/revenue; – = no change in cost/revenue; ↓ = decrease in cost/revenue; –/↑ = static/increase cost/revenue; –/↓ = static/decrease cost/revenue; ↑/↓ = unknown effects

Alternative 1 –Rock Creek PS

Direct, Indirect, and Cumulative Effects

No new permit would result in complete loss of all employees, stock and business opportunities on NFS lands. All facilities would be removed. No revenue would be generated from this operation; this would have major, long term effect on operations. That portion of the public desiring or requiring stock services will not be served.

Alternative 2 –Rock Creek PS

Direct and Indirect Effects

New actions or mitigations proposed specific to Rock Creek that will affect operations include fencing that will lower the amount of pasture grazing authorized and the removal and replacement of the pit toilet, as outlined in Chapter 2, Alternative 2 – Proposed Action.

Personnel Costs: There would be no change in costs associated with number of employees as a result of environmental protection measures proposed in Alternative 2 because it is expected that work will be accomplished with existing employees, with no additional hiring for this requirement.

No change is expected in costs associated with number of employees as a result of services and use proposed in Alternative 2. This is because the proposed non-wilderness use levels will allow the permittee to maintain current operations, with allowances for slight increases in use, not requiring additional personnel.

No change is expected in costs associated with the number of employees as a result of the amount of grazing proposed in Alternative 2 as no additional employees will be required.

Stock Costs: There would be no change in costs associated with number of stock because proposed environmental protection measures do not require an addition to or reduction in the number stock.

No change is expected in costs associated with number of stock, maintenance of facilities and feed/pasture grazing as a result of services and use proposed in Alternative 2. This is because the proposed non-wilderness use levels will allow the permittee to maintain current operations, with allowances for slight increases in use.

No change is expected in costs associated with the number of stock as a result of the amount of grazing proposed in Alternative 2 because no increases in herd size are allowed.

Facilities Costs: An increase in cost is likely for construction, relocation and maintenance of fences required for the protection of riparian resources and/or sensitive plant populations located in both pastures, and relocation of corral panels at the Lower Corral. This is expected to have minor, short term effects for additional construction materials and negligible to minor effects in the long term for continued maintenance of the fencing.

Replacement of the pit toilets at both the Pack Station and the Lower Corral locations will affect operations as described in the cumulative effects common to all analysis units, Section 3.2.5.1.

Grazing Restriction Costs: A reduction in allowable grazing utilization levels in the Upper Corral Pasture proposed in Alternative 2 may increase costs for purchase of additional feed. This effect is expected to be negligible to minor and of long term duration. Exclusion of wet slopes and the small stream adjacent to the corral at the Lower Corral Pasture, coupled with a reduction in allowable grazing, is also likely to increase costs for feed. The forested pasture unit adjacent to the Lower Corral will be available, but is not expected to offset proposed reductions. Cost of maintenance is likely to increase with additional fencing around the forested unit pasture and is expected to be negligible in intensity and of long term duration.

Revenue: No increase or decrease in revenue is expected as a result of environmental protection measures because these actions do not generate revenue.

Environmental protection measures prescribed at the Pizona base camp will have negative impacts to the operation. Removing manure from the corrals after use is expected to have minor to moderate effects on operational costs (facilities maintenance) because of the additional trucking costs, fuel and increased staff hours, to the remote location. Other remedies prescribed to protect riparian resources, such as berming, are not expected to add significantly to operational costs.

Alternative 2 proposed travel management would restrict use to approved routes within the HDRAs, with cross country travel permitted outside HDRAs. This is expected to have negligible effects to operations because for safety reasons clients are kept on trails due to the steep, rocky terrain

in the drainage. An allowance for increase in non-wilderness use, if maximized, is expected to increase revenue.

No change in revenue is expected as a result of utilization levels proposed because pasture use does not generate revenue.

In summary, Rock Creek runs the most complex operation with extensive types and locations of services. Because of its complexity, it is affected by nearly every proposed action. Therefore, it is expected that the individual indicators described above may not affect significant change to costs or revenue; however, the additive effect of minor to moderate cost increases are likely to be substantial to the total business. Increased costs are passed along to the customer in the form of increased service rates. Increasing rates are likely to lessen the number of potential customers that can afford the service, thereby reducing revenue.

Alternative 3 –Rock Creek Pack Station

Direct and Indirect Effects

Personnel Costs: It is expected that work associated with fencing the pastures may be accomplished with existing employees, with no change in costs for additional hiring.

No change is expected in costs for number of employees grazing as a result of authorized services and use proposed in Alternative 3. It is expected that non-wilderness services will remain uninterrupted and unchanged.

Negligible effects are expected in costs related to number of employees as a result of the amount of proposed grazing because it is expected that work to be performed can be accomplished with existing employees.

Stock Costs: Costs associated with number of stock will not increase as a result of environmental protection measures.

No change is expected in costs for number of stock as a result of authorized services and use proposed in Alternative 3 because it is expected that non-wilderness services will remain uninterrupted and unchanged.

Negligible effects are expected in costs related to number of stock because allowable grazing does not dictate the number of stock used in an operation.

Facilities Costs: Increases in maintenance costs associated with more extensive fencing required to protect sensitive plant species and riparian resources within the Lower Corral Pasture are expected to be minor and short term with the construction of additional fence. Long term maintenance will have negligible effects to operational costs.

Replacement of the pit toilets at both the Pack Station and the Lower Corral locations will affect operations (increased costs) as described in the cumulative effects common to all analysis units, Section 3.2.5.1.

Grazing Restriction Costs: The proposal to rest the Upper Corral Pasture is expected to increase feed costs as currently available feed will no longer be available, necessitating an increase in purchased feed, resulting in minor to moderate, long term effects.

Increased costs are expected to be minor to moderate and long term for feed/pasture grazing as a result of the amount of grazing proposed in Alternative 3 because the resting of the Upper Corral Pasture combined with the reduction in allowable use in the Lower Corral Pasture will reduce available forage, requiring the purchase of additional feed.

Increased maintenance costs associated with addition of the forested pasture will be offset by the resting of the Upper Corral Pasture and subsequent reduction in associated maintenance work, which will continue to have negligible, long term effect to the operation.

Revenue: No increase or decrease in revenue is expected as a result of environmental protection measures because these actions do not generate revenue.

Proposed travel management direction outlined in Alternative 3 limiting most travel to approved routes may present negligible, long term effects to operations by eliminating flexibility to travel where desired. There are allowances for slight increases in non-wilderness use, which may lead to increased revenue if fully utilized.

No change in revenue is expected as a result of utilization levels proposed because pasture grazing does not generate revenue.

The effects of Alternative 3 are expected to be higher than those of Alternative 2, with increased costs passed along to the customers in the form of increased service rates. Increasing rates are likely to lessen the number of potential customers that can afford the service, thereby reducing revenue.

Alternatives 2 and 3 –Rock Creek Pack Station

Cumulative Effects

Personnel Costs: Authorized uses in the Ansel Adams and John Muir Wildernesses are expected to increase costs for employees proposed in Alternatives 2 and 3 because more employees will be required to handle stock and increased trail maintenance.

Stock Costs: Authorized uses in the Ansel Adams and John Muir Wildernesses are expected to increase costs for stock, maintenance proposed in Alternatives 2 and 3 because more stock will be required to pack feed.

Grazing Restriction Costs: With the development of the East Fork Campground, Rock Creek lost authorized pasture. This has likely had negligible effect over the long term on the cost of feed (purchase).

Severe reductions in available grazing under the 2005 AA/JM ROD will cause increased costs to buy feed in lieu of wilderness grazing. Effects to operational costs are expected to be moderate to major over the long term.

Revenue: In operation since 1947, Rock Creek Pack Station has made many operational changes as the Forest Service authorized numerous other recreation facilities and activities in the drainage. An increase in non-stock recreation use has altered pack station use patterns in the drainage by reducing the trails available for stock travel in the recreation area. With development also came increased visitors to the area, affording the pack station with an increased client base.

Rock Creek Pack Station currently provides the greatest number of all expense trips in the AA/JM. The 2005 AA/JM ROD reduces all expense trips assigned to Rock Creek below historic levels. All increases are likely to result in rising trip prices, making packing services more cost prohibitive to more users, likely reducing revenue. Wilderness management components of Alternative 3 relevant to Rock Creek's operation do not change from those in Alternative 2.

Pine Creek Pack Station

Affected Environment

The base station for the Pine Creek Pack Station (Pine Creek) is located in Pine Creek Canyon adjacent to the Pine Creek Pass Trailhead (Section 4, T7S, R30E), Inyo County. Base station facilities are authorized at this site only. A detailed listing of improvements can be found in Chapter 2, Section 2.3.3.6 under Pine Creek Pack Station. Authorized facilities include corrals, tent cabins, tack sheds, outbuildings, an office, utilities, water and septic systems. This pack station has been in operation since 1934 and has been under permit to the current permit holder since 1979. Existing facilities are sufficient to handle the authorized herd size of 65.

Three wilderness trailheads are accessible from Pine Creek Pack Station, namely Pine Creek Pass, Gable Lakes and Morgan Pass. Gable Lakes is not open to commercial pack stock per the 2005 AA/JM ROD. Non-wilderness day use is very limited in Pine Creek Canyon. Pine Creek advertises their area of operation to include Pine Creek, French Canyon, Horton Lakes, Hilton Creek, Morgan Lakes and Piute Creek. Non-wilderness operations take place in Pine Creek Canyon and the Hilton Creek Trailhead area.

Pine Creek runs a moderately complex packing operation offering day rides, re-supply, spot and dunnage services, base camps and multi-day all expense trips in the wilderness. Non-wilderness activities include commercial stock drives to and from winter pastures and pack station facilities and day rides ranging from 1/2 hour to full day rides. The majority of the packing services take place within the JM Wilderness. Pine Creek offers relatively few all expense trips within the wilderness, reporting a high of 6 trips servicing 21 clients in 2004 with an average of 4 trips and 15 clients (INF Tally Summary Data 2001-2004). Common destinations include established sites in French Canyon, Pine Creek Canyon and Sequoia Kings National Park (SEKI). Services in SEKI are authorized under an Incidental Business Permit. Pine Creek has historically grazed, as authorized, in conjunction with their overnight packing operations. During the 2001 through 2004 use reporting period they ran a high in 2001 of 65 spot and dunnage trips serving 199 people (with an average of 54 trips and 158 clients) within the wilderness. Wilderness day use reported during the same timeframe shows an average of 44 day rides, with a high of 113 clients served in 2003 (current permitted allocation).

Few trails are available for non-wilderness day rides. Available trails include the Pine Creek Pass Trail to the JM Wilderness boundary, Morgan Pass route to the JM Wilderness boundary, 1/2 hour and one hour rides down canyon on old roads and rides beginning at the Hilton Creek Trailhead.

Non-wilderness day ride use has varied from zero to 35 clients served over the 2001 to 2005 reporting period (annual average is 12 day rides) (Front Country Pack Stock Use Data 1999-2005). Pine Creek Pack Station is located in a canyon that has been heavily influenced by past mining operations. Major mine improvements are still present. There is potential for hydroelectric generation facilities on adjacent private lands. This substantial development, to some extent, detracts from the scenic value of Pine Creek Canyon. Day rides are customer requested and not run daily.

Pine Creek continues to provide support to various agencies including, but not limited to, the National Park Service, the Forest Service, tribal agencies and California Department of Fish and Game as well as to other commercial outfitter and guide permittees. There are no pastures on NFS lands associated with the Pine Creek Pack Station special use authorization. Pine Creek Pack Station holds a pasture lease (non NFS lands) adjacent to the Hilton Creek Trailhead. There are no facilities on National Forest System lands at the Hilton Creek Trailhead.

Pine Creek Pack Station has adapted its operations over time to meet changing wilderness regulations and client demands. They have continued to offer a relatively small number of traditional, multi-day, full service stock supported services compared to the number of spot and dunnage services provided. Levels of wilderness service have remained fairly constant during the Court ordered reduction in use, however represent a reduction from prior year reports.

Permittees of the Pine Creek Pack Station also own and operate Sequoia Kings Pack Trains, based at Onion Valley. See the Sequoia Kings Pack Trains section for a full description of their operations.

Environmental Consequences - Pine Creek Pack Station

Table 3.24. Comparison of the effects of all alternatives on Pine Creek pack Station operations in terms of the indicators identified descriptions of methodology at the beginning of Section 3.2.5.1. Alternative 1 effects are not displayed because under Alternative 1, no new permit would result in complete loss of all business opportunities and revenue.

Pack Station	Effect on operational cost and revenue:									
	# of Employees		# of Stock		Facilities Maintenance		Feed/Grazing		Revenue	
	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3
Pine Creek Pack Station										
Environmental Protection Measures	—	—	—	—	—	—	—	—	—	—
Type & Amount of Use Authorized	—	—	—	—	—	—	—	—	↑/↓	↑/↓
Amount of Pasture Grazing Authorized	—	—	—	—	—	—	—	—	—	—
2005 AA/JM ROD	↑	↑	↑	↑	—/↑	—/↑	↑	↑	↓	↓

Predicted Effects: ↑ = increased cost/revenue; — = no change in cost/revenue; ↓ = decrease in cost/revenue; —/↑ = static/increase cost/revenue; —/↓ = static/decrease cost/revenue; ↑/↓ = unknown effects

Alternative 1 – Pine Creek PS

Direct and Indirect Effects

No new permit would result in complete loss of all employees, stock and business opportunities on NFS lands. All facilities would be removed. No revenue would be generated from this operation; this would have major, long term effect on operations. That portion of the public desiring or requiring stock services will not be served.

Alternative 2 – Pine Creek PS

Direct and Indirect Effects

All Indicators: No change is expected in costs associated with number of employees, number of stock, maintenance of facilities and feed/pasture grazing as a result of components of Alternative 2, including environmental protection measures, services and use authorized, and amount of grazing authorized. This is because no environmental protection measures are prescribed under Alternative 2. No change is expected because non-wilderness services will remain largely uninterrupted and unchanged and there is no pasture grazing authorized with this permit. Pine Creek provides relatively small amounts of non-wilderness day ride or overnight services due to factors including the lack of nearby developed recreation sites (campgrounds) and less scenic attributes of nearby mine site facilities. Pine Creek Canyon is not a designated recreation area, so it does not tend to draw more visitors like other adjacent canyons such as Rock Creek and Bishop Creek.

Alternative 2 proposed travel management would restrict use to approved routes within the HDRAs, with cross country travel permitted outside HDRAs. This is expected to have negligible effects to current operations. Proposed travel management is not expected to change operations. Number of employees is expected to remain constant. No additional facilities are proposed that will require additional maintenance. If fully realized, allowances for increase in non-wilderness opportunities, are likely result in increased revenue.

In summary, the proposals of Alternative 2 are expected to have negligible long term effects on the non-wilderness operations of Pine Creek Pack Station.

Alternative 3 –Pine Creek PS

Direct and Indirect Effects

The effects of the actions proposed in Alternative 3 are expected to be very similar to those of Alternative 2. The only difference is the proposed travel management to stay on approved routes at all times, which is not expected to have any appreciable effect on operations.

Cumulative Effects

Personnel Costs: Increased costs are expected in relation to employees as a result of the amount of grazing available and amount of service and uses authorized within the John Muir Wilderness. Severe grazing reductions in the AA/JM Wildernesses will require longer days spent on the trail for

stock and employees. A trip that typically took two moderately long days would need to be completed in a single very long day. Support costs will increase with potential employee OWCP costs and salaries for longer hours worked for the employees. Overnight holding of stock will require either more intensive stock management measures to manage critical habitat, or more packing of feed. Both options will increase operational costs.

Trail suitability outlined in the 2005 decision identifies certain “short cut” routes as unavailable for commercial pack stock use. This is expected to have minor to moderate long term effects on operation because of increased time on the trail for stock and employees.

Stock Costs: Increased costs are expected in relation to employees, stock and grazing/feed availability as a result of the amount of grazing available and amount of service and uses authorized within the John Muir Wilderness. Severe grazing reductions, more intensive stock management, longer days, and unavailable “short cuts” in the trail system in the AA/JM Wildernesses all result in increased support costs, including numbers of animals needed for trips, veterinary care, and tack for the stock.

Facilities Costs: With the closure of the Tungstar Mine, the Morgan Creek Road has deteriorated significantly. The road is neither a system trail nor road and as such receives no maintenance. As the road continues to deteriorate pack station use, although authorized, may no longer be possible. Although Pine Creek’s use of the road has been minor over the recent past, this will have a minor long term effect on operations as it further reduces destinations available at the pack station.

Costs associated with maintenance of facilities are expected to remain the same under the 2005 AA/JM ROD.

Grazing Restriction Costs: Increased costs are expected in relation to employees, stock and grazing/feed availability as a result of the amount of grazing available and amount of service and uses authorized within the John Muir Wilderness.

Revenue: The potential development of the community of Rovana at the base of Pine Creek canyon is likely to increase the customer base for the pack station. It is likely that an increased customer base will have a negligible to minor effect (increase) on operations revenue. As local development occurs, it is also likely that use conflicts may increase as long as the trail is located in the pack station yard.

A future action likely to affect pack station operations is the development of the Tungstar Hydroelectric project. The power generation facility will be built adjacent to the pack station and is expected to have negligible long term negative effect to the visitor’s and employee’s experience at the pack station because of the noise generated by the facility. It is also likely that the project’s mitigation requirement to develop trailhead parking and realign the trail out of the pack station yard will have a minor positive long term effect on operations because public user conflicts in the yard would be eliminated.

Wilderness management components of Alternative 3 relevant to Pine Creek’s operation do not change from those in Alternative 2.

In summary, it is expected that the individual indicators described above may not affect significant change to costs or revenue; however, the additive effect of minor cost increases may be substantial to the total business. The effects of Alternative 3 are expected to be slightly higher than

those of Alternative 2, with increased costs passed along to the customers in the form of increased service rates. Increasing rates are likely to lessen the number of potential customers that can afford the service, thereby reducing revenue.

Bishop Pack Outfitters

Affected Environment

Bishop Pack Outfitters is operated out of a base station near North Lake in the Bishop Creek drainage (Section 20, T8S, R31E), Inyo County. Additional facilities are also located adjacent to the Aspendell subdivision further down the Bishop Creek drainage (Section 30, T8S, R31E). A detailed listing of the facilities can be found in Chapter 2, Section 2.3.3.6 under Bishop Pack Outfitters. Authorized facilities include corrals, bunkhouses, tack sheds, outbuildings, an office, utilities, water and septic systems. This pack station has been in operation under special use permit since 1927 and has been under permit to the current permit holder since 1994. Existing facilities are sufficient to handle the currently authorized historic herd size of 60.

Three wilderness trailheads are accessible from Bishop Pack Outfitters' base station, namely Piute Pass, Lamarck Lakes and Sabrina Basin. There are relatively few trails available for non-wilderness day rides. Their typical area of operation includes the North Fork of Bishop Creek along the Piute Pass Trail, Piute Canyon, Sabrina Lakes Basin, Lamarck Lakes, Humphreys Basin, Horton Lakes and the non-wilderness areas of the Cardinal Mine and the Buttermilk Country.

Bishop Pack Outfitters runs a moderately complex packing operation. Services and activities include day rides, re-supply, spot and dunnage services, base camps, packing instruction trips and multi-day all expense trips in wilderness and in non-wilderness areas. Other non-wilderness activities include commercial stock drives to and from winter pastures and pack station facilities. The majority of the operations take place within the JM Wilderness. Bishop Pack Outfitters offers a relatively small number of all expense trips within the JM Wilderness, reporting an average of 4 trips and 37 clients served with a high of 7 trips serving a high of 41 clients in 2002 (INF Tally Summary Data 2001-2004).

Occasional trips heading over Piute Pass will travel along the John Muir Trail as far south as Sequoia Kings National Park and as far north as Yosemite National Park and operate under Incidental Business Permits with these Parks.

During the 2001 through 2004 use reporting period Bishop Pack Outfitters ran a high of 162 spot and dunnage trips serving a high of 508 people (2001) with an average of 143 trips and 445 clients served within the wilderness. Wilderness day use reported during the same timeframe records a high of 82 clients served in 2004 with an average of 75. (INF Tally Summary Data 2001-2004). Non-wilderness use has remained fairly constant over the 2001-2005 reporting period. Two trails are available at the pack station for non-wilderness day rides. They include old mine roads beginning on private lands at Cardinal Village Resort to the Cardinal Mine and an unnamed system trail leaving directly out of the pack station to an Owens Valley overlook. Reported non-wilderness day rides

stand at a high of 16 clients served to the Buttermilk overlook and 731 day rides to the Cardinal Mine (Front Country Pack Stock Use Data 1999-2005). Additionally, day rides have been provided in conjunction with tribal events in the Monache Meadow area in the southern Sierra.

Bishop Pack Outfitters continues to provide support to various agencies including, but not limited to, the National Park Service, the Forest Service, Southern California Edison, local tribal agencies, and California Department of Fish and Game as well as to other commercial outfitter and guide permittees.

Bishop Pack Outfitters currently uses four pastures in conjunction with the pack station operations. Two are located near the pack station at North Lake, approximately 16 and 3 acres, each under permit use since 1927. A third pasture is adjacent to the Aspendell facilities (approximately 27 acres and in use since 1927), and the fourth is adjacent to Aspendell east of Highway 168, (approximately 7 acres for late season use since 1927). All pastures and pack station activities were in operation prior to 1927, operating prior to permit. Wilderness grazing has been authorized incidental to packing operations.

Bishop Pack Outfitters has adapted their operations over time to meet changing wilderness regulations and client demands. They have continued to offer the traditional, multi-day full service stock supported vacations through these changes. Anecdotal trends in public use show a desire for shorter duration trips, with more dunnage type services, as result of hectic lifestyles, family commitments, school schedules and activities and the increasing costs of service.

Environmental Consequences - Bishop Pack Outfitters

Table 3.25. Comparison of the effects of all alternatives on Bishop Pack Outfitters operations in terms of the indicators identified descriptions of methodology at the beginning of Section 3.2.5.1.

Alternative 1 effects are not displayed because under Alternative 1, no new permit would result in complete loss of all business opportunities and revenue.

Pack Station	Effect on operational cost and revenue:									
	# of Employees		# of Stock		Facilities Maintenance		Feed/Grazing		Revenue	
	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3
Bishop Pack Outfitters										
Environmental Protection Measures	—	—	—	—	↑	—	—/↑	—/↑	—	—
Type & Amount of Use Authorized	—	—	—	—	↑	↑	↓	↓	—/↑	↓
Amount of Pasture Grazing Authorized	—	—	—	—	—	—/↑	—/↑	↑	—	—
2005 AA/JM ROD	—	—	—	—	—	—	↑	↑	—/↓	—/↓

Predicted Effects: ↑ = increased cost/revenue; — = no change in cost/revenue; ↓ = decrease in cost/revenue; —/↑ = static/increase cost/revenue; —/↓ = static/decrease cost/revenue; ↑/↓ = unknown effects

Alternative 1 –Bishop Pack Outfitters

Direct, Indirect and Cumulative Effects

No new permit would result in complete loss of all employees, stock and business opportunities on NFS lands. All facilities would be removed. No revenue would be generated from this operation; this

would have major, long term effect on operations. That portion of the public desiring or requiring stock services will not be served.

Alternative 2 –Bishop Pack Outfitters

Direct and Indirect Effects

New actions and mitigations proposed specific to Bishop Pack Outfitters that will affect operations include pasture authorizations with specific actions to protect riparian areas, replacing eight temporary travel trailers with tent cabins and the removal and replacement of the pit toilet as outlined in Chapter 2, Alternative 2 – Proposed Action.

Personnel Costs: No change in costs associated with numbers of employees is expected as a result of prescribed environmental protection measures because it is anticipated that all fence construction and maintenance will be handled with existing employees.

Authorized services and use proposed in Alternative 2 are not expected to change costs associated with number of employees because proposed non-wilderness use levels will allow the permittee to maintain current operations, with allowances for slight increase in use.

It is expected that work for the tent cabin and pit toilet will be accomplished with existing employees resulting in no effect on cost of employees.

No change in costs is expected associated with the number of employees as a result of the amount of pasture grazing proposed in Alternative 2.

Stock Costs: No change in costs associated with numbers of stock is expected as a result of prescribed environmental protection measures because number of stock is not a factor in environmental protection.

Authorized services and use proposed in Alternative 2 are not expected to change costs associated with number of stock. This is because proposed non-wilderness use levels will allow the permittee to maintain current operations, with allowances for slight increase in use. Although the proposal is to increase the overall herd size, the increase simply reflects the number of stock currently held on private lands used in conjunction with the Cardinal Mine day rides. In actuality, stock count will remain the same and costs associated with additional authorized numbers stock are expected to remain the same, including feed.

No change in costs is expected associated with the number of stock as a result of the amount of pasture grazing proposed in Alternative 2 because pasture use will remain the same and number of stock is not dependent on pasture availability.

Facilities Costs: Proposed environmental protection measures are expected to increase costs related to maintenance of facilities because additional pasture fencing is required to protect riparian and aspen habitat resources. This is expected to have minor, short term cost effects for additional construction materials and negligible effects in the long term for continued maintenance of the fencing.

There is an expected increase in cost of maintenance of facilities as related to authorized services and use including the proposed replacement of travel trailers used for employee housing with tent cabins. A short term, moderate effect is expected with the construction of the tent cabins and a

negligible long term effect is expected with continued maintenance. Proper abandonment and replacement of the pit toilet will affect operations as described in the cumulative effects common to all analysis units.

No change in costs is expected associated with the cost of maintenance of facilities as a result of the amount of pasture grazing proposed in Alternative 2 because no fencing or other change in facilities is proposed.

Grazing Restriction Costs: Proposed environmental protection measures are expected to increase costs related to the amount of available pasture grazing/feed. Prescribed fencing exclosures will reduce the acreage of pasture grass available for use. This is expected to have a negligible, long term effect for additional purchase of feed.

Authorized services and use proposed in Alternative 2 are not expected to change costs associated with feed/pasture grazing because proposed non-wilderness use levels will allow the permittee to maintain current operations, with allowances for slight increase in use.

No change in costs is expected associated with the amount of feed/pasture grazing as a result of the amount of pasture grazing proposed in Alternative 2. It is expected that feed costs will remain the same due to continued implementation of existing pasture management plans and utilization standards. The areas to be removed from available forage are expected to have a negligible, long term effect on grazing/feed costs because the area removed is a very small fraction of the available pasture.

Revenue: No decrease or increase in revenue is expected as a result of environmental protection measures because these actions do not generate revenue.

No change in revenue is expected with tent platform construction and maintenance because neither the pit toilet nor the employee housing generate revenue.

Travel management proposed in Alternative 2 includes the restriction of use to approved routes within the HDRAs, with cross country travel permitted outside HDRAs. This is expected to have negligible effects to current operations as all use currently runs on approved routes.

Allowances for slight increases in use in the non-wilderness, if fully utilized, may increase revenue. No change in revenue due to pasture management is expected as pasture grazing does not generate revenue.

Alternative 3 –Bishop Pack Outfitters

Direct and Indirect Effects

An increase in cost is likely for construction and maintenance of fences required for the protection of riparian resources and aspen habitat. This is expected to have minor, short term effects for additional materials and negligible, long term effects for continued maintenance of fewer fences than proposed in Alternative 2.

Personnel Costs: It is likely that all work related to environmental protection measures will be accomplished with existing employees. This will affect no change on the costs related to the number of employees.

No change is expected in costs associated with number of employees as a result of the amount of pasture grazing proposed in Alternative 3 because employee numbers are not dependent on grazing.

No change is expected in costs associated with the number of employees as a result of the proposed type and amount of services contained in Alternative 3. This is because authorized uses will remain largely unchanged, without necessitating new hires, and the construction of the proposed tent platforms will likely be completed with existing employees.

Stock Costs: Herd size is not affected by proposed protection measures because grazing does not determine number of stock required to efficiently run the business.

No change is expected in costs associated with number of stock as a result of the amount of pasture grazing proposed in Alternative 3 because stock numbers are not dependent on grazing.

A decrease in the costs associated with the number of stock authorized in Alternative 3 is expected. Alternative 3 proposes 15 stock fewer than currently utilized which will result in lower feed costs. It is likely this will have moderate to major, long term effects on operational revenue because fewer stock will be available for non-wilderness services (Cardinal Mine day rides).

Facilities Costs: The fenced exclosures will slightly reduce the total acreage available for pasture grazing. Protection measures alone are expected to have negligible, long term effect on the costs associated with feed/pasture grazing because the area removed from use is a very small portion of the total available acreage, resulting in very little additional feed purchase.

A short term, minor effect on costs associated with facilities maintenance is expected with the required removal of fence from those pastures not authorized in Alternative 3. For the long term, this will lessen fence maintenance costs, resulting in negligible effects to costs.

Replacement of the existing pit toilet will affect operations as described in the cumulative effects common to all analysis units.

Grazing Restriction Costs: An increase in the costs associated with feed/pasture grazing is expected as a result the amount of pasture grazing authorized under Alternative 3. Alternative 3 proposes a reduction of 20 acres of available pasture and a reduction in the allowable use standard as compared to Alternative 2. It is expected that this will have a minor to moderate effect on feed costs because less pasture grass will be available necessitating additional feed purchase.

The effects of proposed travel management direction may change operations some, mainly eliminating the flexibility to travel where desired, but is not expected to affect revenue. This is expected to have negligible effects to current operations as all use currently runs on approved routes.

In summary, it is expected that the individual indicators described above may not affect significant change to costs or revenue; however, the additive effect of minor cost increases may be substantial to the total business. The effects of Alternative 3 are expected to be moderately higher than those of Alternative 2, with increased costs passed along to the customers in the form of increased service rates. Increasing rates are likely to lessen the number of potential customers that can afford the service, there by reducing revenue.

Alternatives 2 and 3 –Bishop Pack Outfitters

Cumulative Effects

Personnel Costs: Limitations in grazing availability in the AA/JM Wildernesses are expected to require additional employees to manage stock more intensively.

Stock Costs: Limitations in grazing availability in the AA/JM Wildernesses are expected to require additional stock to carry feed, with resulting cost increases.

Facilities Costs: Change in the costs associated with maintenance of facilities as a result of authorized uses in the John Muir Wilderness are expected to be negligible to minor and long term for increased maintenance responsibility of trails.

Grazing Restriction Costs: The development of the Bishop Park Campground forced the removal of the larger Bishop Park Pasture authorized in the past. This has likely had negligible long term effect on costs of feed purchase in lieu of pasture grazing.

Authorized uses in the Ansel Adams and John Muir Wildernesses are expected to increase costs for feed/grazing. Unavailability of grazing resources in upper Piute Creek canyon and reductions in stock nights in Hutchinson Meadow as authorized in the 2005 AA/JM ROD is likely to require more wilderness pack stock support, including increased need to pack feed in for stock where grazing nights are not available. Implementing the grazing limitations is likely to require additional pack stock and additional employees to manage the stock more intensively to manage critical habitat and limited stock nights.

Revenue: The continued development of the recreation facilities and opportunities in the Bishop Creek drainage has increased user capacity, facilitated by campgrounds and resorts, and provided a large visitor base for the area. This has likely added to the business of the pack station. The recent construction of additional camp sites at the existing Forks and Big Trees campgrounds and the new Bitterbrush campground in the drainage has again increased visitor capacity, which is likely to further increase the customer base, especially for day ride services.

Likewise, the development of the hydroelectric facilities throughout the Bishop Creek drainage has created various recreation opportunities which have drawn many visitors to the area. It is likely that this has contributed to business over the years. Hydro development also displaced previously used pasture lands used in connection with packing operations.

The development of the North Lake Campground, with corresponding road improvements, increased vehicle traffic on the North Lake Road which is used to access three different trailheads. With increased traffic came increased conflict in the form of elevated exposure and risk of injury to clients, employees and stock as the pack stock share the road with increasing number vehicles. This has had a minor negative effect on operations which is likely to continue until a parallel trail is constructed.

Bishop Pack Outfitters currently disperses use as reflected in destination management quotas set in the 2005 AA/JM ROD. Limits in use in one area are balanced with allowances at other destinations. However, the set quota will lessen operational flexibility to deliver clients to their

desired locations. As destinations with very low assigned quota fill, potential clients may be unwilling to select another destination and choose to not book services.

Actions adopted relating to the John Muir Wilderness will result in an adjustment of business practices, but should not have a measurable affect on revenue if allocations are fully utilized. If not fully realized, all cost increases in the wilderness, together with the increased costs described in the indirect and direct effects, are likely to be passed onto the customer resulting in higher trip prices, making packing services more cost prohibitive to more users, likely reducing revenue. Wilderness management components of Alternative 3 do not differ from those in Alternative 2.

Rainbow Pack Outfitters

Affected Environment

The base station for the Rainbow Pack Outfitters (Rainbow) is located along the South Lake Road approximately one mile south of the Bishop Pass Trailhead (Section 11, T9S, R31E), Inyo County. Base station facilities are authorized at this site only. A detailed listing of the facilities can be found in Chapter 2, Section 2.3.3.6 under Rainbow Pack Outfitters. Authorized facilities include corrals, employee housing cabins, tack sheds, outbuildings, an office/kitchen, utilities, water and septic systems. This pack station has been in operation under permit since 1924 and has been under permit to the current permit holder since 2000. Existing facilities are sufficient to handle the currently authorized herd size of 40.

Four wilderness trailheads are accessible from the Rainbow base facilities: Bishop Pass, Treasure Lakes, Green Lake and Tyee Lakes. Rainbow's typical area of operations include Tyee Lakes, Treasure Lakes, destinations along the Bishop Pass Trail and on into Sequoia Kings National Park (SEKI), where they operate under an Incidental Business Permit. The Green Lake Trailhead provides access to non-wilderness destinations. Wilderness and non-wilderness day rides are guided along old roads and established trails in the immediate vicinity of the pack station.

Rainbow runs a moderately complex packing operation offering day rides, re-supply, spot and dunnage services, base camps and multi-day all expense trips in the wilderness. Non-wilderness activities include base camps, site location (pack station only) for commercial filming, day rides ranging from ½ hour to two hours and occasional meal service to clients. The vast majority of the packing services take place within the JM Wilderness and Sequoia Kings National Park. Rainbow offers relatively few all expense trips exclusively within the JM Wilderness. None were reported during the period of 2001 to 2004, however, four all expense trips serving 36 clients took place in 2005 within the JM Wilderness. All expense trips destined to SEKI reported during the 2001 to 2004 reporting period records a high of 4 trips and 25 clients served (average of 2 trips and 12 clients) (INF Tally Summary Data 2001-2004). Incidental grazing is authorized where grazing resources are available and is in conjunction with overnight packing operations. During the 2001 through 2004 use reporting period they ran a high of 83 spot and dunnage trips serving 181 people within the wilderness, averaging 75 trips and 306 clients. Of those 83 spot and dunnage, 58 trips and 122 clients

(70%) were destined for the SEKI. Wilderness day use reported during the same timeframe records a high of 121 clients served in 2001 with an average over the four years of 107 rides (INF Tally Summary Data 2001-2004). Rainbow continues to provide pack support to various agencies including, but not limited to, the National Park Service, the Forest Service, tribal agencies and California Department of Fish and Game as well as to other commercial outfitter and guide permittees.

Non-wilderness use has steadily increased over the 2001-2005 reporting period. Their reported high is 498 day rides in 2005 with an average of 353 day rides for the reporting period (Front Country Pack Stock Use Data 1999-2005). Only a few trails are available for non-wilderness day rides, including the Bishop Pass Trail from the pack station to South Lake and an old road from the pack station downstream to Willow Campground. Occasional overnight services are provided to Green and Brown Lakes in non-wilderness.

The current authorization for Rainbow Pack Outfitters does not permit any pastures or offsite corrals. Historically, two pastures have been associated with the operation. They are Donkey Meadow Pasture (53 acres, Section 34, T8S, R31E) and Big Meadow Pasture (10 acres, Section 34, T8S, R31E) located a short distance down stream of the pack station.

The current permit holders have steadily increased and broadened their services over the seven seasons they have been in operation. Increases in use have been within the current management direction and authorized use levels. Rainbow Pack Outfitters' level of service is trending towards increased non-wilderness services and all expense trips, as well as slightly increasing wilderness all expense trips to SEKI and on the Forest. As use levels in wilderness areas are more heavily regulated, non-wilderness opportunities may increase.

Environmental Consequences - Rainbow Pack Outfitters

Table 3.26. Comparison of the effects of all alternatives on Rainbow Pack Outfitters operations in terms of the indicators identified descriptions of methodology at the beginning of Section 3.2.5.1. Alternative 1 effects are not displayed because under Alternative 1, no new permit would result in complete loss of all business opportunities and revenue.

Pack Station	Effect on operational cost and revenue:									
	# of Employees		# of Stock		Facilities Maintenance		Feed/Grazing		Revenue	
	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3
Rainbow Pack Outfitters										
Environmental Protection Measures	—	—	—	—	—	—	—	—	—	—
Type & Amount of Use Authorized	—	—	↑	—	—/↑	—	↑	—	↑	—/↓
Amount of Pasture Grazing Authorized	—	—	—	—	↑	↑	—	—	—	—
2005 AA/JM ROD	—	—	—	—	—	—	—	—	—/↑	—/↑

Predicted Effects: ↑ = increased cost/revenue; — = no change in cost/revenue; ↓ = decrease in cost/revenue; —/↑ = static/increase cost/revenue; —/↓ = static/decrease cost/revenue; ↑/↓ = unknown effects

Alternative 1 – Rainbow PO

Direct, Indirect and Cumulative Effects

No new permit would result in complete loss of all employees, stock and business opportunities on NFS lands. All facilities would be removed. No revenue would be generated from this operation; this would have major, long term effect on operations. That portion of the public desiring or requiring stock services will not be served.

Alternative 2 –Rainbow PO

Direct and Indirect Effects

New actions or mitigations proposed specific to Rainbow Pack Outfitters that will affect operations include authorizing the use of Donkey Meadow Pasture, proper abandonment of the pit toilet and increasing the authorized herd size as outlined in Chapter 2, Alternative 2 – Proposed Action.

Personnel Costs: No change is expected in the cost associated with the number of employees, stock and feed/pasture grazing as a result of environmental protection measures proposed in Alternative 2. The requirement to remove manure from the corrals more frequently and place berms or other features to prevent direct entry of pack station runoff into the Green Creek are the only environmental protection measure required. These tasks are expected to be accomplished with existing employees. Manure removal is expected to have a negligible to minor effect on operational costs for the long term.

Increased costs are expected for employees, stock and maintenance of facilities as a result of authorized services and use proposed in Alternative 2. Increased number of stock will increase feed purchase, which is likely to represent a negligible to minor effect on operational costs over the long duration.

No change is expected in the cost associated with the number of employees as a result of amount of grazing authorized in Alternative 2.

Stock Costs: The environmental protection measures require no additional costs for stock. The proposed increase in total number of stock authorized will be made available for increased non-wilderness service opportunities.

No change is expected in the cost associated with the number of stock as a result of amount of grazing authorized in Alternative 2.

Facilities Costs: The environmental protection measures require no additional facilities. Berming the creek is expected to have negligible long term effects to operational costs.

Proper abandonment of the pit toilet will affect operations as described in the cumulative effects common to all analysis units.

An increase in the cost of maintenance is expected as a result of the amount of grazing authorized in Alternative 2. Donkey Meadow has been used under authorization to Rainbow Pack Outfitters since the 1930s. With the expiration of the prior term permit in 1999, it was decided to rest the meadow until analysis for permit re-issuance was completed. It has not been grazed since 1999. The

authorization of the Donkey Meadow Pasture will not add significant grazing resources to affect a reduction in feed costs; however, it will facilitate improved stock health and welfare, allowing an area for rest and recuperation of working and injured stock. Initial reconstruction of the dilapidated fencing at Donkey Meadow is expected to have minor short term effects on costs, but long term effects are expected to be negligible.

Grazing Restriction Costs: The environmental protection measures require no additional costs relative to grazing or feed.

No change is expected in the cost associated with feed/pasture grazing as a result of amount of grazing authorized in Alternative 2.

Revenue: General allowances for growth outside the wilderness are expected to result in increased revenue, with effects expected to minor to moderate for a moderate length of time.

As described in Alternative 2, stock travel is restricted to approved routes within HDRAs, with cross country travel permitted outside of HDRAs. It is expected that this will not change operations, or decrease or increase revenue

Alternative 3 –Rainbow Pack Outfitters

Direct and Indirect Effects

Personnel, Facilities, Grazing Costs: No change is expected in the cost associated with the number of employees, stock and feed/pasture grazing as a result of environmental protection measures as proposed in Alternative 3. Effects do not differ with these analytical elements because the alternatives are the same.

Operational effects of the amount of authorized grazing on employee, stock and feed costs are expected to be similar to Alternative 2 except that if ecological condition improves, higher utilization levels can be set.

Stock Costs: Associated costs related to the number of stock proposed in Alternative 3 are expected to stay static or decrease. It is expected that the maximum number of stock at one time as prescribed in the 2005 AA/JM FEIS/ROD will be in use in the wilderness, leaving only five animals available for non-wilderness use. This is expected to result in a revenue loss as non-wilderness day rides are a major component of this operation. Costs associated with number of stock or employees authorized are not expected to change under Alternative 3 because the proposal represents no change from current authorization.

Alternatives 2 and 3 - Rainbow Pack Outfitters

Cumulative Effects

No change is expected in the cost of number of employees, maintenance of facilities and feed as a result of services authorized in the John Muir Wilderness. Currently, commercial pack stock grazing is prohibited in Upper Bishop Creek. The vast majority of overnight use is occurring in SEKI; consequently, National Forest wilderness grazing limitations are not expected to affect operations.

The continued development of the recreation facilities and opportunities in the Bishop Creek drainage has increased user capacity and visitation, facilitated by campgrounds and resorts. This has likely added to the business of the pack station. The recent construction of additional camp sites at the existing Forks and Big Trees campgrounds and the new Bitterbrush campground in the drainage has again increased visitor capacity, which is likely to increase the customer base, especially for day ride services.

The development of the hydroelectric facilities throughout the Bishop Creek drainage has created various recreation opportunities which have drawn many visitors to the area. It is likely that this has contributed to business over the years. Actions adopted in Alternatives 2 and 3 relating to the John Muir Wilderness may result in an adjustment of business practices, but should not have a measurable affect on operations or revenue. Flexibility in meeting customer requested destinations will be reduced. This may have a negligible to minor, long term effect on revenue if customers choose not to book services because they cannot be packed to a specific desired destination.

However, proposed destination management outlined in the 2005 AA/JM ROD allows for continuing current levels of use. It is expected that current operations within the wilderness will generally continue uninterrupted and unchanged having a negligible effect on operational cost and revenue. In fact, if allocations are fully utilized, it is expected that revenue will have a negligible increase over the long term. Day use is likely to increase with the elimination of service days, replaced with the control measure of total stock at one time in the wilderness. Day use revenue may increase.

Although the intensity and duration of effect is unknown at this time, the eventual establishment of a stock management plan in SEKI will affect Rainbow's operations because the vast majority of their overnight business is destined for the Park.

Glacier Pack Train

Affected Environment

The base station for the Glacier Pack Train (Glacier) is located along the Glacier Lodge Road in the Big Pine Creek drainage (Section 36, T9S, R32E), Inyo County. The pack station sits approximately one half mile east of Glacier Lodge. Base station facilities are authorized at this site only. A detailed listing of the facilities can be found in Chapter 2, Section 2.3.3.6 under Glacier Pack Train.

Authorized facilities include corrals, employee housing cabins, tack sheds, utilities, and water and septic systems. This pack station has been in operation since 1925 and has been under permit to the current permit holder since 1965. Current facilities are more than sufficient to handle the currently authorized herd size of 30 and will be sufficient to handle the proposed increase to 55. Three wilderness trailheads are accessible from the Glacier Pack Train's base facilities. They include the North and South Forks of Big Pine Creek and the Baker Lake Trailhead. Additionally, the Birch Lake, Red Lake, Sawmill Pass, Taboose Pass, Sage Flat and Haiwee trailheads have had consistent light use over the history of the outfit, typically for customer requested pack stock support for

hunting. Glacier's typical area of operations has included Big Pine Lakes, South Fork Big Pine Creek, Baker Lake/Creek, Birch Creek/Lake, Tinemaha Creek and the southern areas of Haiwee and Sage Flat. The Baker Lake Trailhead also provides access to non-wilderness destinations. The majority of services provided occur in the John Muir Wilderness. Day use was reportedly higher prior to the loss of the Glacier Lodge to fire. There is currently little demand for non-wilderness services in the vicinity of the pack station. Increased day use may result from the reconstruction of Glacier Lodge.

Glacier Pack Train runs a fairly simple operation, low in complexity and constant in the levels of use. Services and activities include day rides, re-supply, spot and dunnage services and base camps in wilderness. Non-wilderness activities include commercial stock drives to and from winter pastures and pack station facilities and occasional client requested day rides and stock supported hunting trips. Glacier Pack Train offers few all expense trips within the JM Wilderness, reporting only 2 trips serving 12 clients during the reporting period (INF Tally Summary Data 2001-2004). During the 2001 through 2004 use reporting period they operated a high of 162 spot and dunnage trips serving 451 people (2001) with an average of 117 trips and 314 clients within the wilderness. Ninety percent of this use was in the Big Pine Lakes basin. Wilderness day use reported during the same timeframe records a high of 111 people served in 2003 and 2004 (maximum allocation) with an average of 98 day rides for the reporting period. Glacier Pack Train continues to provide support to various agencies including, but not limited to, the Forest Service, Los Angeles Department of Water and Power, California Department of Water Resources and California Department of Fish and Game as well as to other commercial outfitter and guide permittees.

Non-wilderness use has remained an insignificant component of the overall operation. No non-wilderness day use or commercial stock drive use was reported during the reporting period of 2001-2005 (Front Country Pack Stock Use Data 1999-2005). Only a few trails are available for non-wilderness day rides, including the Baker Lakes trail to the wilderness boundary and the South Fork Big Pine trail to the wilderness boundary.

Glacier Pack Train has one pasture on NFS lands authorized in conjunction with the pack station operations. McMurry Pasture is fenced and irrigated and is located in the middle of a production livestock cattle allotment. Stock held in this pasture typically numbers less than ten and are comprised of brood stock. Glacier Pack Train breeds and trains their own stock to be used specifically in their pack station operations. The pasture has been under special use authorization since 1959.

Glacier's predominant activities have been to provide pack stock support into the Big Pine Lakes basin facilitating customer access to the Palisade Glacier region. Geographically speaking, from the pack station, Glacier Pack Train is limited to this region. There is no access over the crest into Sequoia Kings National Park. Hunting party support using outside trailheads, identified above, has been and continues to be a minor, but constant part of the operations.

Environmental Consequences – Glacier Pack Train

Alternative 1

Direct, Indirect, and Cumulative Effects

No new permit would result in complete loss of all employees, stock and business opportunities on NFS lands. All facilities would be removed. No revenue would be generated from this operation; this would have major, long term effect on operations. That portion of the public desiring or requiring stock services will not be served.

Alternative 2 – Glacier Pack Train

Direct and Indirect Effects

Table 3.27. Comparison of the effects of all alternatives on Glacier Pack Train operations in terms of the indicators identified descriptions of methodology at the beginning of Section 3.2.5.1. Alternative 1 effects are not displayed because under Alternative 1, no new permit would result in complete loss of all business opportunities and revenue.

Pack Station	Effect on operational cost and revenue:									
	# of Employees		# of Stock		Facilities Maintenance		Feed/Grazing		Revenue	
	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3
Glacier Pack Train										
Environmental Protection Measures	–	–	–	–	–	–/↑	–/↑	–	–	–
Type & Amount of Use Authorized	–	–	↑	–	–	–	–	–	–/↑	–/↑
Amount of Pasture Grazing Authorized	–	–	–	–	–	–	–	↑	–	–
2005 AA/JM ROD	–	–	–	–	–	–	–	–	↑	↑

Predicted Effects: ↑ = increased cost/revenue; – = no change in cost/revenue; ↓ = decrease in cost/revenue; –/↑ = static/increase cost/revenue; –/↓ = static/decrease cost/revenue; ↑/↓ = unknown effects

Personnel and Facilities Costs: No change in the costs associated with the number of employees or maintenance of facilities is expected as a result of Alternative 2's environmental protection measures because there will be no change in operations involved..

No change in the costs of number of employees and maintenance of facilities is expected as a result of the amount and types of uses and services proposed.

No change in the costs of number of employees and maintenance of facilities expected as a result of the amount of grazing available proposed in Alternative 2 because no changes to allowable utilization from what is currently authorized are proposed that will have effect on costs or revenue.

Stock Costs: Alternative 2 proposes an increase in total stock authorized. The stock held in the McMurry Meadow Pasture was traditionally understood to be permitted as part of the separate pasture permit, and not the pack station permit. These animals are used in direct connection with the pack station operations as breeding stock to be trained and used in the operations. Because the total

proposed herd size of 55 encompasses these additional animals typically held at McMurry Meadow Pasture, no change is expected in operational costs.

No other stock cost changes are expected.

Grazing Restriction Costs: No change in the costs associated with the number of feed is expected as a result of Alternative 2's environmental protection measures. On dates will continue to be prescribed in McMurry Pasture to protect the Inyo star-tulip, a proposed sensitive plant species, which represents no change from current operations. Actions are proposed to protect Father Crowley lupine within the permit boundary. Protection of either plant population will not affect operational costs or revenue. No other grazing cost changes are expected.

Revenue: Current operations are expected to continue uninterrupted and unchanged. There are no additional facilities proposed. If fully realized, increased use allowances in non-wilderness use may increase revenue. Glacier runs a low complexity operation with nearly all uses destined for the wilderness. Allocations set in the Golden Trout and South Sierra Wildernesses are likely to have negligible long term effect on business revenue because use levels proposed reflect historical use. It is expected that use in the non-wilderness will continue to be a minimal component of the business.

Alternative 2 proposes an increase in total stock authorized. Because the total proposed herd size of 55 encompasses these additional animals typically held at McMurry Meadow Pasture, no change is expected in revenue.

Proposed travel management is not expected to change operations in the Big Pine Creek drainage because all stock use travels on existing, authorized routes. Use originating at the Birch Creek trailhead (typically used for fall hunting parties) may be affected as cross country travel from McMurry Pasture to the system trail crosses Birch Creek and an unnamed tributary. If continued use of the cross country route adversely impacts the riparian habitat, use will be required to travel on the road to the trailhead. This is expected to be inconvenient, but have negligible effects on operations.

No change in revenue is expected as a result of the amount of grazing available proposed in Alternative 2 because no changes to allowable utilization from what is currently authorized are proposed.

Alternative 3 –Glacier Pack Train

Direct and Indirect Effects

All Indicators: The effects of prescribed environmental protection measures do not change from those identified under Alternative 2 because the prescriptions do not change.

Alternative 3 proposes an increase in total stock authorized but that number is less than that authorized under Alternative 2. It is likely that fewer animals will be held at McMurry Meadows (breeding stock) rather than reducing the working herd at the pack station. This is expected to have negligible long term effect to operations because these animals do not provide direct revenue service to the operations.

Alternative 3's proposed travel management restricts use to approved routes. Services provided up Birch Creek are typically started at McMurtry Meadows and travel cross country to the system trail. This is expected to be inconvenient, but have negligible long term effects on operations.

The effects of allocated use in the South Sierra Wilderness do not change from those described under Alternative 2 because the conversion from trips to service days captures the same level of use.

The effects of the amount of grazing authorized do not differ from those identified under Alternative 2. Alternative 3 proposes the application of INF LRMP Amendment 6 to the pasture, but the estimated use figure is identical.

Alternatives 2 and 3 - Cumulative Effects

In operation since 1925, Glacier Pack Train has been affected by the many developed recreation sites, resorts and other authorized recreation uses such as outfitters and guides. All aspects of recreation have added to the visitor base in the Big Pine Creek drainage. It is likely that increasing use has contributed to the business of the pack station.

The Palisade School of Mountaineering located at the base of the glaciers provided steady business for the pack station throughout the 1960s, 70s and into the 1980s. When the School was dissolved, that business was lost. Likewise, it is likely that business dropped when the Glacier Lodge burned down because the visitor capacity in the drainage was lowered. It is expected that the coming reconstruction of the lodge will again bring in visitors to the drainage, a portion of which will use the services of the pack station.

Effects of the continuing mountain yellow-legged frog habitat restoration activities, including fish eradication and fish enhancement, are not entirely known at this time. It is known, however, that removal of fish from certain lakes has changed the use pattern in the Big Pine Lakes Basin, but the effect to revenue is less certain because as eradication takes place, fish enhancement will occur at nearby lakes.

No change is expected in the cost of number of employees, number of stock, maintenance of facilities and feed as a result of services authorized in the John Muir Wilderness. Actions relating to the John Muir Wilderness may result in an adjustment of business practices, but should not have a measurable affect on operations or revenue because proposed destination management quotas outlined in the 2005 AA/JM ROD allow for continuing recent historic levels of use. It is expected that current operations within the wilderness will largely continue uninterrupted and unchanged. The one exception is that day use is likely to increase with the elimination of service days, controlled by stock at one time in the wilderness. This is expected to have minor to moderate long term effects on revenue.

Sequoia Kings Pack Trains

Affected Environment

Sequoia Kings Pack Trains (Sequoia Kings) pack station facilities are located at the end of the Onion Valley Road (Section 25, T14S, R33E), west of the city of Independence, Inyo County. A detailed listing of the facilities can be found in Chapter 2, Section 2.3.3.6 under Sequoia Kings Pack Trains. Authorized facilities include corrals, employee housing, tack sheds, utilities, water and septic systems. This pack station has been in operation since 1872, based out of Independence. Operations have occurred from the present location since 1947. The pack station has been under permit to the current permit holder since 1993. Existing facilities are sufficient to handle the currently authorized herd size of 65.

Services are conducted from the base facility at Onion Valley, and corrals at Shepherd, Taboose and Sawmill Pass Trailheads. Sequoia Kings' typical area of operations has included these areas. The majority of services provided enter Sequoia Kings National Park, passing through the John Muir Wilderness. There is little demand for non-wilderness services in the vicinity of the pack station.

Sequoia Kings Pack Trains runs a fairly simple operation, low in complexity and constant in the levels of use. Services include day rides, re-supply, spot and dunnage services, base camp and traveling all expense trips. Commercial stock drives to and from winter pastures and pack station facilities are currently authorized. The predominant services provided are spot trips and dunnage drops in SEKI. During the 2001 through 2004 use reporting period they operated an average of 40 trips and 143 people served with a high of 44 spot and dunnage trips serving 126 people (2003), with 95% of those clients destined for the Park (INF Tally Summary Data 2001-2004). Wilderness day use reported during the same timeframe ranged from zero in 2004 to a high of 25 day rides in 2001 and 2003. Trends in use show a fairly constant total use level during the 2001 to 2004 wilderness use reporting period. This level of use, however, is less than pre-2001 levels. Sequoia Kings Pack Trains continues to provide support to various agencies including, but not limited to, the Forest Service, the National Park Service, and California Department of Fish and Game as well as to other commercial outfitter and guide permittees.

Non-wilderness use has remained an insignificant component of the overall operation. Sequoia Kings reported zero non-wilderness day use or commercial stock drive use during the reporting period of 2001-2005 (Front Country Pack Stock Use Data 1999-2005). Opportunities for day ride services are extremely limited at the Onion Valley site.

There are no pastures on NFS lands associated with the Sequoia Kings Pack Trains special use authorization.

Permittees of Sequoia Kings Pack Trains also own and operate Pine Creek Pack Station. See above for a full description of the Pine Creek Pack Station operations.

Environmental Consequences - Sequoia Kings Pack Trains

Table 3.28. Comparison of the effects of all alternatives on Sequoia Kings Pack Trains operations in terms of the indicators identified descriptions of methodology at the beginning of Section 3.2.5.1. Alternative 1 effects are not displayed because under Alternative 1, no new permit would result in complete loss of all business opportunities and revenue.

Pack Station	Effect on operational cost and revenue:									
	# of Employees		# of Stock		Facilities Maintenance		Feed/Grazing		Revenue	
	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3
Sequoia Kings Pack Trains										
Environmental Protection Measures	–	–	–	–	–	–	–	–	–	–
Type & Amount of Use Authorized	–	–	–	–	–	–	–	–	–	–
Amount of Pasture Grazing Authorized	–	–	–	–	–	–	–	–	–	–
2005 AA/JM ROD	–/↑	–/↑	–/↑	–/↑	↑	↑	–	–	↑/↓	↑/↓

Predicted Effects: ↑ = increased cost/revenue; – = no change in cost/revenue; ↓ = decrease in cost/revenue; –/↑ = static/increase cost/revenue; –/↓ = static/decrease cost/revenue; ↑/↓ = unknown effects

Alternative 1 –Sequoia Kings PT

Direct, Indirect and Cumulative Effects

No new permit would result in complete loss of all employees, stock and business opportunities on NFS lands. All facilities would be removed. No revenue would be generated from this operation; this would have major, long term effect on operations. That portion of the public desiring or requiring stock services will not be served.

Alternatives 2 and 3 –Sequoia Kings PT

Direct and Indirect Effects

No effect is expected in costs related to the number of employees, stock, maintenance or feed/pasture grazing as a result either alternative's proposed environmental protection measures because there are no measures prescribed.

Likewise, no change in costs is expected related to number of employees, stock, facilities maintenance or feed/pasture grazing as a result of the authorized services, uses and amount of grazing proposed in either alternative. This is because 1) it is expected that the amount of authorized services outside the AA/JM Wildernesses will remain fairly constant, even with allowances for slight increases, owing to the fact that non-wilderness day ride opportunities are limited around the Onion Valley base facility, 2) Sequoia Kings Pack Trains does not currently graze National Forest System pasture land, and none is proposed, 3) the rebuilding of the Sawmill Pass trailhead corral will better facilitate trip logistics, but is not expected to affect revenue and will not add significant costs for maintenance. It is not expected that the travel management direction proposed in either alternative will negatively effect operations, nor decrease or increase revenue, because non-wilderness use is an insignificant component of the entire business.

Alternatives 2 and 3- Sequoia Kings Pack Trains

Cumulative Effects

The accidental destruction by fire of the Sawmill Trailhead Corral has added a minor measure of inconvenience to the Sequoia Kings operation because they no longer have the ability to overnight the stock at the trailhead prior to trip departure or upon return. This has necessitated changes to the operations at that trailhead, but has had negligible to minor, moderate term effect on the total operation.

Effects of the continuing mountain yellow-legged frog habitat restoration activities, including fish eradication and fish enhancement, are not entirely known at this time. It is known, however, that removal of fish from certain lakes has changed the use pattern in the Independence Creek drainage, but the effect to revenue is less certain because as eradication takes place, fish enhancement will occur at nearby lakes.

No changes are expected in cost of number of employees or number of stock, facilities maintenance or the amount of grazing resources as a result of the implementation of the 2005 AA/JM ROD. This is because the majority of Sequoia Kings Pack Trains business enters Sequoia Kings National Park, and destination management quotas for the forest reflect recent historic use levels. Operations will largely continue uninterrupted and unchanged, likely having negligible to minor effects on revenue.

It is expected that the stock at one time limit will allow for increased day ride opportunities, which, is likely to have a negligible to minor beneficial effect to revenue.

Although the intensity and duration of effect is unknown at this time, the eventual establishment of a stock management plan in SEKI will affect Sequoia Kings' operations because the vast majority of their overnight business is destined for the Park.

Cottonwood Pack Station

Affected Environment

Cottonwood Pack Station (Cottonwood) is located at the Horseshoe Meadow trailhead (Section 15, T17S, R35E), Inyo County, and is surrounded by the Golden Trout Wilderness. The pack station was relocated to its present location in 1985 after the completion of road construction to the present roads end. A detailed listing of the facilities can be found in Chapter 2, Section 2.3.3.6 under Cottonwood Pack Station and generally include corrals, tack sheds, employee housing, an office, kitchen and water and sanitation facilities. This pack station has been in operation since 1923 and has been under permit to the current permit holder since 1982. Current facilities are sufficient to handle the currently authorized herd size of 80.

Four wilderness trailheads are accessible from the Cottonwood base facilities: Cottonwood Lakes accessing the John Muir Wilderness, and Cottonwood Pass, Mulkey Pass and Trail Pass accessing the Golden Trout Wilderness. Cottonwood Pack Station has historically used the Sage Flat Trailhead as

well to access the South Sierra and Golden Trout Wildernesses. The typical area of operations includes the Cottonwood Lakes Basin in the JM Wilderness, and Little and Big Whitney Meadows, Templeton, Tunnel and Ramshaw Meadows, Rocky Basin Lakes and Chicken Spring Lake within the Golden Trout Wilderness, and over Cottonwood Pass on into Sequoia Kings National Park where they operate under an Incidental Business Permit. Use of the Sage Flat Trailhead typically occurs during the shoulder seasons when road conditions do not allow access to Horseshoe Meadow, or upon client request.

Cottonwood Pack Station is one of two remaining operators identified in the GT Wilderness Management Plan authorized to provide services within the GT Wilderness. The operation is of low complexity, providing basic pack stock services such as day rides, re-supply, spot and dunnage services, and a few all expense trips. The majority of the packing services travel through the GT Wilderness destined for Sequoia Kings National Park. Spot and dunnage trips are the predominant type of service provided by Cottonwood. Reported use shows a range of 6 to 14 trips and 17 to 75 people served exclusively in the GT/SS during the 2001 to 2004 reporting period. Reported use shows an average of 33 trips and 181 people served, with a high in 2000 of 49 trips and 317 people served, accessing SEKI through the GT Wilderness (Cottonwood Pass to SEKI Summary). Cottonwood reports relatively few all expense trips exclusively within the JM Wildernesses. Because of limitations with the previous service day allocations, no all expense trips were reported during the period of 2001-2004. Cottonwood changed business practices to maximize service day use in the Cottonwood Basin (see trends discussion below). Grazing resources have not been available in Cottonwood Lakes Basin since the mid-eighties. Incidental grazing is authorized where grazing resources are available in the Golden Trout and South Sierra Wildernesses.

Wilderness day use reported during the same timeframe records a high of 94 clients served in the GT Wilderness (Front Country Pack Stock Use Data 1999-2005) and a high of 79 into the JM Wilderness (INF Tally Summary Data 2001-2004). Cottonwood Pack Station continues to provide pack support to various agencies including, but not limited to, the National Park Service, the Forest Service, tribal agencies, Los Angeles Department of Water and Power and California Department of Fish and Game as well as other commercial outfitter and guide permittees.

Non-wilderness use has remained an insignificant component of the overall operation. Cottonwood reported zero clients served for non-wilderness day use during the reporting period of 2001 to 2005 (Front Country Pack Stock Use Data 1999-2005). Other than very short rides around the pack station facilities, non-wilderness lands are not available as the Golden Trout Wilderness surrounds the facility.

Two pastures, Overholster and South Fork Meadow Pastures, have been authorized in the past, however none are currently authorized.

The predominant activities have been to provide pack stock support into the Sequoia Kings Canyon National Park and stock support for fisherman wanting to access the Cottonwood Lakes Basin. Trends show that use in the Golden Trout has changed due to California Department of Fish and Game management of the California golden trout species, currently listed as sensitive. Day ride

services to lake destinations have declined. Trends in self reported use data show services in the John Muir Wilderness have continued to decline due to management decisions on acceptable use levels. Cottonwood Pack Station has continued to adapt its operations in the face of changing wilderness management policy and regulation.

Environmental Consequences - Cottonwood Pack Station

Alternative 1 – Direct, Indirect and Cumulative Effects

No new permit would result in complete loss of all employees, stock and business opportunities on NFS lands. All facilities would be removed. No revenue would be generated from this operation; this would have major, long term effect on operations. That portion of the public desiring or requiring stock services will not be served.

Alternative 2 –Cottonwood Pack Station

Direct and Indirect Effects

Table 3.29. Comparison of the effects of all alternatives on Cottonwood Pack Station operations in terms of the indicators identified descriptions of methodology at the beginning of Section 3.2.5.1. Alternative 1 effects are not displayed because under Alternative 1, no new permit would result in complete loss of all business opportunities and revenue.

Pack Station	Effect on operational cost and revenue:									
	# of Employees		# of Stock		Facilities Maintenance		Feed/Grazing		Revenue	
	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3
Cottonwood Pack Station										
Environmental Protection Measures	–	–	–	–	–	–	–	–	–	–
Type & Amount of Use Authorized	↑	–	–	–	↑	–	–	–	↑	↓
Amount of Pasture Grazing Authorized	–	–	–	–	–	–	–	–	–	–
2005 AA/JM ROD	↑	↑	–	–	–	–	–	–	↑	↑/↓

Predicted Effects: ↑ = increased cost/revenue; – = no change in cost/revenue; ↓ = decrease in cost/revenue; –/↑ = static/increase cost/revenue; –/↓ = static/decrease cost/revenue; ↑/↓ = unknown effects

New actions proposed specific to Cottonwood Pack Station that will effect operations include authorizing a day ride loop in the Horseshoe Meadow area as outlined in Chapter 2, Alternative 2 – Proposed Action.

Negligible change is expected in costs related to the of number of employees, number of stock, maintenance of facilities or feed/grazing/pasture as a result of environmental protection measures prescribed in Alternative 2. The restricted camping zones prescribed in the Golden Trout Wilderness for the protection of resources are expected to have negligible effect on operations over the long term because camping will continue to be allowed with the use of designated campsites. No increase or decrease in revenue is expected.

Alternative 2's proposed levels of service and use within the Golden Trout Wilderness may cause increased costs for maintenance of trails and facilities because it is expected that, when constructed, the day ride loop trail will be maintained by the permittee. Increased day ride potential proposed in the Golden Trout Wilderness is likely to result in additional employees to provide more day rides. Both of these cost increases are likely to result in increased revenue because they will allow for increased business opportunity.

Alternative 2's proposed travel management restriction within HDRA is not expected to affect operations because there has been very little demand for this use.

No change is expected in the cost related to the of number of employees, number of stock, maintenance of facilities or feed/grazing/pasture as a result of amount of authorized grazing prescribed in Alternative 2 because current operations will be maintained under the proposed actions. No change in revenue is expected due to this action because grazing does not generate income. Effects of environmental protection measures, proposed grazing and travel management are expected to be the same for Alternative 3.

Alternative 3 –Cottonwood Pack Station

Direct and Indirect Effects

The effects of actions proposed in alternative 3 are similar to those of Alternative 2, with the exception of the authorized levels of service. Alternative 3 proposes an allocation of service days, rather than a number of trips, which represents reduced levels of service. Access to SEKI is Cottonwood's core business. Reducing that opportunity would have a moderate to major effect on operations revenue. Day use in the GTW will be limited to service days rather than limited by herd size. It is expected the number of service days allocated will have minor long term effects to revenue as use will not be allowed to exceed the allocation.

Alternatives 2 and 3 –Cottonwood Pack Station

Cumulative Effects

A past action to affect Cottonwood Pack Station operations includes the development of the complex of recreation sites at Horseshoe Meadow. The completion of the road and facilities enabled the pack station to move closer to the wilderness boundaries. This had a beneficial effect on the health and welfare of the stock as they now had a significantly shorter distance to travel to reach client destinations, as well as creating a more efficient operation closer to the activities.

The ongoing contribution of business from the Golden Trout Camp has had moderate long term effects to revenue. The camp has afforded a steady supply of work to Cottonwood over the years. This is not expected to change.

Effects of the continuing mountain yellow-legged frog habitat restoration activities, including fish eradication and fish enhancement, are not entirely known at this time. It is known, however, that removal of fish from certain lakes has changed the use pattern in the both the Cottonwood Lakes

Basin and the high lakes of the Golden Trout Wilderness, but the effect to revenue is less certain because as eradication takes place, fish enhancement will occur at nearby lakes.

Authorized uses in the John Muir Wilderness are not expected to change costs related to the number of stock, costs of feed/grazing and maintenance of facilities because operations will remain unchanged in the Cottonwood Lakes Basin. However, increased day ride and all expense service potential, made available in the 2005 AA/JM ROD and managed through stock at one time and all expense destination quotas in the Cottonwood Lakes Basin, are expected to increase employee costs for providing increased services. If fully realized, this cost increase is likely to result in moderate beneficial effects to revenue.

The effect to overall business revenue is unknown, but is likely to decrease as the opportunities within the JM Wilderness may be overshadowed by the reduction in authorized uses in the GT Wilderness and access to SEKI. Access to SEKI is the pack station's core business.

Although the intensity and duration of effect is unknown at this time, the eventual establishment of a stock management plan in SEKI will affect Cottonwood's operations because the vast majority of their overnight business is destined for the Park.

Mt. Whitney Pack Trains

Affected Environment

Mt. Whitney Pack Trains (Mt. Whitney) was once operated out of the Whitney Portal. In 1973 the Forest made the decision to disallow stock use on the main Mt. Whitney Trail due to the increasing user conflicts between hikers and stock. At that time the business was sold to the Rock Creek Pack Station and Red's/Agnew Meadow Pack Station permittees. Use has been shared between the two owners since then. The pack station facilities at Whitney Portal were removed. It was agreed that Mt. Whitney Pack Trains would operate predominately out of the Sage Flat Trailhead, with limited use out of Horseshoe Meadows so as to not conflict with the permittee based there.

Today, Mt. Whitney Pack Trains is still operated by the same partners. There are no pack station facilities, pastures or corrals under permit associated with the operation. Stock numbers have not been assigned to the operation in the past.

Mt. Whitney Pack Trains is one of two remaining operators identified in the Golden Trout Wilderness Management Plan authorized to provide services within the GT Wilderness. All expense trips are the predominant type of service provided by Mt. Whitney including base camp, traveling trips, and packing and veterinary instruction trips within the Golden Trout and South Sierra Wildernesses. Reported all expense trips show an average of 3 trips and 20 clients with a high of 7 trips with 45 people served in the GT/SS during the 2001 to 2005 reporting period. Traveling all expense trips into Sequoia Kings National Park are also typical. Operations in SEKI are authorized under an Incidental Business Permit. Reported use shows a high of 4 trips and 26 people served accessing SEKI through the GT Wilderness. (Cottonwood Pass to SEKI Summary 2001-2004) Mt. Whitney serviced 1 spot/dunnage trip with 7 people in the Golden Trout Wilderness during the same

time period. Mt. Whitney Pack Train's uses in the GTS/SSW and trips accessing the Park have been constant in numbers since 1973. Day use is rare.

Other southern Inyo National Forest trailheads available for Mt. Whitney use include Haiwee, Mulkey Pass, Trail Pass, Shepherd Pass, Sawmill Pass and Taboose Pass. Mt. Whitney has provided spot, dunnage and all expense services at all listed trailheads. Reported use shows an average of 6 spot/dunnage trips and 16 people served with a high of 11 trips and 52 people served (2001) into the JM Wilderness. All expense trip reports show a range of 0 to 6 trips and 0 to 46 people served on all expense trips in the JM Wilderness during the 2001 to 2004 reporting period. Day use is rare. (INF Tally Summary Data 2001-2004)

Mt. Whitney Pack Trains, under the current ownership, has consistently provided service in the areas identified above. If any trend has developed, it is that the level of use in the GT/SS Wildernesses is likely to increase during years of heavy precipitation and snow pack in the northern part of the Forest, such as in 2005 when the high use was reported.

Environmental Consequences - Mt. Whitney Pack Trains

Table 3.30. Comparison of the effects of alternatives on MWPT operations in terms of the indicators identified descriptions of methodology at the beginning of Section 3.2.5.1. Alternative 1 effects are not displayed because Alternative 1 would result in complete loss of all business opportunities and revenue.

Pack Station	Effect on operational cost and revenue:									
	# of Employees		# of Stock		Facilities Maintenance		Feed/Grazing		Revenue	
	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3
Mt. Whitney Pack Trains										
Environmental Protection Measures	—	—	—	—	—	—	—	—	—	—
Type & Amount of Use Authorized	—	—	—	—	—	—	—	—/↓	—	↑/↓
Amount of Pasture Grazing Authorized	—	—	—	—	—	—	—	—	—	—
2005 AA/JM ROD	—	—	↑	↓	—	—	↑	↑	↑/↓	↑

Predicted Effects: ↑ = increased cost/revenue; — = no change in cost/revenue; ↓ = decrease in cost/revenue; —/↑ = static/increase cost/revenue; —/↓ = static/decrease cost/revenue; ↑/↓ = unknown effects

Alternative 1 –Mt. Whitney Pack Trains

Direct, Indirect and Cumulative Effects

No new permit would result in complete loss of all employees, stock and business opportunities on NFS lands. No revenue would be generated from this operation; this would have major, long term effect on operations. That portion of the public desiring or requiring stock services will not be served.

Alternative 2 –Mt. Whitney Pack Trains

Direct and Indirect Effects

No change in costs in numbers of employees, stock, maintenance of facilities and feed/grazing/pasture are expected as a result of proposed authorized uses in Alternative 2 within the Golden Trout and South Sierra Wildernesses or in non-wilderness areas because Alternative 2 proposes historic levels of use in these areas. Change to revenue is unknown.

Use of commercial livestock (cattle) facilities is prohibited. This may add a layer of inconvenience, perhaps changing trip logistics, but is likely to have negligible long term effect on operations and revenue.

All Mt. Whitney Pack Trains services are destined for the wilderness areas. Wilderness and non-wilderness day use is rare and existing employees and stock is expected to handle authorized use and services. Cross country travel management as proposed in Alternative 2 is not expected to effect operations or revenue because Mt. Whitney Pack Trains rarely operates out of trailheads located within HDRAs.

No change in costs related to numbers of employees, stock, maintenance of facilities and feed/grazing/pasture are expected as a result of Alternative 2 proposed amount of grazing resources within the GT/SS Wildernesses or in non-wilderness areas because Mt. Whitney Pack Trains does not have any pasture lands authorized for use and Golden Trout and South Sierra Wilderness allowable grazing will remain available.

Alternative 3 –Mt. Whitney Pack Trains

Direct and Indirect Effects

Operational and revenue effects of the actions set forth in Alternative 3 are not expected to differ from those of Alternative 2.

Alternatives 2 and 3 –Mt. Whitney Pack Trains

Cumulative Effects

The most significant decision that has affected Mt Whitney Pack Trains was the 1973 prohibition of pack stock on the Main Mt. Whitney Trail. The pack station facilities located near the Whitney Portal were no longer needed and removed. This likely had major effects on operations and revenue as all business opportunity at the Whitney Portal was lost and no facilities were authorized to replace those removed. The packing operations were allowed to continue primarily out of the Olancha Pass Trailhead at Sage Flat and minimally out of Horseshoe Meadow. Operational costs likely increased through the trucking of stock and feed to the southern trailheads.

Implementation of the 2005 AA/JM Wilderness decisions is not expected to change costs related to numbers for employees, stock or maintenance of facilities and feed/grazing/pasture for Mt. Whitney. Change to revenue is unknown. Mt. Whitney generally crosses the Forest gaining access to SEKI, usually within one travel day, and does not necessarily rely on facilities or grazing resources within the wilderness. Destination quotas reflect recent use.

Although the intensity and duration of effect is unknown at this time, the eventual establishment of a stock management plan in SEKI will affect Mt. Whitney's operations because the vast majority of their overnight business is destined for the Park.

Three Corner Round Pack Outfit

Affected Environment

Three Corner Round Pack Outfit (TCR) operates a base camp at the end of the road along Pinyon Creek (Section 35, T13N, R34E), west of Independence, Inyo County, for approximately two weeks each summer. They have been running trips since 1919, operating under special use outfitter and guide permit since 1947. Operations are categorized as low complexity. Activities at the base camp include training the youth participants in caring for, packing and handling burros with which they will hike during the following six weeks. TCR is a non-profit corporation that provides back country exposure to youth. TCR is currently authorized 119 service days of use in the John Muir Wilderness.

Facilities at the Pinyon Creek base camp location include a small corral and a small ditch that runs water through the corral and fills a concrete lined pool used by the participants to cool down during the hot summer days. The burros are pastured on private lands nearby and fed hay during their stay at Pinyon Creek.

Following the base camp training, participants lead their loaded burros into the wildernesses for an extended trip that amounts to hiking with pack stock. Itineraries vary year to year, but generally include a day or two in the John Muir and/or the Golden Trout Wilderness on the Inyo National Forest with the rest of the trip spent in Sequoia Kings National Park. TCR operates in SEKI under an Incidental Business Permit. In years past, TCR has taken extended trips traveling north through SEKI and into the Sierra National Forest.

Environmental Consequences - Three Corner Round Pack Outfit

Table 3.31. Comparison of the effects of all alternatives on Three Corner Round operations in terms of the indicators identified descriptions of methodology at the beginning of Section 3.2.5.1.

Alternative 1 effects are not displayed because under Alternative 1, no new permit would result in complete loss of all business opportunities and revenue.

Pack Station	Effect on operational cost and revenue:									
	# of Employees		# of Stock		Facilities Maintenance		Feed/Grazing		Revenue	
	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3	Alt2	Alt3
Three Corner Round Pack Outfit										
Environmental Protection Measures	—	—	—	—	—	—	—	—	—	—
Type & Amount of Use Authorized	—	—	—	—	—	—	—	—	—	—
Amount of Pasture Grazing Authorized	—	—	—	—	—	—	—	—	—	—
2005 AA/JM ROD	—	—	—	—	—	—	—	—	—	—

Predicted Effects: ↑ = increased cost/revenue; — = no change in cost/revenue; ↓ = decrease in cost/revenue; —/↑ = static/increase cost/revenue; —/↓ = static/decrease cost/revenue; ↑/↓ = unknown effects

Alternative 1 –Three Corner Round

Direct, Indirect and Cumulative Effects

No new permit would result in complete loss of all employees and stock, and business opportunities on NFS lands. All facilities would be removed. No revenue would be generated from this operation; this would have major, long term effect on operations. Youth participants would be denied the type of experience and exposure to wilderness resources provided by this operator.

Alternative 2 –Three Corner Round

Direct and Indirect Effects

No change in costs is expected associated with numbers of employees, stock, maintenance of facilities or cost of feed based on the availability of grazing/pasture as a result of any action proposed in Alternative 2, including environmental protection measures, type and amount of use authorized, and amount of pasture grazing authorized. Actions proposed in Alternative 2 are expected to have negligible long term effects to operations and revenue because proposed actions in Alternative 2 will allow historic operations to continue largely uninterrupted and unchanged.

Alternative 3 –Three Corner Round

Direct and Indirect Effects

The effects of alternative 3 on TCR's operations and revenue are not expected to differ from those of Alternative 2 because there are no changes between the alternatives.

Alternatives 2 and 3 –Three Corner Round

Cumulative Effects

There are no other known actions that have affected the operations and revenue of Three Corner Round.

No change in revenue or operational cost is expected because services and uses authorized in the John Muir Wilderness, together with the actions proposed in Alternative 2 or 3, are not expected to significantly alter current operations.

3.2.5.2 Socioeconomics

All Analysis Units

Affected Environment

The project area for this analysis includes Mono, Inyo, and Tulare Counties. Pages III-90 – III-94 of the Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses Final EIS (2005 AA/JM FEIS) provides a full description of the economic and social setting for Inyo and Mono Counties.

Portions of the Golden Trout and South Sierra Wildernesses are in Tulare County and are administered by the Inyo National Forest. Although Tulare County is within the project area, it is not described or included in this analysis. There are no communities in Tulare County that are likely affected by the actions included in this project. The closest sizable community is Porterville, California, more than 200 road miles from the closest pack station (Cottonwood Pack Station). It is unlikely that any change to commercial packing service would affect this or other communities in Tulare County. Visitors seeking to utilize commercial packing services would secure these services in a community in Inyo or Mono Counties.

Inyo and Mono Counties are rural, sparsely populated counties heavily dependent on recreation and tourism for employment and income. As described in the 2005 AA/JM FEIS, tourism-related employment makes up 18% of Inyo County's total employment. Likewise, Mono County is heavily dependent on tourism and recreation: these industries make up 30% of county employment.

Compared to state-wide average, Mono and Inyo Counties have lower unemployment rates and higher median household incomes. Likewise, the poverty rates in these counties tend to be lower than average state rates. While the statewide poverty rate is 14.2%, Inyo County's is 12.6% and Mono County's rate is 11.5% (U.S. Census Bureau, 2000).

Inyo and Mono Counties are more sparsely populated than the state as a whole. While California averages 217.2 persons per square mile, Inyo County's average is 1.8 persons per square mile, and Mono County has an average of 4.2 persons per square mile. Inyo and Mono Counties are slightly older on the average compared to California as a whole and have lower percentages of minority populations compared to the state as a whole.

Current Employment/Personal Income Contributions of Commercial Pack Station Operations

As detailed in the 2005 AA/JM FEIS, current commercial pack station activities make up a relatively small percentage of overall employment and personal income in Inyo and Mono Counties. Using gross revenue figures included in the *Report to Congress: Management Review Commercial Pack and Saddle Outfitter and Guiding for the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses* and estimating the spending of commercial pack station clients (including gas, food, and lodging), it was determined that at the county-level, these operations make a relatively small contribution to county employment and personal income. Using the Impact Analysis for Planning model, it was estimated

that current (2003) commercial pack station economic activity makes up .5% of the total number of jobs and .2% of the overall personal income in Inyo and Mono Counties (see AA/JM FEIS, p.III-95). As discussed in more detail in the FEIS, these calculations are at the county-scale; it is likely that at the city or town scale the economic contributions of commercial pack stations will be far more profound.

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 on the Inyo National Forest was estimated (see table 3.32). The table expresses the contribution analysis in terms of labor income generated from pack station activities for all pack station activities.

It should be noted that it is likely that the economic impact in Table 3.32 overstates the actual economic impact of pack stations. The approach described above attributes the economic impacts of pack station visit-related spending (i.e., spending on lodging, gas, food, etc.) to only the pack station. In other words, there is an assumption that the sole reason for the forest visit is to engage in pack stock related activities and that without these services, the visit would never occur. It is likely that pack station visitors engaging in day rides will visit the forest and spend money on gas, food, lodging etc. regardless of whether they use the pack stations. However, we could not separate those visitors who would not have visited the forest without pack stations, and therefore used this overestimate.

Results

Table 3.32 Regional economic impact of pack station activities

Direct Labor Income	Indirect Labor Income	Induced Labor Income	Total Income
\$942,639	\$163,598	\$489,662	\$1,577,900

Direct Employment	Indirect Employment	Induced Employment	Total Employment
74.7	7.5	17.0	99.2

Using the IMPLAN model, commercial pack station related activity generates approximately \$942,600 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 \$163,600 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 \$489,700 in induced labor income is generated by the commercial pack station operations. Induced labor income is related to household spending of income earned from either the pack stations or their suppliers. Given assumptions and spending patterns put into the model, commercial pack station operations are currently generating approximately 1.6 million dollars in labor income for the project area.

Approximately 75 direct jobs are supported by current pack station operations, with approximately 7.5 indirect and 17 induced jobs supported by the activities of this industry. This totals almost 100 jobs.

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.

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.

Environmental Consequences

Alternative 1

Direct and Indirect Effects

Alternative 1 does not reissue permits to commercial pack stations and calls for the removal of all facilities from National Forest System lands. The economic contributions described in the 2005 AA/JM FEIS would not be available to Inyo and Mono Counties. These operations make up a relatively small percent of total county employment and personal income and, therefore, it is not likely that the elimination of these operations will have a noticeable effect at the county scale. As mentioned before, there may be noticeable effects at the city or town scale.

It is more likely that there will be noticeable social effects related to the complete removal of commercial pack stock from the Inyo National Forest. In public comment on related projects, many individuals have expressed the importance of commercial pack stock as a symbol of their rural lifestyle. To some extent, commercial packing represents a vestige of a lifestyle that is disappearing and is an important part of the values, beliefs, and attitudes of these groups. The complete elimination of commercial packing services from the forest will adversely affect this group that places a high value on history and tradition.

Completely eliminating these services is not likely to provide social benefits to any groups. While there are certainly plenty of individuals who have expressed dissatisfaction (through public comment) with current packing activities in the Eastern Sierra, very few actually call for the complete elimination of this service.

There are also those who rely upon commercial packing for their access to the AA and JM Wildernesses and, to a lesser extent, the GT and SS Wildernesses. The elimination of commercial packing services on the Inyo National Forest will adversely affect these individuals and groups and will likely limit their ability to access and enjoy some wilderness areas on the forest.

Given the current socioeconomic composition of visitors to the Inyo National Forest, it is unlikely that any economic, racial, or ethnic groups will be disproportionately affected by this elimination of commercial packing services on the Inyo National Forest. One group, elderly visitors to the forest, may be adversely affected by the complete elimination of commercial packing from the forest. National Visitor Use Monitoring statistics from 2003 found that nearly a quarter of wilderness users are 50 years of age or older. Although there is no data available that suggests that elderly visitors make up a large percentage of commercial packing clients, it may be logical to assume so. It is

possible, then, that the elimination of commercial packing services would have adverse effects to this group of forest visitors.

Alternatives 2 and 3

Direct and Indirect Effects

It does not appear as though there are any components included in either Alternative 2 or 3 that would significantly alter the way commercial packers currently conduct their business, particularly in the non-wilderness areas of the forest. For example, while Alternative 2 and 3 both limit commercial pack stock use to authorized trails in HDRAs, most of these trails already carry the bulk of the non-wilderness use and will continue to be available to commercial packers. Likewise, although Alternative 3 requires that commercial pack stock also stay on authorized trails in areas outside of HDRAs, a majority of the packer's current trail use is included in the trail authorizations. Overall, a review of Alternative 2 and 3 does not reveal any new restrictions that are likely to significantly change the operations of these businesses and adversely affect the local economies.

If anything, it appears as though Alternatives 2 and 3 provide the flexibility and opportunity for non-wilderness growth that might provide for an expansion of the existing businesses. While in the past non-wilderness use was limited by service day allocations, much of the use in the non-wilderness is now limited by the herd size allocated for each pack station. This provides the commercial packer flexibility and will likely make it easier to meet the public's demand for these services.

While it is possible that non-wilderness use may increase in both Alternatives 2 and 3 (compared to current levels of use), it is not likely that this increased use will mean much in terms of overall regional economic impact. In Inyo and Mono Counties, there may be some inconsequential growth in employment if commercial packers find they need to hire additional help to support an expansion of service in the non-wilderness areas of the forest. Any growth, however, would be minimal and would likely have no effect on the overall regional economy.

There are no discernable social effects to any economic, racial, or other socioeconomic group associated with Alternatives 2 or 3. For both of these alternatives, it is unlikely that members of the public will perceive any change in the way commercial packers conduct their business.

Cumulative Impacts – All Alternatives

For cumulative effects, several past, present, and reasonably foreseeable activities were considered including the Inyo National Forest's current Route Designation project, decisions made in the 2005 AA/JM ROD and future wilderness designations in the counties. Given the relatively small contribution of commercial packing activities on the regional economy, it is not expected that there will an additive effect when the proposed project is added to these other relevant actions and activities. Even with the complete elimination of commercial packing in Alternative 1, cumulative regional economic effects are not expected. Commercial packing simply does not provide a substantial economic contribution to local economies; the effect of these past, present, and reasonably

foreseeable activities may have their own effect on the local economies, but there is no additive effect when the proposed project is considered.

Ansel Adams and John Muir Wildernesses

The Trail and Commercial Pack Stock Management Final EIS (2005) described the affected environment and environmental consequences for the portions of the Ansel Adams and John Muir Wildernesses that are within the project area considered in this EIS. That analysis is incorporated into this document by reference. A description of the socioeconomic affected environment can be found on pages III-90 – III-94 of the Final EIS. An environmental consequences discussion of the operations and socioeconomic affects associated with the five analyzed alternatives can be found on pages IV-233 - IV-258.

The 2005 AA/JM ROD selected Alternative 2 – Modified. In terms of operations and socioeconomics, this alternative will provide some modest opportunities for growth in pack station revenue, 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 current situation, 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.

3.3. Physical Environment

3.3.1 Air Quality

3.3.1.2 Affected Environment

The entirety of Inyo, Mono, and Tulare Counties are designated non-attainment for PM₁₀ under the California State Standard. Portions of Inyo and Mono Counties, and all of Tulare County are in Federal non-attainment (in 2003) (Great Basin Unified Air Pollution Control District [GBUAPCD] 2001). Most of the PM₁₀ issues over Forest Land are due to off-forest activities, namely forest fires on the West slope of the Sierra Nevada, automobile emissions, re-suspension of dust and cinders from paved roads, wood burning from valleys east and west of the Sierra Crest, and dust from the dry or partially dry Owens and Mono Lakes (GBUAPCD 2001,1990).

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 near the June Lake and Mammoth Lakes areas, where Frontier, Mammoth Lakes and Red'/Agnew Meadows Pack Stations operate.

3.3.1.2 Environmental Consequences

Alternative 1

Direct and Indirect Effects

Under the No Action alternative, there should be no effect to air quality on a project level scale. There could be reduction in the very local and temporary dust emissions relative to the current condition. This is because commercial stock would no longer use trails, and therefore would no longer kick up dust as they walk along trails with loose soils. Pack station operations contribute little to no air pollution within the project area, and cessation of pack stock operations would therefore make little to no difference in air quality. Where pack station buildings would be removed, the bare soil remaining could be a small increased source of airborne dust. However, mitigation such as planting vegetation or spreading mulch could help prevent increases in airborne dust. In the long term, vegetation would grow in and reduce the extent of bare soil in corrals and around pack station facilities, and therefore the local and temporary increased in airborne dust at the pack stations would decrease.

Cumulative Effects

Past and present actions that affect local air quality include smoke from wildland fires and wood burning, dust and pollution from urban development, blowing dust from the dry portions of Owens and Mono Lakes, and pollutants from motorized vehicle use within the project area and west of the

Sierra Nevada Mountains. Future actions include a continuation of most present actions, with possible slight decreases in dust from Mono and Owens Lake with planned restoration activities (GBUAPCD 2003).

Removal of commercial pack stations may reduce contribution of an immeasurably small volume of dust and vehicle emissions over a very short time, but they are a negligible portion of the cumulative air quality effects. Because the direct and indirect effects are negligible and likely too small to be measured, there will be no additive effects.

Alternative 2 — Air Quality

Direct and Indirect Effects

Under Alternative 2, there should be no change in air quality within the front country on a project-wide scale. Pack station operations contribute to local and temporary air pollution within the project area, and continuation of pack stock operations would continue to contribute local and temporary increases in airborne dust.

Portions of Inyo and Mono Counties are in non-attainment for PM₁₀, (particulate matter 10 microns or smaller in size). Commercial Pack Station activities can very locally affect PM₁₀ on trails, campsites, and at the pack station resorts themselves. First, the stock walking on trails can kick up dust, particularly in ashy soils such as those found in the June Lake and Mammoth Lakes areas. Stock tend to break up trail treads, creating loose soil. When numerous stock travel over those trails, they create dusty conditions for a few minutes on and directly adjacent to the trail. This can cause local increases in airborne dust, which is one type of PM₁₀. This dust does not travel out of the trail corridor, but could affect hikers and the stock riders themselves. At campsites where the soil is dry, such as on Tamarack Bench, and Truman Camp, the regular trampling by pack stock and clients has caused a core area of loose soil. At campsites, most of the area is usually well compacted, and moist enough that there is little loose soil. However, the small areas of loose soil can be blow during winds, and can create local increases in airborne dust. At the pack stations themselves, most soil is compacted and not easily blown by wind. In corrals, the constant kicking and walking by stock does create loose soil. Because the corral areas are relatively small (normally 1/2 to 2 acres), the volume of dust that is churned up can only cause local increases in PM₁₀.

The nearest air quality monitoring site to a commercial pack station is in Mammoth Lakes. In Mammoth Lakes, past PM₁₀ violations occurred in the winter (GBUAPCD 1990). Pack stations are not operational in the winter. The nearest pack station is Mammoth Lakes Pack Outfit, which has the highest levels of front country day rides of any pack station. Even though pack station use at Mammoth Lakes Pack Outfit and along adjacent trails does increase PM₁₀ levels over a local area, the monitoring in the town of Mammoth Lakes shows that the use is not raising PM₁₀ levels to unacceptable levels on a region-wide scale. Because the authorized level of use should be within 10% of past use, it is assumed that the authorized use will also not adversely affect air quality on a region-wide scale.

Some pack stations are accessed by dirt roads and contain corrals that are a local source of dust pollution during windy, dry periods. Further, some pack station operators regularly truck their stock to trail heads away from the pack stations, which can be a minor source of air pollution from vehicle emissions and dust from traveling on dirt roads. Pack stock use of trails stirs up dust that may cause localized and very short-term increase in particulate matter. In the Golden Trout Wilderness, the only effect of pack station operations on air quality is pack stock use of trails, which can stir up minor quantities of dust for only very short-term increases in airborne dust.

Cumulative Effects- Alternative 2

Past and present actions that affect local air quality include smoke from wildland fires and wood burning, dust and pollution from urban development, blowing dust from the dry portions of Owens and Mono Lakes, and pollutants from motorized vehicle use within the project area and west of the Sierra Nevada Mountains. Future actions include a continuation of most present actions, with possible slight decreases in dust from Mono and Owens Lake with planned restoration activities (GBUAPCD 2003).

Authorization of commercial pack stations may contribute a local and minor volume of dust and vehicle emissions over a very short time, but they are a negligible portion of the cumulative air quality effects. Because the direct and indirect effects are very local and temporary, there will be no additive effects from other activities that do not occur in the exact same locations and time as commercial pack stock use.

Alternative 3 –Air Quality

Direct, Indirect, and Cumulative Effects-

Due to the small difference in on-the-ground practices under Alternative 3, the effects to air quality should be the same as under Alternative 2.

3.3.2 Hydrology and Soils

Introduction

This section will discuss the soil and water environment of the portions of the Inyo National Forest used by commercial pack stock operators. Separate discussions are provided for the four analysis units: the Non-Wilderness, the Montgomery Pass Wild Horse Viewing Area (MPWHVA), the AA/JM Wildernesses, and the GT/SS Wildernesses (Figure 1.2). The discussion of the soil and water environment of the AA/JM Wildernesses has been summarized from the analysis completed for the 2005 Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses Record of Decision and Final Environmental Impact Statement (referred to hereafter as the 2005 AA/JM ROD/FEIS). More detailed information on effects to the water, soil and air resources within the Ansel Adams/John Muir Wildernesses can be found in the 2005 AA/JM ROD/FEIS.

Methods

The analysis of the current and predicted hydrologic condition of the project area is focused on the effects to beneficial uses and hydrologic function of streams and riparian areas. Conditions were analyzed for compliance with the Inyo National Forest Land and Resource Management Plan (LRMP) (USDA FS, 1988) as amended by the Sierra Nevada Forest Plan Amendment (USDA Forest Service, 2004). Compliance with these documents includes compliance with Riparian Conservation Objectives (RCOs) (USDA Forest Service, 2004) and Best Management Practices (BMPs) (USDA Forest Service, 2000). Specific RCOs and BMPs applicable to commercial pack stock operations are further described in the project record in the Hydrologist Reports. The BMPs applicable to pack stations include:

- Practice 4-4: Control of Sanitation Facilities
- Practice 4-5: Control of Solid Waste Disposal
- Practice 4-8: Sanitation at Hydrants and Water Faucets within developed recreation sites
- Practice 4-9: Protection of Water Quality Within Developed and Dispersed Recreation Areas.
- Practice 4-10: Location of Pack and Riding Stock Facilities and Use Areas in Wilderness, Primitive, and Wilderness Study Areas.
- Practice 7-3: Protection of Wetlands
- Practice 7-5: Control of Activities under Special Use Permit

The Alternatives and mitigations were created to comply with BMPs.

The alternatives are also analyzed for compliance with water quality standards identified in the Lahontan Basin Plan (LRWQCB 1994) and Central Valley Basin Plan (CVWQCB 1998) (incorporated by reference), including standards that protect beneficial uses (a list of beneficial uses for the relevant water bodies is available in the project record).

Soil quality is analyzed in terms of Soil Quality Standards (FSH R5 Supplement 2509.18-95-1) in “activity areas”, which are areas dedicated to growing vegetation. “Activity Areas” include pastures and all areas outside of trails, roads, campsites, and the pack station permit area. This means that soil quality standards do not apply to roads, trails, pack station footprints, or other areas not dedicated to growing vegetation. Activities within the pack station permit area, campsites, roads and trails will be analyzed in terms of their effects to soil compaction and erosion because they affect soil quality and cumulative watershed effects.

The alternatives were analyzed in response to significant issue #3 (in Chapter 1): “Commercial pack stock operations, including facilities, pasture grazing and camps in riparian conservation areas (RCA’s), may adversely affect water quality and RCA condition and trend.”

The indicators that address this issue that are used in this hydrology and soil analysis include:

- **Water Quality**
 - Sedimentation and manure in water (measured by fecal coliform).
 - Measured by quantitative measurements or observed indicators such as muddy water entering a stream or manure adjacent to water.
- **Water Quantity**
 - Volume of water diverted
 - Effects at pack stations and at campsites where surface water is diverted.
- **Geomorphology**
 - PFC analysis, observations of stream sinuosity, stream bank shape, and stream incision.
- **Soil Quality**
 - Area of soil compaction, sod fragmentation, and changes to the soil organic component.

For a more detailed explanation of methods used for analysis and relevant Standards and Guidelines, see the hydrology and soil specialist reports in the project record.

The following four components of pack station use will be analyzed in terms of their effects to water quality, water quantity, geomorphology and soil quality. The potential effects of each component are described here:

Pack Station Base Facility and Campsite Condition

To determine the current and predicted water and soil resource effects of pack station base facilities and exclusive use campsites, the IDT visited the pack stations and looked for evidence of erosion, sedimentation into surface water, trash or other substances entering surface water, evidence of altered stream geomorphology, evidence of altered wetland hydrologic function, and evidence of any alteration of beneficial uses. Fecal coliform and turbidity were also quantitatively measured at two pack stations and three pastures. One method used to determine whether effects were occurring was utilization of the BMP Evaluation Program. Form R22: Developed Recreation Sites (available in the project record) was used as a rapid assessment method to determine possible water quality effects and

consistency with established BMPs. Consistency with the RCOs listed in the project record was also evaluated.

Pastures/Meadows

This hydrology and soils section will briefly discuss soil and hydrology standards and guidelines and pasture hydrologic condition, but most discussion of pasture hydrology is included in the Grazing section of this document (Section 3.4.2.1).

Pack station pastures were analyzed to determine consistency with applicable laws and Forest Service Standards and Guidelines, including RCOs (available in the project record). The RCOs require that state water quality standards (LRWQCB 1994, CVRWQCB 1998) and BMPs are met.

RCO #5, Standard and Guideline #117 requires that meadows are assessed for functional condition using the Proper Functioning Condition (PFC) Protocol (USDI, 1999 and USDI, 1998), and that the meadows and streams within the meadows are, at a minimum, in Proper Functioning Condition (PFC). A wetland or riparian area is considered to be at PFC if it can withstand high flows, filter sediment, improve ground-water recharge, and provide habitat for aquatic and riparian-dependent species. A PFC evaluation was completed for most pastures in the non-wilderness that either contained wetlands, streams or lakes. In areas where streams are not at PFC, and are either functional at-risk or non-functional, actions were developed to allow for improvement of condition and trend toward PFC.

It is assumed that all moist to wet meadows are wetlands. Therefore, they are subject to BMP Practice 7-3, "Protection of Wetlands," which requires consideration and protection of wetland function and habitat value.

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 composed of bedrock or sandy soil that cannot be compacted or chiseled. Pastures used by the pack stations are almost always in meadows or contain some portion of meadow vegetation.

Trails

Trails were observed for compliance with RCOs and BMPs. Adverse trail effects can include soil loss beyond that normal for a trail, sedimentation into surface water, diversion of streams or diversion of sheet flow, and propagation of headcuts off-trail. When trails are within riparian areas or near surface water, these effects can alter water quality or stream geomorphology.

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 recreational use, and are not considered to have unacceptable effects to soil or hydrologic resources unless they are unusually severe or occur outside the trail tread.

There are trail segments known to currently have localized, adverse impacts on water and soil resources. In a few locations, such as the McGee Creek Trail outside of the wilderness boundary, incised trails were diverting overland flow into the trail, causing it to act as a channel and further incise. This was repaired in 2005. In some locations, most notably on old cattle trails in meadows in the Golden Trout Wilderness, trails may be 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.

Trails can also become too wet or incised for comfortable travel, and multi-trailing can result as users move off-trail to bypass the difficult trail segment. This is not common in the project area, but does occur in a few places, particularly meadows within the Golden Trout Wilderness. Because trails in the Golden Trout Wilderness are generally sandy and have good infiltration, water usually pools on trails only in meadows.

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.

3.3.2.1 All Analysis Units - Summary

Affected Environment

This section will briefly discuss the affected environment for all analysis units. Site specific analysis is provided in following sections for the Analysis Units: Non-Wilderness, MPWHT, AA/JM Wildernesses and SS/GT Wildernesses.

Precipitation and hydrologic setting

Precipitation varies greatly across the Inyo National Forest (INF). It averages less than five inches per year in the low elevation (4,000-5,000 ft) southern areas east of the Sierra Nevada Mountains, to over 60 inches near Mammoth Mountain, at around 10,000 ft (Oregon Climate Service, 1995).

Precipitation generally increases with elevation, and from South to North. Precipitation in low elevation valleys falls as rain and snow, and a greater percentage falls as snow with increasing elevation. Throughout the Inyo National Forest, most precipitation occurs in winter.

The non-wilderness portion of the analysis area is mostly within the Owens River Watershed. The exception is the far northern portion within the Mono Lake Watershed. A small area west of Mammoth Mountain containing Red's/Agnew Meadows Pack Station (RMPS) flows into the Middle Fork San Joaquin River. The MPWHT Analysis Unit drains into closed, dry basins with no surface connectivity. The GT/SS Wildernesses and the Monache Meadows area drain mostly into the Kern River drainage and partially into the Southern Owens River basin. Lakes are common within the northern portion of the INF, near Frontier Pack Station, and west of the city of Mammoth Lakes, near Mammoth Lakes Pack Outfit (MLPO). There are a few other lakes further south at the eastern base of the Sierra Nevada Mountains, including Convict Lake, Rock Creek Lake, North Lake, Lake Sabrina,

and South Lake. There are many tributaries to the Owens River that flow from the eastern flank of the Sierra Nevada Mountains. Below forest land, these provide a portion of the water supply for the City of Los Angeles. One-third to one-half of the water that would contribute to the Owens River and Mono Lake watersheds in a normal water year is diverted for municipal use by the Los Angeles Department of Water and Power (LADWP).

Development is common within the non-wilderness area, often within floodplains of larger streams, especially within the Rush Creek, Mammoth Creek, Rock Creek, and Bishop Creek watersheds. This development includes houses, resorts and cabins, campgrounds, parking lots and roads. Many smaller streams, such as McGee Creek, Independence Creek, and Cottonwood Creek have little development on the floodplains.

Water Quality

Surface water quality on the INF is generally good. The Los Angeles Department of Water and Power (LADWP) has the most extensive surface water quality monitoring of the area. According to LADWP, there have been no pollutants of concern for their municipal water supply in Owens River or the Mono Basin in the past five years. The 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 INF land (LADWP, 2004). In LADWP samples in 2004, total coliform bacteria levels always met standards of less than 5% of monthly samples positive. According to Mammoth Community Water District (MCWD), naturally occurring arsenic is the only pollutant of concern for their groundwater and surface water supplies originating on the INF (MCWD, 2002).

Five water bodies in the project area are listed on the state's 303(d) list of impaired water bodies as water quality limited (Mammoth Creek, Lee Vining Creek, Mill Creek, Tuttle Creek, and Goodale Creek). The designations for Tuttle and Goodale Creek are due to sediment/siltation from cattle grazing, for Mammoth Creek from metals, and flow alterations for Lee Vining and Mill Creeks, (LRWQCB 2003). Only Mammoth Creek has a commercial pack station within its watershed, which is not likely a contributor to the listing because metals are from urban runoff and automobile use, and cannot be associated with pack station operations.

Although we do not have quantitative water quality information for most areas on the forest, it is believed that other water bodies could have fine sedimentation in excess of natural levels. Most sedimentation is likely due to new construction in developed areas and grazing, especially in meadows with heavy grazing impacts on the Kern Plateau, the east flank of the White Mountains and in the Glass Mountains.

Quantitative water quality data was collected for fecal coliform and turbidity at two pack stations and three pastures in summer 2006. At least two samples were taken at each location, one upstream and one downstream of the pack station or pasture. This data will be used for baseline data for future comparison, and because operations under Alternative 2 would be almost the same as currently, the data can be used for estimating future water quality effects. The data was collected after rain and

during dry weather. Water quality was measured at three pastures, which was assumed to represent conditions in most pastures. It was also measured at two pack stations, Rainbow Pack Outfit (RPO) and MLPO. These are the two pack stations where the herd is held near surface water, and therefore the most likely to show fecal coliform and turbidity effects related to pack stock. Results are shown in Table 3.33. The lower corral at Rock Creek Pack Station (PCPS) also holds stock near water. Water quality was measured in the adjacent pasture, on the same stream. Results show pasture and corral effects.

The results of water quality analysis during June and July 2006 showed that most locations met the fecal coliform water quality standard of a log mean of no more than 20 coliform forming units per 100 mL. The log mean shall ideally be based on a minimum of not less than five samples collected as evenly spaced as practicable during any 30-day period. However, a log mean concentration exceeding 20/100 ml for any 30-day period shall indicate violation of this objective even if fewer than five samples were collected (LRWQCB 1994). At all but Rainbow PO, water quality measurements were completed two or three times during a consecutive 30 day period. At Rainbow Pack Outfit, one measurement was taken in June and one in early October. The water was analyzed for total coliform and fecal coliform. The method used had a detection range from 1.1 to 23. Many of the results were given as <1.1 or >23 cfu/100 mL, and because these numbers are not known, they cannot be used to accurately calculate a log mean. In this document, we report all results. In cases where any fecal coliform measurement was >23 cfu/100 ml, then the standard was met. In cases where at least 3 measurements were completed in a 30-day period, we calculated a log mean to determine standard compliance. Results are shown in Table 3.33.

It should be noted that none of the samples were taken during spring snowmelt, a time that was particularly suggested by a commenter. The monitoring plan included Appendix I shows that water quality monitoring for fecal coliform will be completed at pack stations near water in subsequent years to determine whether management actions are sufficient to protect water quality.

Of the 32 samples taken, five did not meet fecal coliform standards. At the North Lake pasture used by Bishop Pack Outfitters, a sample taken on 6/28/2006 showed fecal coliform levels of 23 cfu/100 ml. On this date, the pasture was flooded to about a foot deep over most of the pasture. On 7/10/2006, a sample taken in the same flooded pasture showed a fecal coliform level of 1.1 cfu/100 ml. The first sample was taken just inside the pasture gate where stock congregate, and the second sample was taken in a marshy area with less concentrated use. However, all the surface water was connected. To determine whether flood water from the pasture affected Bishop Creek, samples were taken across the road in Bishop Creek, and at a culvert that carries water from the flooded pasture into a ditch and into Bishop Creek. Both of those locations had fecal coliform levels within standards, and therefore it can be assumed that fecal coliform does not persist at high levels outside of the pasture during early summer.

Table 3.33 (a-e). Water quality results at pack stations and pastures. Water quality measurements were taken for fecal coliform and, in some cases, turbidity. Shaded boxes show results that do not meet water quality standards (for complete explanation of methods and results for water quality monitoring, see "Water Quality Monitoring Results" in the project record)

a) Reds/Agnew Meadows Pack Station – West Agnew Pasture – fecal coliform results			
Date	Fecal coliform (mpn or cfu/100 mL*)		
	Upstream of pasture (site AG-1)	Downstream of pasture (Site AG-2)	Standard (LRWQCB 1994)
7/6/2006	23	23	20
7/12/2006	>23	>23	
10/2/2006	5.1	9.2	
10/24/2006	2	<2	
10/31/2006	2	4	
Log mean for 3 October results	2.7	4.2	

* mpn = most probable number, cfu = coliform forming units

(b) Mammoth Lakes Pack Outfit – fecal coliform results			
Date	Fecal coliform (mpn or cfu/100 mL)		
	Upstream of pack station	Downstream of pack station	Standard (LRWQCB 1994)
7/6/2006	2.2	2.2	20
7/12/2006	<1.1	2.2	
10/2/2006	<1.1	23	
10/24/2006	<2	2	
10/31/2006	<2	2	
Log mean for 3 October results	<1.6	4.5	

(c) Rock Creek Lower Pasture – Fecal coliform results				
Date	Fecal coliform (mpn or cfu/100 mL)			
	Upstream from pasture – tributary stream	Lower end of pasture – tributary stream	Rock Creek - downstream of pasture	Standard
6/28/2006	<1.1	>23	3.6	20
7/10/2006	<1.1	2.2	3.6	

(d) Bishop Creek Small North Lake Pasture – Fecal coliform results				
Date	Fecal coliform (mpn or cfu/100 mL)			
	Standing water in flooded pasture	Downstream from pasture – tributary stream	Bishop Creek – downstream from pasture	Standard
6/28/2006	23	-	1.1	20
7/10/2006	1.1	3.6	<1.1	

(e) Rainbow Pack Station – Fecal coliform results			
Date	Fecal coliform (mpn or cfu/100 mL)		
	Upstream from pack station	Downstream from pack station	Standard
6/28/2006	<1.1	<1.1	20
10/2/2006	2.2	<1.1	

At the Rock Creek Lower Corral Pasture, the situation is similar to Bishop Creek. It was raining and the pasture was partially flooded during the time of the first measurement on 6/28/2006. It is assumed that this would be the period of greatest fecal coliform input into surface water, when there is water moving over the meadow that can carry manure into creeks. On 6/28, a slow moving stream that enters Rock Creek had a fecal coliform level of >23 cfu/100 ml. This does not meet the standard. Measurements in Rock Creek just downstream of the tributary channel at the same time showed a fecal coliform level of 3.6 cfu/100 ml, which is within the standard. On 7/10/2006, the same slow moving stream had a fecal coliform level of 2.2 cfu/100 ml. On this day, the meadow was drier and there had been no recent rain. Rock Creek had the same fecal coliform level as on the wetter day. It can be concluded that during early summer, before grazing begins, fecal coliform from the pasture does not affect fecal coliform levels in Rock Creek.

In West Agnew Pasture the fecal coliform level both upstream and downstream of the pasture was not compliant with the standard (Table 3.33 (a)) in July. One sample was taken during rainfall, and the other on a dry day. It is uncertain what the source for fecal coliform was on those days, and it can be assumed that the pasture was not contributing to fecal coliform on the sampling day (before this year's grazing). In October, after grazing, the log mean of three samples was within standards, at 2.7 cfu/100 mL upstream and 4.2 cfu/100 mL downstream.

At both pack stations, fecal coliform levels were within standards both on days following thunderstorms and during periods with no precipitation. At all measurement sites, few or no pack stock were yet present at the pack station or in the pasture.

Water Quantity: Most major streams in the west portion of the Inyo National Forest are dammed and/or diverted by the Los Angeles Department of Water and Power (LADWP), June Lake Public Utility District (PUD), Southern California Edison (SCE), or Mammoth Community Water District (MCWD). Very few streams are diverted in the GT/SS Wildernesses, although there is some irrigation still occurring in meadows, and incised streams have affected water quantity. In the MPWHT, most springs are diverted for private use or for use by commercial pack stations or, historically, for livestock watering. Throughout the forest, other small springs and streams are diverted for domestic and livestock watering use.

Specific pack station water use is included in the affected environment of the "Non Wilderness Analysis Unit" section. The total actual diversions are unknown, and were estimated for this document. The total maximum allowable usage is known for the 10 pack stations with explicit water rights (Table 3.35). The total of those combined is about 13.2 acre-feet per year (AF/year). One other pack station, Bishop Pack Outfitters, uses spring water to water their stock only. Although this use is unknown precisely, it was estimated at about 0.33 AF/year, based on a total of a herd size of 60 drinking 45 liters of water per day from June 1st to November 1st. This is likely an overestimate, because not all stock is held at the pack station at one time, and the herd is normally not at the pack station during such a large range of time. Water is also diverted for livestock watering at Pizona Camp, Truman Camp, and the Three Corner Round Base camp. Assuming that all 110 head is held at Pizona and Truman Camp, for 30 days each spring, the total water use at each of those sites was estimated at 0.1 AF/year. At the Three Corner Round Base Camp, up to 25 donkeys are held for two weeks each year. At 45 liters per day, it was estimated that water use could be up to 0.01 AF/year.

The total of all surface water diversion by pack stations is estimated to be around 13.4 AF/year. For comparison, an average family in Mammoth Lakes uses about 0.3 AF/year (Mammoth Community Water District, 2005), and the entire Mammoth Community Water District supplies almost 4,000 AF/year to the city of Mammoth and outlying areas.

Geomorphology: Stream geomorphology ranges from steep, straight bedrock channels in headwaters to meandering rivers in flat meadows. Many of the streams are either bedrock or boulder controlled, and unlikely to be altered by human activities. Others, especially those in flat meadow areas, have channels dominated by fine sediment, and are susceptible to alteration. Sediment loads in streams are variable, depending on the sediment source material, differences between snowmelt and rainfall

patterns, and relative position in the watershed. In the headwaters, channels are normally boulder controlled and have very little fine sediment. When the headwaters run through meadow areas, the channel often has few boulders, with fine sediment build-up in many segments.

Proper Functioning Condition analysis was completed on most pastures and the results are shown in Table 3.36. Proper Functioning Condition (PFC) analysis is a measure of stream stability based on geomorphologic and vegetation parameters. Riparian Conservation Objective (RCO) #5, Standard and Guideline #117 states: 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.

PFC analysis was also completed on many meadows in the GT/SS Wilderness that were requested for grazing use by the commercial pack stations. Some non-wilderness pastures and GT/SS Wilderness meadows are not at PFC. Individual pastures and meadows will be discussed in the relevant analysis units below and in the Grazing section of this document (Section 3.4.2.1).

Soil Characteristics: The portion of the INF used by commercial pack stock operators has many different soil types and they differ in their parent material, climate, topography, vegetation and degree of soil development. Most are derived from granitic parent material, with the second most common parent material being pumiceous. The remaining soils are derived from limestone, metasedimentary rock and basalt. The majority of soils in and near the Sierra Nevada are young and weakly developed, as they are a product of quaternary glaciations and volcanic activities. Soils are older within much of the GT/SS Wildernesses because they were not recently glaciated.

Soil productivity varies in the project area. Generally, the more productive soils are found in meadow areas and Jeffery Pine and upper mixed conifer forested vegetation types with more favorable temperature and precipitation levels. Since the majority of soils are coarse textured, soil is easily displaced. Some meadow soils throughout the Forest are not hydrologically functioning because of compaction, bare ground and soil displacement from development.

Environmental Consequences

Summary for All Analysis Unit

Below is a brief discussion of the environmental consequences of each alternative on a project area scale. A more detailed, site-specific analysis follows in each Analysis Unit section.

Alternative 1 –All Analysis Units

Direct, Indirect, and Cumulative Effects

Removal of pack stations and termination of pack station activities should have slight, locally beneficial effects to hydrologic and soil condition on the analysis unit scale. At the pack stations themselves, and in the few other areas used exclusively by commercial pack stations, there would likely be local, long term improved hydrologic and soil function with removal of pack stock grazing or pack station buildings.

Water Quality: There would likely be a beneficial effect to water quality on National Forest Land, particularly in pastures and along a few trails and at base camps. As shown in Table 3.33, use of pastures by commercial pack stock has locally increased fecal coliform levels. Removal of commercial pack stock grazing in 12 pastures would prevent deposition of manure that could move into creeks. This would eliminate any potential for pathogens or bacteria from commercial pack stock manure to enter surface water. There would also be a removal of any potential for manure to enter water along trails, at stock holding areas, or at corrals that are not used by private stock.

Relative to current conditions, this would likely cause a minor, temporary improvement in water quality, because measurements show that, at least after rain and during a fall dry period, the pack stations near water do not significantly affect fecal coliform levels (Table 3.33).

At the base camps of Pizona Camp and Tamarack Bench, removal of commercial pack stock would remove the potential for sediment and/or manure input into surface water. Water quality would likely show improvements from current conditions at these sites. At Pizona Camp, improvement could be measurable, because the corral currently allows manure to directly enter Pizona Creek. Removal of use in this corral would eliminate a source of bacteria and possibly pathogens. At Tamarack Bench, the improvement in water quality would be minor, because pack stock and clients are currently held over 100 feet from water. However, trails to the stream and lake likely cause minor inputs of sediment. Removal of use on those trails would remove any potential for sediment input.

Water Quantity: Removal of all commercial pack stock use would remove diversions to streams and springs at 11 pack stations and three base camps. The total current diversions are unknown, but were estimated to be around 13 AF/year.

The total estimated water flow off of the Inyo National Forest is about 1.1 million AF/year (Inyo National Forest, 1988). On a project-wide scale, the effects of cessation of 13 AF/year diversions would be too small to be measured. On a more site-specific scale, however, the removal of some spring diversions could substantially increase water flow. This is true at 5 pack stations, where most of each springs' flow is diverted. With removal of those pack stations, five springs would have substantially increased flow during the months of June through October. More site-specific analysis will be completed in the "non-wilderness" section of this analysis.

Geomorphology: Under Alternative 1, the cessation of all commercial pack stock use could lead to long-term, local recovery of stream geomorphology in 9 pastures, at Pizona Camp, and at stream crossings along at least two trails used exclusively by commercial pack stations. These improvements would be due to elimination of stream bank trampling, which would allow vegetation to grow and stabilize stream banks, eventually allowing sediment to collect and rebuild incised or straightened streams. Further geomorphologic analysis is included in the Grazing section of this document.

Soil Characteristics: Soil would decompact and have greater vegetation cover at all 12 pack station resort facilities, because all buildings and uses would be removed.

Soil compaction and fragmented sod would be reduced in 10 pastures. The soil would likely take 20 years or more to completely decompact. Soil compaction would, over decades, be reduced at all

campsites currently used exclusively by commercial pack stations, which is an estimated 20 campsites. If the use was discontinued at these sites, the soil would have no trampling by humans or stock, and soil would gradually loosen with freeze/thaw action and vegetative growth. The effect to soil conditions on and near trails would be minimal at all but a few trails. Most trails are used by multiple recreation types, not just commercial pack stock. Therefore, with removal of pack stock, there may be a slight narrowing of the trail, and the trails would be slightly more stable, but compaction would not be reduced. The exceptions are: the loop trail at Frontier Pack Train, all connector trails accessing only pack stations, and one trail at Pizona Camp that appears to be used exclusively to access horse viewing from the camp. On these trails, removal of commercial pack stock use would allow the trails to gradually decompact and revegetate.

Cumulative Effects – Alternative 1 – All Analysis Units

This cumulative effects analysis for soil and water resources will include a land area encompassing all HUC6 watersheds with any commercial pack station activities with current operations or proposed activities. HUC 6 (Hydrologic Unit Code 6) watersheds vary in size from 10,000 to 50,000 acres. An example of a HUC6 watershed is the combined Convict and McGee Creek drainages. . The HUC6 watershed was chosen as the maximum extent of analysis because any hydrologic effects from commercial pack stock activities could be carried downstream in watersheds. Therefore, one must look at an entire watershed to determine cumulative watershed effects. Any watershed larger than a HUC6 watershed would be too large, and would mask cumulative effects.

In assessing cumulative effects for soils and hydrologic resources, impacts of past actions were included for actions implemented in the past that still have effects. Some of these actions, such as dam building, occurred over 50 years ago, but will have permanent effects. Impacts of reasonably foreseeable future actions were not included beyond 2026 because the permits will likely be in effect for up to 20 years, and because actions and their effects cannot be predicted beyond 20 years.

There are numerous past and present actions that have affected soil and water resources within the project area. There has been increases in fine sedimentation into streams by the major sediment sources in the project area, including: cattle, sheep, wild horse, recreational pack stock, and commercial pack stock grazing; Mammoth and June Mountain ski areas; numerous dirt roads; trail erosion; campground erosion; urban developments (on- and off-Forest) and mines. Mines and urban areas have the potential to contribute pollutants other than sediment into surface water, such as metals and petroleum products. Urban areas can also be the source of chemicals such as pesticides and herbicides, copper from automobile brake pads, and household chemicals. These activities occur, but are widely spaced, within the analysis unit as well as adjacent to the unit, in watersheds that cross the boundary. Mines at Pine Creek and Bishop Creek could have increased metal and sediment levels in these creeks where pack stations are also located. Most of the analysis unit is undeveloped, and water quality is assumed to be good over almost the entire project area despite the numerous minor contributions to water quality identified above. Past commercial pack stock grazing occurred in all

pastures, and it either caused or contributed to current adverse effects to hydrologic resources and soil quality.

The 2005 AA/JM ROD allowed commercial pack stock use in the AA/JM Wildernesses. It constrained that use by destination quotas, allowable grazing levels, limiting use to authorized trails, and traveling trip quotas. Cumulative effects from pack stock use to the AA/JM Wilderness were discussed in the 2005 AA/JM EIS.

Foreseeable future actions include continued cattle and sheep grazing, especially in areas used for commercial pack stock drives, and continued water diversions in most watersheds downstream of INF land. It is assumed that there will be increased overall recreational use as the population of California increases. Removal of commercial pack stock use on the Inyo NF could lead to an increase in use in adjacent National Parks and Forests.

While the above cumulative effects have led to altered hydrology and soil quality throughout the analysis unit, adverse effects have been reduced over the past few decades in many areas. Actions that have been taken to improve watershed condition include reduced grazing, reduced water diversions in the Mono Lake and Owens River Basins, watershed restoration projects, State stormwater pollution prevention policies, implementation of construction BMPs, and others. Future implementation of the 2005 AA/JM ROD will be another small, beneficial additive effect to upper portions of watersheds on the INF.

Alternative 1 would be another small contribution toward reducing the cumulative total bare soil, compacted soil, and sedimentation into surface water over the analysis unit. It would also slightly reduce water diversion from springs and streams, and slightly reduce geomorphic alteration. The beneficial effects of pack station removal on soil and water resources should be local and likely too small to be measured on a watershed scale, but will be a small contribution to overall improved conditions.

At a local scale, such as at individual pack stations and in about four pastures, removal of commercial pack stock use could be a large contributor to improved conditions. At pastures, historical adverse effects from production livestock grazing likely included soil compaction, stream bank destabilization, and possibly water table lowering. Removal of commercial pack stock grazing would allow for more rapid recovery from recent and historical grazing than the other alternatives. The beneficial effects on individual meadows, in conjunction with past reducing grazing across the forest and future reduced grazing impacts from implementation of the 2005 AA/JM ROD, would be a small part of improved meadow hydrologic function and soil quality throughout the region. In adjacent National Parks and forests, increased pack stock use could lead to increased trail erosion if use is new. It could also lead to increased grazing and increased meadow compaction, sod fragmentation and streambank erosion.

There would be no measurable cumulative watershed effects in any HUC 6 scale watershed (from 10,000 to 60,000 acres in size) due to implementation of Alternative 1. For further information, see the cumulative watershed effects analysis in the Project Record. Concentrated pack station activities cover less than 70 acres in any one watershed, and the effect to stream geomorphology and water

quality are localized and minor to moderate. Therefore, removal of these activities could not have measurable cumulative watershed effects at any HUC6 scale watershed. The most intensive commercial pack stock use occurs in watersheds that contain pack stations. All watersheds containing pack stations also contain roads, parking lots, multi-use trails, resorts, and most have major dams or diversions either on or directly downstream from the INF land. These semi-developed watersheds often have fundamentally altered flow or geomorphology downstream from the analysis area. Removal of pack stations and pastures located directly on streams could contribute to minor locally decreased input of fine sediment and manure into the water, and local improved stream geomorphology in pastures.

Alternative 2 –All Analysis Units

Direct and Indirect Effects

There would be local differences between effects of Alternative 2 and Alternative 1, with a few more locations experiencing adverse soil and water effects under Alternative 2. The effects to soil and hydrologic resources should remain about the same as the current situation under Alternative 2, because commercial pack station operations would be similar. There could be a slight beneficial effect relative to current conditions in two pastures from more restrictive pasture management designed to meet standards and guidelines. In two to three other pastures, the new regulations should allow for decreased soil compaction, decreased stream bank trampling and therefore decreased sedimentation into surface water, and increased stream bank stability.

Water Quality: Under Alternative 2, there will be local inputs of manure and sediment into surface water in pastures and where trails cross streams. At the pack station facilities, there should be little to no manure input into water. At all pack stations, manure will be removed in corrals at least once a year to prevent snowmelt from carrying manure into water. At Rainbow Pack Outfitters (RPO), the pack station with corrals nearest water, manure will be removed at least once every two weeks. This should reduce the potential for entry of manure into water. In summer 2006, water quality was measured at the two pack stations nearest water (MLPO and RPO). At RPO, there were no increases in fecal coliform downstream from the pack station. At MLPO, there were some small increases downstream relative to upstream, but the log mean average of fecal coliform over a 30-day period met the standard.

Because facilities and activities will remain the same other than some mitigations to reduce manure entry into water, this condition is expected to remain the same or improve under Alternative 2. Although the large herd sizes authorized by this alternative suggest that there would be a higher likelihood of manure entry into surface water during spring runoff, water quality standards should still be met with application of proposed mitigations. Of RPO and MLPO, the two pack stations nearest water, Rainbow Pack Outfit could hold up to 15 more stock than they are currently authorized. Due to the construction of erosion control features and removal of manure accumulations once every two weeks, the increased herd size should not increase manure entry into surface water, and in fact it

should be reduced. Specific pack stations and the expected effects of their herd size increases are discussed below in the Non-wilderness analysis unit section.

In pastures and along trails, manure would continue to be deposited on meadow surfaces and directly into water. The type of use along these trails and in the pastures should remain the same as today, with a possible 20% increase in use levels. Input of manure into water could therefore increase by about 20%, and water quality might have a 20% increase in fecal coliform levels relative to summer 2006 (Table 3.33). For pasture water quality sampling, in two pastures the water in the pasture has fecal coliform levels that do not meet standards, but downstream of the pasture, water quality meets standards. In West Agnew Meadow, fecal coliform levels exceeded standards both upstream and downstream of the pasture, and it is therefore impossible to determine whether the pasture was contributing fecal coliform to the creek.

Under Alternative 2 and Alternative 3, fecal coliform and turbidity levels will continue to be monitored during snowmelt, after thunderstorms, and during dry, low flow periods at pack stations within 100 feet of water. This will occur for at least one year, until uncertainties about the severity, timing, and extent of contributions to water quality are reduced. Changes to operations or facilities will be made if water quality monitoring indicates that either fecal coliform or turbidity exceeds standards in surface water.

Water Quantity : Under Alternative 2, all 11 pack stations and three base camps would continue to divert about the same volume of surface water as they currently divert. The effects will be major in 5 springs during the summer months, and for the rest, the effects will be too small to be measured. Total current diversions are estimated to be less than 13 AF/year for all stations and camps based on allocated water rights. Although five pack stations could have increased herd size (relative to reported currently used levels), and the volume of water used might increase as a result, total diversions must still remain within the 13 AF/year limit set by water rights. One pack station could divert more water than currently used under this alternative. Bishop Pack Outfitters pumps water from a spring in the small North Lake pasture. The current estimate was that 0.3 AF/year is used. With an additional 15 head drinking 45 liters per day, there could be an additional 0.1 AF/year of water use, for a total near 0.4 AF/year.

The water diversions are too small to have project area scale effects to stream flow, because the major effects are to 5 springs out of thousands in the project area. Springs at five pack stations will be almost fully diverted during the summer months. These diversions likely affect the beneficial uses in those particular springs. The beneficial uses (listed in LRWQCB 1994 for minor surface waters) affected could include:

- Cold Freshwater Habitat
- Wildlife Habitat

These beneficial uses could be negatively affected because during summer months, a major percentage of the 5 springs will be diverted for use at the pack stations. A reduction in flow can reduce riparian vegetation and habitat for aquatic species.

The pack station water use does not have substantial effects to beneficial uses of major water bodies or to any watershed. Almost all of the water used has been authorized by the State Water Resources Board.

At the remaining five pack stations and two base camps where water is diverted from streams, the diversions are too small relative to flow to affect beneficial uses. At Truman, the diversion is too small and infrequent to affect beneficial uses. The use only occurs for a month a year, and the spring box is constantly connected, meaning that the natural flow is already disturbed, and the only difference is that less water seeps into the ground because it is drunk by horses.

A more detailed discussion of specific springs is in the “non-wilderness” section below.

Geomorphology: Under Alternative 2, stream geomorphology is expected to be adversely affected in pastures and along trails at stream crossings. Stream geomorphology in twelve pastures in the Non-wilderness analysis unit could be affected by stream bank trampling and trails crossing water. However, grazing standards will be implemented in meadows to maintain or improve stream morphology (See grazing section 3.4.2.1 for more detailed information).

In the GT/SS Wildernesses, there are low levels of commercial pack stock use authorized (60 trips into the GTW and 25 trips into the SSW, relative to over 1,500 in the AA/JM Wildernesses) under Alternative 2. These low levels of use should prevent any effect to stream geomorphology in grazed meadows. The eight meadows that are vulnerable to even low levels of grazing are closed to commercial pack stock grazing. For more site-specific analysis of meadow geomorphology in the GT/SS Wildernesses, see the “vegetation-grazing” section of this document.

Soil Productivity: There will be local and mostly minor negative effects to soil productivity under Alternative 2. In pastures, at pack station facilities, along trails, and at campsites, soil will have slight to major compaction, and in some cases, will have reduced or absent vegetative cover.

Soil compaction and fragmented sod would occur in 15 pastures. Soil compaction would, continue at approximately 20 campsites currently used exclusively by commercial pack stations. The effect to soil conditions on and near trails would be minimal on all but a few trails, because stock generally remain on trails, simply continuing the current compaction and bare soil that occurs on all trails. Continuation of commercial pack stock would be a portion of the use that maintains trails in their compacted state.

The extent of soil compaction related to commercial pack stock operations proposed by Alternative 2 in the non-AA/JM portions of the Inyo National Forest is:

- 20 campsites, 1/4 acre each = 20 acres (severe compaction)
- 560 miles of trail, average 10 ft wide = 700 acres (severe compaction)
- 12 pack stations, total = 76 acres (severe compaction)
- 3 base camps, 2 acres each = 6 acres (severe compaction)
- 15 pastures, total = 360 acres (minor to moderate compaction)

Total compacted area estimate outside of the AA/JM Wildernesses = 1,147 acres (570 acres if multiple use trails are not included)

Total project area outside of the AA/JM Wildernesses = 1,059,347 acres

Most of this estimated compacted area (700 acres) is trail. Almost all of these trails (except for about 10 miles) will be used by multiple users, and will remain compacted without any commercial pack stock use. Therefore, an estimate of the area actually compacted due to commercial pack stock use is closer to 570 acres.

Weed removal that will occur under both Alternatives 2 and 3 will not affect soil movement. No pack station has enough weeds, or large enough weeds, to cause more than very minor and very local soil disturbance. It will not be extensive enough to cause soil erosion.

In pastures, compaction is less severe, and there is vegetative growth. In these areas, the soil still supports vegetation, and so the effects of the compaction are minimized. It does not greatly increase soil surface erosion, but does reduce infiltration and possibly increase overland flow. However, because use patterns will remain about the same as they have in recent years, no pasture should have more than a small area with moderate to severe compaction (where animals congregate). Therefore, the effects to water flow should be absorbed by the non-compacted area of the meadow.

Cumulative Effects- All Analysis Units

Cumulative effects for hydrology are geographically bounded by the HUC6 watersheds containing pack stations and commercial pack stock activity. Cumulative effects analysis will be completed on a site-specific scale (to determine the effects of actions throughout time on one piece of land), and up to the HUC6 watershed scale. HUC 6 (Hydrologic Unit Code 6) watersheds vary in size from 10,000 to 50,000 acres. An example of a HUC6 watershed is the combined Convict and McGee Creek drainages. For a list of HUC6 watersheds, see the Cumulative Effects Analysis in the project record. These watersheds almost always begin on the Inyo National Forest, but the downstream extent of these watersheds is off forest land. In this project area, the downstream portions of watersheds are on Bureau of Land Management (BLM) or LADWP property. Because the commercial pack stations to be analyzed in this document also use SEKI, cumulative effects analysis will also be completed in HUC6 sized watersheds within SEKI. The HUC6 watershed was chosen as the maximum extent of analysis because any hydrologic effects from commercial pack stock activities could be carried downstream in watersheds. Therefore, one must look at an entire watershed to determine cumulative watershed effects. Any watershed larger than a HUC6 watershed would be too large, and would mask cumulative effects.

The time frame for these cumulative effects is bound in the past by any action that continues to show watershed effects, and in the future up to 20 years. These time and space boundaries apply to cumulative effects analyses for all analysis units.

At a Forest-wide scale, the cumulative effects to hydrologic resources and soil quality under Alternative 2 should be similar to Alternative 1. At a local scale, there could be a few areas with more adverse cumulative effects under Alternative 2. At no place should pack station permits be the action that triggers irreversible adverse effects to soil or water resources. This is because pack station activities generally have minor and local soil and hydrologic impacts. More site specific cumulative effects will be discussed for the separate analysis units below.

Water quality is generally good throughout the Forest, although there are water bodies with elevated sediment, metal, or bacteria levels (LADWP 2005, LRWQCB 1994). Sediment enters water from production livestock grazing throughout the forest, urban development, especially in the cities of Mammoth Lakes and June Lake, and through operation of ski areas and other developed recreation areas. Mammoth Creek is on the 303d list for metals. It is assumed that this is due to urban runoff and natural sources in the Mammoth Lakes Basin (LRWQCB 1994). Bacterial input is attributable to human development, production livestock grazing throughout the forest, and natural sources. The pack station pastures, and to a small extent, the pack station facilities and trails, locally add sediment and bacteria to surface water. According to the limited water quality samples taken in summer 2006, fecal coliform (and total coliform) enters surface water when a pasture is flooded or has water flowing over the surface (Table 3.33). During drier periods before the presence of stock, fecal coliform does not enter water in pastures. This monitoring showed that while water has increased levels of fecal coliform within the pastures, downstream of the pastures, the fecal coliform is diluted to levels that meet water quality standards. The cumulative effect with other uses, while existent, is minor. Overall, water quality on the INF is good, and commercial pack stock permitting will not measurably add to water quality degradation.

Water quantity has been affected throughout the Inyo National Forest due to major water diversions by LADWP and local water districts. The total estimated water flow off of the Inyo National Forest is about 1.1 million AF/year (Inyo National Forest, 1988). Almost all major streams on the Sierra flank are diverted by LADWP, either on or downstream of Forest land. The total amount diverted by LADWP averages about 1/3 of that, at 307,000 AF/year. Portions of that are groundwater, but even accounting for groundwater, these numbers show that water flow and hydrologic processes in the Owens River and Mono Lake watersheds are profoundly and irreversibly altered.

Many watersheds containing pack stations, including Bishop Creek, Mammoth Creek, Rock Creek, and Rush Creek have diversions and dams upstream of the pack stations, and the others have dams and diversions below pack stations. The pack stations, in total, divert an estimated 13 AF/year of water. This is a contribution to the overall major alteration of the Owens River and Mono Lake watersheds. However, the continuation of the pack station diversions is too small to cause a measurable effect to overall hydrologic systems. Locally, the diversion effects alone can alter riparian vegetation and aquatic habitat, but in these cases, there is no cumulative effect, just the direct effect of pack station diversion.

There would be no measurable cumulative watershed effects in any HUC 6 scale watershed due to implementation of Alternative 2. All watersheds with pack stations and pastures also contain roads, parking lots, multi-use trails, resorts, and most have major dams or diversions either on or directly downstream from the INF land. Almost all of these watersheds (other than Independence Creek near Sequoia Kings Pack Trains, the San Joaquin River near Red's/Agnew Meadow Pack Station and McGee Creek near McGee Creek Pack Station) have fundamentally altered flow or geomorphology downstream from the analysis area. Use of pack stations and pastures located directly on streams will likely contribute to minor locally increased input of fine sediment into the water. There will continue

to be local adverse effects to stream geomorphology in pastures, although these effects will be within standards due to implementation of utilization standards, range readiness on-dates, fencing of specific spring heads and streams, and implementation and enforcement of the 10-20% streambank trampling standard in pastures and the GT/SS Wilderness.

Concentrated pack station activities (campsites, pastures, structures) would not affect more than 70 acres in any of the watersheds in the cumulative effects analysis area, and the effects to stream geomorphology and water quality would be local and minor. Therefore, these activities could not have measurable cumulative watershed effects in any HUC6 scale watershed.

Commercial pack stock that originates on the Inyo National Forest will enter SEKI, and graze in meadows there. According to Gregg Fauth, SEKI Wilderness Coordinator, about 5 meadows have increased hoof punching, soil compaction, stream bank trampling, and likely erosion due to grazing. Much of this grazing is from packers based on the INF.

Alternative 2 is predicted to result in about the same levels of grazing as in recent years, meaning that adverse effects to the 5 meadows would continue. It is a possible foreseeable future action that, with continuation of current levels of grazing in these meadows, the meadows will be closed to commercial pack stock use. Over a period of a few years of rest, vegetative and streambank cover, would increase and erosion and bare soil would decrease. These effects would likely reverse once the meadows were re-opened.

Within five years, SEKI plans to implement a commercial pack stock management plan. When this occurs, it is assumed that they will allow only the commercial pack stock use that protects their meadow resources. In that case, these meadows would have some, but likely reduced, levels of grazing. The meadows would contribute small volumes of sediment and manure into surface water, and there would be some stream bank trampling. However, because the SEKI plan is expected to authorize use levels that would meet their standards, the effects to stream bank trampling and water quality should not cause unacceptable effects.

Because there are only about 5 meadows that have grazing issues in the meantime, on a HUC6 watershed scale, effects are too small to be measured. At a smaller watershed scale, there could be a very small increase in stream velocity or turbidity, but these effects should be minor due to the small area of meadows relative to the surrounding buffering non-meadow area.

Alternative 3 –All Analysis Units

Direct and Indirect Effects

The effects to soil and hydrologic resources should be about the same as Alternative 2, because commercial pack station operations would be similar. There would be local differences between effects of Alternative 3 and Alternative 2, with fewer locations experiencing adverse soil and water effects under Alternative 3. There could be a slight beneficial effect relative to current conditions in two pastures from more restrictive pasture management designed to meet standards and guidelines. In two to three pastures, Alternative 3 would allow for decreased soil compaction, decreased stream

bank trampling and therefore decreased sedimentation into surface water, and increased stream bank stability. Outside of pastures, the effects should be almost the same as Alternative 2, with the minor differences described below.

Water Quality: Effects to water quality should be about the same overall as under Alternative 2, with negative effects only in specific locations. There could be differences relative to Alternative 2 at three pastures, which would be rested to grazing under Alternative 3, but open under Alternative 2. At these pastures, there would be no manure deposition onto the meadow surface and into streams at the pastures, and therefore there would be less manure washed into the surface water. According to the results from current operations (Table 3-20), this would likely reduce bacteria input into surface water within meadows, but would have little effect to larger streams, because the bacteria is diluted when it reaches larger streams.

At Pizona and Truman camps, water quality effects should be slightly improved relative to Alternative 2. Both camps would be moved completely away from water under Alternative 3. There would be no potential for sedimentation into surface water other than from access roads or trails.

Water Quantity: The effects to water quantity would be the same as under Alternative 2, because all of the same pack stations and base camps would be in place. They would continue to divert about the same amount of water, although there could be slightly less diverted at the 5 pack stations that would have smaller herd size under Alternative 3 (relative to Alternative 2). This difference in diversions at any spring compared to Alternative 2 would be about 0.1 AF/yr, (about 33,000 gallons per year, or 400 gallons/day). This difference in effects to riparian and aquatic life would be too small to measure, although there could be negligibly more riparian and aquatic habitat under Alternative 3.

Geomorphology: Effects under Alternative 3 would be the same as Alternative 2, except at a few local areas. There could be differences in geomorphologic effects in five pastures. These pastures would be rested to grazing under Alternative 3 with implementation of Amendment 6. There would be less stream bank trampling and more vegetative growth on the stream banks. This could allow for less stream bank erosion, and possibly narrowing stream banks or decreased incision, with an upward trend in stream functional condition. When the pastures were re-opened after the period of rest, there would be trampling up to the standard of 20%, and this could cause the streams to cease their upward trend, and remain in a static condition. The meadows would not be opened to grazing unless standards were met and the meadows maintained in a static condition. For further detail, see the “Vegetation – grazing resources” section of this document.

Soil Productivity: The effects to soil productivity should be about the same as under Alternative 2. This is because the areas with severe soil compaction and loss of productivity are at the pack station facilities and base camps. In three pastures, there could be a difference in soil productivity. These three pastures would be rested to grazing under Alternative 3. Over a period of years or decades, the soil could become less compacted in these pastures, and could have increased ground cover. This could lead to less erosion and greater soil productivity. Along trails, at pack station, and at base camps, the use may be slightly less than Alternative 2, but continued use at any level would sustain

compacted soil conditions. Therefore, other than pastures, soil productivity would be the same as under Alternative 2.

Cumulative Effects- All Analysis Units

The cumulative effects of Alternative 3 would be the same as under Alternatives 1 and 2 on a Forest-wide scale. The cumulative effects would be the same as Alternative 2 at all but a few pasture locations. At no place should pack station permits be the small action that causes irreversible adverse effects to soil or water resources.

Past and present actions on or adjacent to INF land that could affect water quality are the same under Alternative 3 as under Alternative 1, other than this proposed action (see Table 3.1, Past, Present, and Reasonably Foreseeable Actions Contributing to Cumulative Effects).

The only difference in cumulative effects under Alternatives 2 and 3 should be in a few pastures that would be rested under Alternative 3 but open for grazing under Alternative 2. Cattle and sheep grazing may have occurred in pastures before pack station existence decades ago, and contributed to impacts seen today such as soil compaction, stream bank trampling, widened and incised streams, and headcutting. It is known that past commercial pack stock grazing occurred in all pastures, and that it may have caused or contributed to adverse effects to hydrologic resources and soil quality.

Re-authorization of grazing in some meadows that already have adverse geomorphic effects could continue those effects, but with some improvement. Some pastures, such as Rodeo, West Agnew, and Upper Rock Creek pastures, would be rested under Alternative 3. This would be a beneficial cumulative effect, because it would allow some recovery in meadows that have likely been grazed by cattle, sheep, and/or commercial pack stock for more than a century. Past effects could prevent streams in these meadows from recovering to PFC. In meadows where water tables are lowered through stream incision, minor beneficial effects from rest may not offset the effects of past actions.

Cumulative watershed effects would be the same as Alternative 2 in all HUC6 watersheds. Although there could be reduced stream bank impacts in up to four meadows, the difference in effects to stream flow, water quality, and stream morphology should be small enough that the effects are immeasurably different on a watershed scale.

3.2.2.2 Non-Wilderness Analysis Unit

Affected Environment

This section contains more site-specific analysis than the previous, project-wide section. This analysis unit contains all of the pack station facilities, a few campsites, many trails, and stock drive routes for all pack stations.

Water Quality: To determine current water quality condition near base facilities, Best Management Practice (BMP) evaluations were completed at 11 of the pack station base facilities (Table 3.34). Further, quantitative water quality analysis was completed at two pack stations nearest water, Mammoth Lakes Pack Outfit (MLPO) and Rainbow Pack Outfit (RPO). An evaluation was not

completed at Three Corner Round, because it is not a developed recreation site, but it is over 100 feet from water (along the water flow path), and is not considered at risk for water quality effects. The remaining two pack stations do not have base facilities.

Three of the eleven analyzed base facilities were found to have potential minor impacts to water quality (Table 3.34). Mammoth Lakes Pack Outfit is located adjacent to a man-made ditch that ultimately flows into a meadow and into Hidden Lake, near the Town of Mammoth Lakes. There is potential for some fine sediment or manure from the site to enter the ditch, because the facilities have bare ground and compacted soil to the ditch's banks. Manure may carry bacteria, nutrients, or pathogens into surface water. However, in recent years, the corrals have been moved away from the ditch to prevent manure from entering the creek. At this site, water quality was not found to be affected by the pack station during summer 2006. Fecal coliform and turbidity was measured five days, twice after rainstorms and three times during dry weather (See table 3.33(a)). Water quality was within standards when measured twice, once after rain and once during a dry period in July. In October, water quality was analyzed three times during one 30-day period so that a log mean could be calculated. While one of these measures showed that water quality downstream of the pack station was 23 mpn/100 mL, 3 mpn over the standard, the log mean of all three measurements was 4.2, well within the standard. To ensure that there are no water quality issues, water quality monitoring will occur during snowmelt, after rain, and during the dry, low flow period during summer 2007, as explained in the Monitoring Plan (Appendix I). If water quality is found to be adversely affected, further mitigations will be implemented (See Toolbox, Appendix I).

RPO has buildings and hitching posts within 50 feet of water, and their grounds are adjacent to Green Creek. In summer 2006, water quality was measured in Green Creek, the morning of a thunderstorm, both upstream and downstream from the pack station. Fecal coliform levels were undetectable in both locations, and turbidity was lower downstream than upstream. This suggests that, during thunderstorms, manure does not reach Green Creek. Currently, manure is removed from the hitching post area as it drops, and is not stored within 100 feet from water. In the corral which is closest to surface water, manure is removed once or twice weekly and placed into a dumpster which is taken to a landfill.

At Bishop Pack Outfit, the small North Lake Pasture contains Glacier Spring, a spring with a pond that is also used for stock watering in a pasture (Figure 3.7). This spring has manure and sediment entering the water due to grazing stock, and also a contribution from the corral.

The spring has surface connectivity to other water bodies, but water quality monitoring suggest that water quality impacts occur within the pasture only. On the other side of the road, water exiting this pasture was found to meet fecal coliform standards.

Little is known about groundwater quality, other than from wells belonging to municipal water departments. According to Mammoth Community Water District (MCWD), arsenic is the only pollutant of concern for groundwater and surface water supplies originating in the INF (MCWD 2002). The source is natural throughout the Eastern Sierras and levels cannot be reduced through Forest management.

Figure 3.7. The small North Lake Pasture, showing Glacier Spring and associated pond.



Table 3.34. Best Management Practice Evaluation results by pack station.

Pack Station	Implementation of Water Quality Best Management Practices	Are current practices effective for preventing water quality impacts?	Pollutant/activity with potential water quality impacts
Frontier Pack Train	Meets requirements	Yes	None
Reds Meadow Pack Station	Meets requirements	Yes	None
Mammoth Lakes Pack Outfit	Minor departure	Minor impacts	Sediment can reach Bodle Ditch, minimized since 1999
McGee Creek Pack Station	Meets requirements	Yes	None
Rock Creek Pack Station	Meets requirements	Yes	None
Pine Creek Pack Station	Minor departure – trailers within 20 feet of creek	Yes	None
Bishop Pack Outfitters	Minor departure – corrals adjacent to Glacier Spring	Minor impacts	Sediment reaches Glacier Spring (spring at pack station)
Rainbow Pack Outfitters	Major departure – hitching posts within 50 feet of water	Minor impacts	Sediment reaches Green Creek
Glacier Pack Train	Meets requirements	Yes	None
Sequoia Kings Pack Trains	Meets requirements	Yes	None
Mt. Whitney Pack Trains	NA- no facilities	-	-
Cottonwood Pack Station	Meets requirements	Yes	None
Three Corner Round Pack Outfit	BMP evaluation not completed, but over 100 feet from water.	-	-

Throughout the INF, trails and campsites also contribute increased levels of fine sediment to surface water, or allow human waste or manure to enter water. Water quality impacts from trails and campsites in the non-wilderness portions of the forest are not quantified, but are likely localized and minor. Only a few entire trails in this area are used regularly by commercial pack stock, although many short segments are used to access wilderness. There are a few known trails with some water quality effect, but the effects are local and minor. The trails with known sediment input into water are the Rush Creek Loop trail and the McGee trail accessing wilderness from the McGee pack station. On these trails, a few stream crossings have some erosion occurring. Other trails also have stream crossings, but the level of erosion is small and within normal trail limits.

Water Quantity: Ten pack stations use surface water diverted from streams or springs for drinking water, stock watering, and/or washing at the base facilities or at regularly used campsites. An office review was conducted to determine whether pack stations or the INF hold water rights used at pack stations. The water system used by each pack station and any associated water rights are listed in Table 3.35. In the locations where there are no water rights, no water rights are needed and there is no quantification of the amount of water that is used. For those sites, diverted water is used for stock watering only. Water diversions were estimated based on the amount of water needed by each head (45 liters per day), and the number of days the pack station or camp is used per year. It was assumed that the entire herd was held at one time, which is an overestimate. In these cases, the Quantity shown in the last column of Table 3.35 is “estimated”.

Mammoth Lakes Pack Outfit and Frontier Pack Station use water provided by municipal water districts, and Cottonwood Pack Station uses only groundwater. Red’s Meadow Pack Station uses both groundwater and spring diversions, as shown in Table 3.35.

Table 3.35. Water rights and water source for pack stations on the Inyo National Forest.

Pack Station Name	Water Rights Holder	Water Source	Quantity (maximum allowable usage in gallons/day)	Quantity (maximum allowable usage in acre-feet per year)
Frontier Pack Station	No water right necessary	Truman Spring	Not quantified	Not quantified (estimated 0.2 AF)
Reds Meadow Pack Station	Inyo National Forest	Unnamed Stream (stock watering only)	1000	0.47
Reds Meadow Pack Station	Inyo National Forest	Unnamed Spring (stock watering only)	5000	2.34
Reds Meadow Pack Station	Groundwater – no water right	Groundwater	Not quantified	Not quantified
Mammoth Lakes Pack Outfit	John Summers	Lake Mary (now provided through MCWD)	1,600	0.60
Mammoth Lakes Pack Outfit	John Summers	Lake Mary (now provided through MCWD)	1,000	0.47
McGee Pack Station	No water rights – none necessary	3 unnamed springs	600	0.28
Rock Creek Pack Station	Inyo National Forest	Unnamed Spring	800	0.27
Rock Creek Pack Station	Inyo National Forest	Unnamed Spring	800	0.27
Rock Creek Pack Station	No water right necessary	Pizona Creek	Not quantified	Not quantified (estimated 0.2 AF)
Rainbow Pack Station	Inyo National Forest	Green Creek	600	0.24
Bishop Pack Outfit	No water right necessary	Unnamed Spring	Not quantified	Not quantified (estimated at 0.3 AF)
Pine Creek Pack Station	Berner	Unnamed Spring	650	0.24
Glacier Pack Train	M. Stewart	Unnamed Spring	0.025 cubic feet per second	7.6
Sequoia Kings Pack Station	Inyo National Forest	Unnamed Spring	600	0.39
Cottonwood Pack Station	Groundwater through FS system – no water right	Groundwater	Not quantified	Not quantified
Three Corner Round	No water right – permission from LADWP	Pinyon Creek	Not quantified	Not quantified (estimated 0.01 AF)

Geomorphology: PFC analysis was completed to determine current condition of stream geomorphology on most of the pastures requested for commercial pack station use. Rodeo, Agnew, Rock Creek Lower Corral, and the North Lake small pasture each contain a wetland, stream reach or pond shoreline that was rated functional at-risk (see Table 3.42 in Section 3.4.2.1,

Vegetation/Grazing). Minor alterations in geomorphic conditions were also observed in Evans Meadow McGee, Upper Rock Creek, the Large North Lake pasture, Donkey Meadow, Bishop Park Office Meadow, and McMurry Meadow pastures.

Table 3.36. Results of Proper functioning condition (PFC) analyses for all analyzed meadows and pastures, including meadow name, pack station requesting or using the meadow, watershed containing the meadow, and PFC rating.

Meadow/Pasture Name	Pack Station Name	Watershed	PFC rating (Year Rated)
Rodeo Meadow	Frontier Pack Train	Rush Creek	Functional at risk – trend not apparent (2004)
Evans Meadow	Frontier Pack Train	Rush Creek	Proper Functioning Condition (2004)
Agnew Meadow – West	Reds Meadow Pack Station	Middle Fork San Joaquin River	Functional at risk – upward trend (2004), Functional at risk – trend not apparent (2005)
Agnew Meadow – East	Reds Meadow Pack Station	Middle Fork San Joaquin River	Undetermined
McGee Pasture	McGee Creek Pack Station	McGee Creek	Proper Functioning Condition (2004)
Rock Creek – Upper Pasture	Rock Creek Pack Station	Rock Creek	Proper Functioning Condition (2004)
Rock Creek – Lower Pasture	Rock Creek Pack Station	Rock Creek	Functional at risk – trend not apparent (2004)
North Lake small pasture	Bishop Pack Outfit	Bishop Creek	Functional at risk – trend not apparent (2004)
North Lake large pasture	Bishop Pack Outfit	Bishop Creek	Proper Functioning Condition (2005)
Cardinal Mine Pasture	Bishop Pack Outfit	Bishop Creek	Proper Functioning Condition (2004)
Bishop Park	Bishop Pack Outfit	Bishop Creek	Undetermined
Big Meadow	Rainbow Pack Station (not used in at least 6 years)	Bishop Creek	Proper Functioning Condition (2005)
Donkey Meadow	Rainbow Pack Station (not used in at least 6 years)	Bishop Creek	Proper Functioning Condition (2005)
McMurry Meadows	Glacier Pack Train	Tinemaha Creek	Undetermined

Further discussion of individual pasture hydrologic function, soil, and vegetative condition is included in the Grazing Management Section of this document (Section 3.4.2.1).

Beyond pastures, there are also some very local, minor, adverse geomorphic alterations from trails, campsites, and pack station facilities. These alterations occur on trails at stream crossings, which cause slight widening of the stream channel at the point of the crossing. Campsites that are near surface water often cause vegetation removal and soil compaction to the water's edge, where campers or stock access the water. This can cause stream channel collapse from trampling of the stream bank, stream widening, and increased fine sedimentation into water. These conditions were not noted on any camps in non-wilderness areas.

Soil Characteristics: Soils in the non-wilderness analysis unit are variable. Most areas have weakly developed soils with granitic or pumiceous parent material. In the Monache Meadow area, soils are more developed because they have not been as recently glaciated. There are large meadows covering about 10 percent of the area, and the soils in these meadows are vulnerable to impacts.

Pack station base facilities severely compact soil and cause reduced infiltration rates. This occurs because the area receives high levels of traffic, which is inevitable at a developed resort.

Some meadows and pastures have compacted soil, although not as severely compacted as at the base facilities. The pastures with moderate to severe soil compaction over a substantial portion of the pasture include Rodeo Meadows, Evans Meadow, Agnew Meadow (West and East), McGee Pasture, Lower Rock Creek Meadow, North Lake pastures, portions of Cardinal Mine Pasture, Art's pasture (Aspendell), and McMurray Meadows. This includes all pastures that have been recently grazed other than Upper Rock Creek pasture. Rodeo Meadow and West Agnew Meadow were observed to have increased soil erosion. Soil conditions in meadows are discussed further in the Grazing section of this document (Section 3.4.2.1).

Trails and campsites contribute additional soil compaction and soil erosion, but have very local and minor impacts. There are only seven campsites in this analysis unit that were identified by the pack station operators as being used recently or requested for future use. These camps all have a barren core with compacted, denuded soil. Two camps, at Casa Diablo and Wells Meadow, receive regular use by large parties and are the most likely to have increased soil compaction and erosion.

The camp at Casa Diablo is a dry camp, far from any surface water source. The site is on flat land and does not have significant soil erosion. Therefore, it currently meets the INF Standards and Guidelines (S&Gs) for soil protection (INF, 1988).

The campsite at Wells Meadow is also on a flat area and there has been little to no erosion from the site observed. The campsite is far from surface water, and therefore no manure or sediment is entering surface water from the site and it meets the INF S&Gs for soil protection (USDA FS, 1988). The corral used by the pack station for holding stock during stock drives is in a man-made meadow. The corral is used once a year during Rock Creek's stock drive, and some years it is not used at all.

Environmental Consequences

Alternative 1 – Non-wilderness Analysis Unit

Direct and Indirect Effects

Removal of pack station use should not have a measurable effect to soil and hydrologic resources on an analysis unit scale. Pack stations and associated corrals, pastures, and repeatedly used campsites cover about 0.04% of the non-wilderness area (about 330 acres out of the roughly 800,000 acres). The pack stations also use many roads and trails non-exclusively. Because the area used exclusively by pack station operations is such a small portion of the entire project area, and there are few major water quality or hydrologic function alterations within those areas, the effects of commercial pack stock use are currently very small.

There could be local beneficial effects to soil and water resources with removal of pack station base facilities and termination of commercial pack stock grazing in some pastures. Many of the pastures associated with the pack stations have altered stream morphology, altered hydrologic function, increased soil erosion, and possibly slightly reduced water quality due to grazing. In many cases, removal of grazing could allow for increased vegetative cover that could reduce soil erosion and possibly allow for some decreased sedimentation into surface water. Recovery of meadow hydrologic function or stream morphology often takes decades or centuries after grazing (Kondolf, 1993). Therefore, in pastures where there are major alterations, removal of grazing may allow for the beginning of slow hydrologic function or stream morphology recovery. Full recovery may never occur or may occur over decades. A more detailed discussion of the effects of Alternative 1 on stream geomorphology can be found in the Grazing section of this document (Section 3.4.2.1).

Water Quality: Although there is little conclusive water quality data available for this area, it is assumed that water quality is good and would have no overall change under Alternative 1.

Table 3.21 shows BMP analysis results for each pack station base facility. Alternative 1 could have long term beneficial effects at the three pack station facilities where there is currently a potential for contributions to water quality degradation. With removal of pack station facilities and restoration of the sites, there would be a gradual reduction of sediment movement with increased vegetative growth and soil decompaction.

According to 2006 water quality monitoring results (Table 3-20), removal of these pack stations would have little benefit to water quality because water quality is rarely degraded (at least during most of the year when snow is not melting). However, there would a greatly reduced *potential* for any input of sediment or manure into surface water with removal of all pack stations.

The improvement would likely be most pronounced, but still minor, at RPO and RCPS Lower Corral. Because these pack stations have hitching posts or corrals within ten feet of water, they currently have the greatest potential to contribute sediment and manure into surface water, and removal could have the greatest positive effect to water quality. Under Alternative 1, sediment input into Green Creek and a Rock Creek tributary would likely increase in the short-term, because building removal would allow for more exposed, compacted, bare soil that would be easily erodible. Over time, with active restoration such as subsoiling, soil would de-compact and vegetation would grow on the site, reducing sedimentation into Green Creek over the long-term.

The closure and removal of Bishop Pack Outfitters facilities would have a slight overall beneficial impact to water quality, although it could be a larger beneficial effect to one pond. The small meadow at North Lake, adjacent to the pack station, contains a pond that currently has the potential for increased fine sediment and manure input. With removal of pack stock, the pond would have greatly reduced sediment input, and after the existing manure breaks down, no manure input. The beneficial effect would likely only be to the water quality of the pond itself, because 2006 sampling data indicates that adverse water quality effects were not detected downstream in Bishop Creek.

The pastures that are currently observed to have increased sediment entering water are Rodeo Meadow, West Agnew Meadow, Upper Rock Creek Meadow, and Lower Rock Creek Meadow. Under Alternative 1, vegetation would grow on trails and streambanks, stabilizing them and making them less prone to erosion. Input into surface water from these meadows would be reduced at a local scale within and directly downstream of the pastures. The effect would likely be small because measurements of turbidity in pastures in summer 2006 showed low turbidity downstream of two representative pastures.

Manure input into streams within pastures would also be reduced under Alternative 1. There could be reduced bacteria and nutrients within and downstream of every pasture. With removal of use in pastures, it is likely that fecal coliform levels within pastures would have moderate reductions, due to lack of manure. Farther downstream, however, water quality monitoring suggests that these pollutants are currently diluted to low levels, which would not change with grazing removal.

Removal of commercial pack stock use from trails and campsites should have a minor, local beneficial effect to water quality. Most trails and campsites are not known to be contributing excessive sediment to surface water. The one trail (the loop trail from Frontier Pack Station), that is used exclusively by commercial pack stock and is known to be contributing small amounts of sediment into surface water, would no longer receive any use. Its gradual decompaction and revegetation could reduce sediment input into surface water over time. The improvement would be more rapid with active rehabilitation.

Water Quantity/Streamflow: Minor and very local beneficial effects to water quantity are expected under Alternative 1. Table 3.22 shows the current water use by pack station. Under SUP regulations, water rights are transferred to the FS in the event of a resort closure (Appendix H). The water would no longer be used at any pack station, and diversion/delivery structures would be removed. This could increase spring and stream flow in more than 10 springs during summer months. The increased spring flow could cause beneficial effects to existing macroinvertebrates by increasing potential habitat area. There would likely be negligible to minor beneficial effect to riparian vegetation. The springs where there could be a measurable benefit are at Glacier Pack Train, McGee Pack Station, and Rainbow Pack Stations, and two at Agnew Meadows, because these are the springs where a majority of the water is diverted during the summer operation period. There would be an increase in water during summer months, which could allow for a larger extent of riparian vegetation.

Geomorphology: Removal of all commercial pack stock operations is expected to result in a minor beneficial effect to stream or spring geomorphology in the non-wilderness analysis unit. The beneficial effect could be larger in a few localized areas, particularly in pastures. Approximately 3 miles of streams are found either within pastures, adjacent to pack stations, or at stream crossings. About half of these stream lengths are experiencing adverse effects to geomorphology. The total length of perennial streams in this analysis unit is on the order of 2,500 mi. Therefore, pack station operations affect no more than 0.1% of all perennial stream channels in the analysis unit. Removal of 3 miles of streamside disturbance should have a minor beneficial effect to geomorphology on a watershed or analysis unit scale.

Local beneficial effects to stream geomorphology would mainly occur with the removal of grazing at pastures that could allow increased stream bank stability and, over time, stream aggradation and a rise in water tables. The pastures that could show substantial improvement in stream morphology within 20 years are Rodeo Pasture, Evans Pasture, Agnew Meadow Pasture – West and East, Upper Rock Creek Meadow, and Lower Rock Creek Meadow. In the other pastures, geomorphology would remain the same as under the current condition, because there are not currently more than minor negative effects.

For a more detailed discussion of the effects of Alternative 1 on pastures, see the Grazing section of this document (Section 3.4.2.1).

Soil Quality: Soil could decompact and revegetate within a few years with active restoration at the pack station facilities and exclusive use campsites. These areas currently cover about 60 acres in the analysis unit, and removal of facilities and rehabilitation of sites would substantially improve soil quality on these 60 acres.

Within pastures, removal of grazing could allow for a slow improvement in soil quality through decreased compaction, increased vegetative growth, and litter cover. The improvement would occur because of the cessation of compaction and grazing. Pastures that are currently used cover roughly 270 acres, but moderate and severe compaction occurs only in portions of some pastures. Pastures with moderate to severe compaction estimated over more than 15% of their area are Rodeo, Agnew, Rock Creek Lower, and North Lake Pastures. These are the meadows that would show substantial beneficial effects from cessation of grazing under Alternative 1. Soil compaction recovery could take up to several decades (Alexander and Poff, 1985).

A few trails could show some reduction in compaction and bare soil with implementation of Alternative 1. The only commercial pack station trail outside wilderness that is known to be currently adversely affecting soil and water resources is the day-ride loop trail at Frontier Pack Station. Under the No Action Alternative, soil compaction along the trail would decrease within years, and could recover within decades. The time frame for decompaction is not well known, but on dirt roads in dry climates is assumed to be on the order of centuries (Bolling et al. 2000, Lovich and Brainbridge, 1999). With the removal of Frontier Pack Station, there would be little to no use of the existing trail since it was designed to start and end at the pack station and does not provide access to other destinations. The current stream crossing incision and stream diversion would continue, likely for decades, even without commercial pack stock use unless active restoration repaired the crossing.

Cumulative Effects – Non-wilderness Analysis Unit

Past and present actions that have affected soil and water resources within the project area include all those listed under the Project Area section. Effects specific to the Non-Wilderness analysis unit are included here.

There is extensive development within the June Lake, Mammoth Lakes, and Bishop Creek areas, near where the pack stations are located. Recreation residences, resorts, diversions for water use, campgrounds, ski areas, and roads can all affect hydrology and soil quality. One calculation

completed on sediment delivery into surface water related to development was completed at the inlet of Silver Lake, upstream of Frontier Pack Station. According to Northwest Biological Consulting (2004), the sediment delivery into the Silver Lake Delta accelerated from previous levels in the past 40-50 years. Northwest Biological Consulting (2004) suggests that causes of increased sediment could be; construction of the June Mountain Ski Area, widening of roads, straightening of Reversed Creek, housing development, flushing of upstream reservoirs, or natural sediment contributions. Similar effects from other developed areas are assumed.

Many of the streams within the non-wilderness analysis unit are dammed or diverted for electricity and municipal water use. Almost all perennial streams on the east flank of the Sierra Nevada Mountains are diverted directly downstream of INF land, and therefore there is a fundamental alteration of stream flow throughout the non-wilderness analysis unit and the region surrounding the project area. The Owens River and Mono Lake Watersheds both have altered water levels, sediment regimes, habitat quality and water quality from water diversions, dams, and other cumulative effects.

The 2005 AA/JM ROD allowed commercial pack stock use in the AA/JM Wildernesses. It constrained that use by destination quotas, allowable grazing levels, limiting use to authorized trails, and traveling trip quotas. Cumulative effects from pack stock use to the AA/JM Wilderness were discussed in the 2005 AA/JM EIS. Under Alternative 1, none of this use would occur.

Pack station activities currently add about another 330 acres of ground disturbance to the project area and allow stock manure to be deposited in concentrated areas. The area of disturbance includes the area within the pack station footprint, the area used as corrals and pastures, and the area used for exclusive use campsites. Although it is unknown how much area is disturbed by all uses throughout the project area, it is estimated that roads alone cause about 2,000 acres of bare, compacted soil due, and ski areas contribute approximately another 1,000 acres.

Foreseeable future actions include continued cattle and sheep grazing, especially in areas used for commercial pack stock drives, and continued water diversions in most watersheds downstream of INF land. It is assumed that there will be increased overall recreational use as the population of California increases.

While the above cumulative effects have led to altered hydrology and soil quality throughout the analysis area, adverse effects have been reduced over the past few decades in many areas. Actions that have been taken to improve watershed condition include reduced grazing, reduced water diversions in the Mono Lake and Owens River Basins, watershed restoration projects, State stormwater pollution prevention policies, implementation of construction BMPs, and others.

On an analysis unit scale, removal of pack stations and cessation of commercial pack stock activities would be another small contribution toward reducing the cumulative total bare soil, compacted soil, and sedimentation into surface water over the analysis area. It would also slightly reduce water diversion from springs and streams, and slightly reduce geomorphic alteration. The beneficial effects of pack station removal on soil and water resources should be local and likely too small to be measured on a watershed scale, but will be a small contribution to overall improved conditions.

At a local scale, such as at the individual pack stations and in five pastures (Rodeo, Evans, Agnew West, Agnew East, and Lower Rock Creek pastures), removal of commercial pack stock use could be a large contributor to improved conditions. Especially at the pastures, historical adverse effects from production livestock grazing likely included soil compaction, stream bank destabilization, and possibly water table lowering. Removal of commercial pack stock grazing would allow for more rapid recovery from recent and historical grazing than the other alternatives in individual meadows. The beneficial effects on individual meadows, in conjunction with past reducing grazing across the forest and future reduced grazing impacts predicted under the 2005 AA/JM ROD would be a small part of improved meadow hydrologic function and soil quality throughout the region. For analysis of cumulative watershed effects (CWE), see the CWE analysis in the project record.

Alternative 2 –Non-wilderness Analysis Unit

Direct and Indirect Effects

Under Alternative 2, there will continue to be local adverse soil and hydrologic effects. There would be local differences between effects of Alternative 2 and Alternative 1, with more locations experiencing adverse soil and water effects under Alternative 2. There could be a slight beneficial effect relative to current conditions in two pastures from more restrictive pasture management designed to meet standards and guidelines. In two to three pastures (Rodeo, Agnew West, and North Lake Small pastures) Alternative 2 should allow for decreased stream bank trampling and therefore decreased sedimentation into surface water and increased stream bank stability.

The effects to the overall non-wilderness analysis unit would be negligible, because pack stations exclusively use less than 0.05% of the land area, and their effects are generally minor and local. Under Alternative 2, about 375 acres of land would be dedicated to pack station facilities, corrals, pastures, and regularly used campsites outside of the wilderness. This constitutes about 0.05% of the non-wilderness analysis unit. The area dedicated to pack station operations is about 50 acres larger than under current conditions because a portion of Donkey Meadow, which is currently unused, would be opened for pasture use by Rainbow Pack Station. In addition to the areas used exclusively by the pack stations, the packers regularly use multiple use trails, OHV routes, or livestock grazing lands. In those areas, it is difficult to determine the contribution to ground disturbance due to commercial pack stock use versus other uses.

Water Quality: Water quality would continue to have minor, very local impacts from commercial pack station operations, but would continue to be good over most of the analysis unit. All of the pastures and most of the pack stations are within Riparian Conservation Areas (RCAs). The only pack station facilities not within RCAs are Frontier, Reds Meadow, and Cottonwood. However, only four pack stations (BPO, Lower Rock Creek Corral, MLPO, and RPO) are close enough to water that erosion from the bare, compacted soil at the facilities has the potential to directly enter surface water. At these pack stations, the presence of the facilities has the potential to cause some increases in fine sediment input into surface waters. In June and July 2006, turbidity measurements were made at MLPO and RPO (Table 3.33). At the time of measurements, turbidity and fecal coliform levels met standards.

The same four pack stations have the potential to contribute manure to surface water, although water quality data collected during summer 2006 suggests that this should not occur during the summer and fall months. Input of manure could cause increases in bacteria or human pathogens if it were to occur. Mitigation measures described in Chapter 2 at BPO, RCPS and RPO will reduce potential for manure or sediment to enter surface water.

Derlet and Carlson (2002) found that 15 of 81 samples (approximately 19%) of fresh pack stock manure on trails in Yosemite and Sequoia/Kings Canyon (SEKI) National Parks contained bacterial or protozoa pathogens capable of causing human disease. Because many of the pack stock that are used in Yosemite and SEKI originate from the INF, it is assumed that pack stock using the forests have similar levels of pathogens in their waste. It is assumed that about 19% percent of the manure that is deposited directly into water, or is washed into water, may contain human pathogens.

Giardia and *Cryptosporidium* are non-bacterial human pathogens of concern in the Sierra Nevada area and both could 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 yet been found in pack stock manure.

In all of the above studies, manure sampled 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 GT 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 similar levels of *E. coli* or whether grazing levels proposed in the alternatives are high enough to cause water contamination.

Derlet and Carlson (2006) analyzed surface water quality in Wilderness areas of the Sierra Nevada of California. They found that *E. coli* and other bacteria were more prevalent at sites heavily used by pack stock than at those used heavily by backpackers. "Heavy use" was not quantified, and the heavily used pack animal sites are also heavily used by humans. While the article shows that heavy pack stock use likely causes more bacteria to enter water than heavy backpacker use, it admits

that the findings are not conclusive. However, because pack stock manure can be deposited directly in the water or on the ground surface, and most humans bury their feces over 100 feet from water, the article supports the logic that there is more risk of bacteria and possibly pathogens to enter water where pack stock are present. For that reason, under Alternative 2, mitigations will be required at pack stations near water to help reduce any potential for manure entry into water, all overnight stock holding will occur away from water, and especially vulnerable areas in pastures will be fenced out.

Fecal coliform levels were measured at this pack station two times during summer 2006. Both after thunderstorms and during a dry period, fecal coliform levels were 2.2 mpn or below (Table 3.33). This is well within standards and suggests that fecal coliform is not entering water at MLPO during thunderstorms. Because the pack station will remain in the same location, and have the same practices as currently, it is expected that, under Alternative 2, there will continue to be minimal potential for manure entry into surface water. The herd size will be the same at MLPO under alternative 2 as it has been in the recent past, and therefore, there should be no change in water quality effects due to herd size. During 2007, water quality measurements will be taken during snowmelt, during or after thunderstorms, and during a dry period to better understand whether manure enters water at any time during the year (see Monitoring Plan in Appendix I).

At RPO, corrals are within 50 feet of Green Creek. Fecal coliform was measured at the site twice during summer 2006, and was always below 2.2 mpn/100 mL both upstream and downstream of the pack station. This suggests that after thunderstorms, manure does not enter Green Creek in substantial quantities and should not do so under Alternative 2. Mitigations including removing manure annually and constructing water control structures should allow for only a negligible to minor, short-term entry of manure into water during snowmelt. For a better understanding of potential manure entry into Green Creek, water quality will be measured during snowmelt, after a thunderstorm, and during a dry period in summer 2007.

The herd size at RPO will be authorized to increase by 15 stock under Alternative 2, from 40 to 55 head. This will require that more head be held in each corral, and there will be more stock on trails used by Rainbow. This could cause a slight increase in manure deposition into water at trail crossings, but the volume should be small enough to prevent any measurable degradation in water quality. Under Alternative 2, RPO will be required to remove accumulations manure at least once every two weeks from both corrals. Berms and other barriers will be constructed to help prevent runoff from entering Green Creek, and the driveway will be maintained to reduce runoff. These mitigations should help prevent sediment and manure entry into Green Creek.

At BPO, the fencing of the spring head at the small North Lake pasture would have a slight, long term beneficial impact to water quality. Fencing would allow for vegetation to grow on the pond banks, and the vegetation would act as a buffer, reducing sediment input. Manure input would also be decreased because it would not be deposited directly in the spring and bacterial levels would be reduced as runoff moved through the vegetation. The pond has surface connectivity to Bishop Creek through groundwater flow and a culvert under the access road. Water quality measurements during summer 2006 showed that when the pasture was flooded, water in the pasture had fecal coliform

levels that did not meet the standard (>20 mpn(cfu)/ 100ml), but water flowing out of the pasture and water in Bishop Creek downstream of the pasture water tributary had fecal coliform levels well within standards. Under Alternative 2, the flooded pasture water would continue to have elevated fecal coliform levels, because manure volumes in the pasture would remain the same as the current condition. Fencing of the spring/pond would have a beneficial effect only to the water quality of the pond and tributary, and would not affect flooded pasture fecal coliform levels. Use of the pasture under Alternative 2 should not cause water quality degradation outside of the pasture, because it does not appear to be doing so currently.

In Lower Rock Creek pasture, fecal coliform levels were elevated above standards in an intermittent stream that runs along the north fence of the pasture. Under Alternative 2, much of this stream, particularly the portion that remains wet year-round, will be fenced out of the pasture, and the corral will be fenced away from the creek. Fencing out of this area should decrease the amount of manure that enters the creek. It should also allow for reduced sedimentation into the intermittent creek, because stock will no longer stir up mud into the water.

In all other pastures, it is assumed that, much like the small North Lake pasture and Lower Rock Creek Pasture, fecal coliform levels within flooded pastures or pastures with overland flow will not meet standards. The water quality monitoring suggests that the elevated levels of fecal coliform (and likely other bacteria) do not extend outside of pastures. This condition should continue under Alternative 2.

Grazing of meadows allows some increased sediment where surface water is present. All pastures currently grazed would have continued grazing under Alternative 2, and grazing would be re-initiated in a portion of Donkey Meadow. The only three meadows that likely have substantially increased sedimentation into surface water currently are Rodeo, West Agnew, and lower Rock Creek Pastures. Sedimentation into surface water might decrease under Alternative 2 in all of these meadows, because grazing levels would be slightly lower, and in West Agnew, streams would be fenced. The reduced grazing alone might not affect sedimentation rates. None of these pastures was observed to have major sediment input into streams, and therefore the continued levels of sediment input should affect beneficial uses only at a few locations directly within and downstream of the pastures.

Under Alternatives 2 and 3, all manure would be removed from pack stations at the end of each season. This would prevent manure from entering water during spring runoff, although it is possible that a large rainstorm could wash manure into surface water during the summer. This could cause local increases in bacteria and nutrient levels near the site of manure entry, but the water quality degradation should not persist downstream or over time, due to dilution of relatively small quantities. Further, prescribed mitigations such as fencing, berm construction, and diverting water around corrals would further reduce water quality degradation. Beneficial uses should only be affected within a few feet of the deposition site in the case of a rainstorm carrying small volumes of manure into creeks.

Beyond sediment and manure, hazardous materials stored on site, such as gasoline, could spill and contaminate soil or any nearby surface water. All pack stations will be required to have containment systems for fuel tanks that should prevent percolation into the soil in case of a spill. Fuel

storage tanks must meet county standards, and were inspected for compliance during summer 2006. Any changes needed will be completed or scheduled for completion before the permits are signed. For other toxic materials stored on site, such as paint and household cleaners, they will be stored inside a building over 100 feet from surface water.

Septic systems and pit toilets are the human waste disposal systems with the greatest potential for surface water or groundwater impacts. Septic systems would remain in use at six pack stations (Red's/Agnew Meadows, McGee, Pine Creek, Glacier, Sequoia Kings, and Cottonwood). Of the six pack stations that use septic systems, two (Glacier and Cottonwood) are over 300 feet from surface water and there should be no potential for surface water quality effects. All septic tanks are required to meet the County guidelines of a 100 foot setback from surface water, and their use is under the jurisdiction of the counties. The septic tanks and the rest of each facility were inspected during summer 2006. If any facilities are found to be in non-compliance with county standards, they will come into compliance or be scheduled for compliance before a permit is signed. Pit toilets will be decommissioned at the 4 pack stations that currently have them. While there is currently no evidence that the pit toilets are causing degradation to water quality, their removal would reduce potential for groundwater or surface water effects from pit toilets.

RCO Standard and Guideline #119 requires that, "During project-level planning, evaluate and consider relocating existing livestock facilities outside of meadows and riparian areas," (USDA Forest Service 2004, p. 65). The forest considered relocating Rainbow and McGee Pack Stations out of riparian areas. This analysis did not justify the re-locating of the pack station because the sites do not appear to have more than minor, local water quality or stream geomorphology effects, and the effects to the riparian vegetation are only in small areas. The other RCOs are being met.

There are seven campsites identified by commercial packers in the non-wilderness analysis unit that are requested for use or used in the recent past. Two of those sites, at Wells Meadow and in Casa Diablo, would be used for stock drive camps, and are far from surface water with no potential for water quality effects. Three camps that would be used by Rainbow Pack Station for overnight trips and stock drives are currently near water. Two other sites, at Sawmill and Sentinel Meadows in the Glass Mountains area, are also near water. Rock Creek Pack Station's campsite at Tamarack Bench is in the vicinity of a lake. Within the 2007 operating season, BMPs will be implemented and all of these sites within 100 feet of water or with potential to allow runoff from the site to enter water will be moved to over 100 feet from water, or to where runoff from the site cannot reach surface water. This should prevent contribution of sediment or manure to surface water.

Water Quantity/Streamflow: Water would continue to be diverted from springs and streams at ten pack stations and two horse viewing camps in the MPWHT. Most of these water sources are springs. At five of these springs, most of the flow is diverted during use. At all pack stations, diversions occur only during a few months in the summer, usually between June and October. None of the diversions would divert all of a spring or creek, and therefore water would continue to flow in its natural path and provide water riparian vegetation maintenance. At Agnew Meadow, McGee, Rock Creek Pack Station, Sequoia Kings Pack Station, and Glacier Pack Train, and, a majority of spring flow is

diverted during the summer operating period, but not all. This could reduce the area of riparian vegetation and aquatic habitat. Overall, since all of the pack stations are located in areas with numerous springs and spring channels, the effect to riparian vegetation, macroinvertebrate populations, and beneficial uses is local, only in the spring channel being diverted.

Geomorphology: With the continued presence of all pack stations facilities and camps, continued use of trails, and continued use of all currently used pastures, there should be a continuation of very local, minor to moderate adverse effects to stream, meadow, and spring geomorphology. Over most of the non-wilderness area, the geomorphic effects would be the same as under Alternative 1, but local areas, such as most of the 16 analyzed pastures, might have greater adverse effects.

The only major difference in geomorphic effects between Alternative 2 and Alternative 1 should be in pastures. Continued grazing under Alternative 2 in all pastures currently grazed would allow for either static or downward stream and meadow geomorphologic function in most meadows, with an upward trend expected in stream condition in portion of three meadows, Agnew West and Rodeo Meadow, and Small North Lake Pasture. Under Forest Plan Guidelines, streams are required to be at or trending toward PFC. Under Alternative 2, two meadows might have a downward trend relative to their current condition, Lower Rock Creek Forest Unit and Donkey Meadow-lower unit. However, they should still remain at PFC, because they only have very slight or no known stream function degradation currently with no use. PFC is not the potential natural condition of a stream, but a functional condition that will be reached in all pastures under Alternative 2. Under Alternative 1, up to nine meadows were expected to have an upward trend in stream functional condition.

A more detailed explanation of grazing effects to pasture geomorphology and soil productivity can be found in the Vegetation - Grazing section of this document (Section 3.4.2.1)

Trails would continue to have minor effects to stream geomorphology. At stream crossings, trails could cause incision and widening of streams within a few feet of the trail. The geomorphic effects to McGee Creek wilderness access trail and Frontier's day ride trail from the pack station would be alleviated with implementation of restoration projects. Otherwise, no unacceptable effects to geomorphology have been noted.

There is a probability of effects to streams with implementation of Alternative 2 with cross-country travel permitted. In Alternative 2, pack station operators would have more latitude to ride cross country with stock than they would have under Alternative 3. Therefore, at almost any location, stock could cross a stream, possibly causing sod fragmentation on stream banks. These stream crossings would not be used regularly, and should therefore be allowed to recover with vegetative growth before the next impact. Riders would not be allowed to travel cross country in meadows before range readiness is reached, and therefore impacts to more sensitive soils with a lower permeability and greater erosion potential, would be protected from newly used stream crossings. As explained in the "toolbox" (Appendix I), any cross-country route that turns into a trail will be discontinued. Cross-country travel does not suggest the creation of new trails, but the occasional use of routes. This should prevent any lasting alteration of stream geomorphology.

Pack station facilities (outside of pastures) can affect stream geomorphology in the same way as campsites, but at a larger scale. The only pack stations close enough to water to affect stream geomorphology are MLPO and PRO. At MCPS, there is no evidence that the pack stations have affected stream geomorphology and therefore they are not expected to do so in the future. The channel is rocky at this point and is not easily altered by off-stream activities. MLPO is located adjacent to Bodle Ditch, a manmade channel. The geomorphology of this stream is not natural, and the current condition does not appear to be altered by MLPO activities. There is a vegetative buffer along almost all of the ditch near the pack station, and other than trails from the pack station connecting to main trails, activities do not occur directly on the creek. At Rainbow Pack Station, the road accessing the pack station and nearby Parcher's resort crosses Bishop Creek, and the creek has rip-rap and retaining walls, and the geomorphology of the creek is fundamentally and irreversibly altered. Even without the pack station, this condition would continue, and therefore it is not directly related to pack station operations. Green Creek also has rip-rapping and a bridge that locally alters Green Creek geomorphology. This bridge would remain under all Alternatives, and would continue to locally alter the creek's geomorphology.

Soils: Commercial pack station activities would continue to have minor to severe adverse effects to soil quality on a very small proportion of the analysis unit, less than 0.06% of the non-wilderness land. Potential adverse impacts to soil quality could occur on the roughly 375 acres of land exclusively used by commercial pack stations.

Increased soil compaction and reduced vegetative cover would continue on about 60 acres of land, at the base facilities and exclusive use campsites. These sites necessarily contain little to no vegetation, and are compacted from constant human and stock traffic. Under Alternative 2, these areas would continue to have the adverse, long-term effects of severe compaction and lack of vegetative cover.

Continuation of grazing in pastures would continue soil compaction and reduced vegetation and litter cover in heavily used portions of pastures. Some changes in pasture management, such as implementation of 30-40% utilization levels and implementation of range readiness on-dates might slightly decrease compaction in a few of the more heavily used pastures. Pastures would cover roughly 330 acres, but moderate and severe compaction would continue to occur only in portions of some of those pastures. Therefore, some area far less than 330 acres would continue to have reduced soil quality over the long term due to pasture use. The pastures with moderate to severe compaction over more than 15% of the meadow that would likely continue are Rodeo Meadow, Agnew Meadow, Rock Creek Lower Pasture, and North Lake Pasture. Although some of these meadows might have slightly reduced compaction and increased vegetative cover with implementation of regional utilization and range readiness standards, and would meet soil quality standards, they would continue to have some reduction in soil quality. Individual meadow predictions are discussed below.

Rodeo, Evans, Agnew, Lower Rock Creek, North Lake, and Art's pastures have some moderate to severely compacted areas. Even with reduced grazing under Alternative 2, compaction would likely not show improvement within 20 years. In all of these meadows, the grazing would likely not be

reduced enough to allow measurable recovery. In some meadows, it would not be reduced at all, while it likely would be reduced in Rodeo, Agnew and Lower Rock Creek pastures. There would continue to be adverse effects to soil productivity in portions of these meadows. There could be slightly greater vegetative vigor in some of these meadows with reduced grazing, and therefore slightly more organic material available for incorporation into the soil. This could slightly improve soil productivity, but the effects would likely be too small to be measured. Continued grazing would not cause irreversible effects to soil productivity. Soil will eventually decompacts with removal or a major reduction of grazing.

McGee, Upper Rock Creek, Cardinal Mine, and McMurray pastures all have minor to moderate soil compaction over a small proportion of the pasture. These meadows could all be grazed at about the same levels as currently, and therefore there would continue to be small areas with adverse effects to soil productivity. On a watershed-wide scale, this compaction is negligible, although on a pasture-specific scale, the effects are substantial in the above listed meadows.

Campsites and trails would continue to cause reduced soil productivity directly within the campsite footprint and the trail tread. Trails currently causing some increased soil erosion beyond that normal for a trail, such as McGee Wilderness Access Trail or the Lower Rush Creek Loop Trail, may at some later date be repaired and therefore have reduced erosion. This reduction might even be greater than under Alternative 1 because under Alternative 1, the trails would not be used and there would be less impetus to repair the trails. The extent of trails and campsites within this analysis unit is small, and on a watershed-wide scale, the effects to soil productivity are negligible.

Cumulative Effects - Alternative 2 – Non-wilderness Analysis Unit

The analysis of cumulative effects for hydrologic and soils the non-wilderness area are bounded by the boundaries of all HUC6 watersheds that have any portion within the analysis unit. All past actions are considered if their effects remain evident today, and future actions are considered relevant if they will occur within the permit term of 20 years.

The cumulative effects to hydrologic resources and soil quality under Alternative 2 should be similar to Alternative 1 on a Forest-wide scale and on a HUC6 watershed scale. There would be local areas with more adverse cumulative effects under Alternative 2 at a local scale. At no place should pack station permits be the action that triggers irreversible adverse effects to soil or water resources. See the Cumulative Watershed Effects Analysis in the Project Record for a more thorough discussion on cumulative watershed effects.

Past and present actions on or adjacent to INF land that could hydrologic resources and soil quality are the same under Alternative 2 as under Alternative 1, other than this proposed action.

Pack station activities would add another roughly 375 acres of ground disturbance to the project area and allow stock manure to be deposited in concentrated areas. The area of disturbance includes the area within the pack station footprint, the area used as corrals and pastures, and the area used for exclusive use campsites. Although it is unknown how much area is disturbed by all uses throughout

the project area, it is estimated that roads alone cause about 2,000 acres of bare, compacted soil due, and ski areas cause about another 1,000 acres. This analysis unit covers about 800,000 acres.

Foreseeable future actions would be different under Alternative 2 than under Alternative 1, because the pack stations themselves have proposed foreseeable future actions. The foreseeable future actions could cause another few acres of ground disturbance, with a new trail created to Piute Pass from Bishop Pack Outfit, a new permanent camp near Green Lake, and expanded housing and/or cabins at Frontier and Red's/Agnew Pack Station. At Frontier and Agnew, the new buildings should be constructed within the existing disturbed area, and should not cause further ground disturbance.

The contribution to adverse cumulative effects that might occur from continuation of pack station activities is local. Sedimentation into Green Creek during snowmelt from Rainbow Pack Station could contribute to cumulative effects in Bishop Creek, as a very small contribution to the extensive development of resorts, campgrounds, parking areas, and roads within the floodplain of the creek. Green Creek is a tributary to the South Fork of Bishop Creek. Bishop Creek receives inputs of fine sediment over natural levels due to dirt road, parking lot, and campground erosion. However, there is likely reduced fine sediment in the creek due to dams that trap sediment. Therefore, it is difficult to determine whether Bishop Creek has overall reduced or increased fine sediment input than in had pre-development. In either case, the contribution from Rainbow Pack Outfit is believed to be small enough that it is a minor contributor to sedimentation. The permit re-issuance should not cause further effects to beneficial uses, even when added to other water quality impacts in the watershed.

It is likely that past cattle and sheep grazing occurred in all pastures, and contributed to impacts seen today such as soil compaction, stream bank trampling, widened and incised streams, and headcutting. It is known that past commercial pack stock grazing occurred in all pastures, and that recent grazing likely contributed to adverse effects or allowed them to continue. Re-authorization of grazing in some meadows that already have adverse geomorphic effects could continue those effects. In the cases of some pastures, such as Rodeo, West Agnew, and Lower Rock Creek pastures, authorization of grazing would allow the meadows to remain in a state that does not meet standards and guidelines from stream functional condition or soil quality. On a watershed scale, the hydrologic and soil effects in pastures are a negligible contribution to overall adverse cumulative effects.

It is a foreseeable future action that cattle and sheep grazing would continue to be permitted on allotments throughout the analysis unit, mostly in areas used for stock drives. There should not be more than small contributions to cumulative effects from commercial pack station activities in these areas. Stock drives of up to 130 head could occur up to four times per year, the stock drives would occur along existing roads, although stock might wander up to hundreds of feet off of the roads. This could add a small area of disturbed soil that was likely already disturbed by cattle or sheep when they graze in the same area. While the commercial pack stock would likely add a small cumulative effect to other soil disturbance, the effect would likely be so small that it would be a negligible impact to soil quality.

Surface water is diverted by most pack stations for stock watering or domestic use, but the volume is small relative to stream flow in all cases. Across the analysis unit, streamflow is

significantly and irreversibly affected from large diversions and dams. While pack station water use does negligibly reduce flow in some stream and spring systems, the volume is likely not large enough when added to major other water flow alteration to further affect beneficial uses. The stream systems with the most significant alteration to hydrologic function are Bishop Creek (downstream from Bishop Pack Outfitters and upstream from Rainbow Pack Outfitters) and Rush Creek (upstream from Frontier Pack Station). These two streams have major dams that profoundly alter flow, preventing normal peak flows and base flows. On Bishop Creek, while both Bishop and Rainbow Pack Outfitters divert surface water, the effect to flows in Bishop Creek is too small to be measured. The actual daily flow in Bishop Creek ranges from about 5 to 200 cfs less than natural flows, depending on the season, due to diversions and dams (Simons, Li and Associates 1990). At peak usage, the two pack stations use about 0.002 cfs. This is too small to be measured in Bishop Creek, and there should be no effects to beneficial uses in Bishop Ck.

Alternative 3- Non-wilderness Analysis Unit

Direct and Indirect Effects

The effects to soil and hydrologic resources would be almost the same under Alternative 3 as under Alternative 2. There could be slightly less widespread and less severe adverse effects from differences in pasture and trail management between the two alternatives. On a local scale, in a few locations, Alternative 3 could have fewer negative effects relative to Alternative 2. The other differences between the alternatives, such as fewer stock at the pack stations or preventing pack stock use growth in the Mammoth Lakes area, should have no effect to soil and water resources. Only the effects expected to be different between alternatives 2 and 3 will be discussed below, as the rest of the effects should be the same.

Water Quality: Water quality effects would be the same as under Alternative 2 except at a few locations where there could be minor improvements in water quality relative to Alternative 2. The locations where adverse water quality impacts would be most likely to be reduced would be Rodeo Meadow, Agnew Meadow, and Upper Rock Creek Pasture. All pack stations would be located at the same site, so any water quality effects shown in Table 3.21 would continue. These effects could be slightly reduced with some mitigation that would occur both under Alternatives 2 and 3. As under Alternative 2, all campsites would be located over 100 feet from water, or 50 feet if topography requires so. Therefore, there should be no impacts to water quality beyond that of client or stock watering.

There will be less stock at 5 pack stations under Alternative 3 relative to Alternative 2. This should not affect water quality. Two pack stations near water, Rainbow and McGee, would have a smaller maximum herd size, by 15 and 12, respectively. Because there will be less stock, less manure will be generated at each pack station. At Rainbow, because manure will be removed once every two weeks, manure should not enter surface water with any herd size. The amount of manure should not make a difference in this case. At McGee, while some pack station facilities are within 20 feet of water, the corral is over 100 feet from water, and manure does not appear to be able to reach water

under current conditions. There is no reason to believe that manure will reach water simply with 12 more stock. More manure will build up in the corral, but it will not reach surface water.

Rodeo, Agnew, and Upper Rock Creek pastures would all be rested from grazing under Alternative 3, where they were open under Alternative 2. All of these pastures have some erosion on streambanks or in spring channels. Rest from grazing would allow some increased vegetative growth, increasing bank stability. This could reduce sedimentation into streams from stream banks and from trail stream crossings. In Agnew Meadow, active headcuts may continue to erode even with rest from grazing. If no active restoration is completed, this erosion could continue to increase sedimentation into streams above natural levels. However, after thunderstorms in June 2006, turbidity downstream of Agnew meadow was less than upstream of the meadow. This does not support the hypothesis that streambank erosion in Agnew Meadow has increased turbidity in the stream. However, this was a one-time measurement, and it was not taken during snowmelt. It is assumed that during snowmelt and perhaps during larger thunderstorms, there could be increased turbidity in the creek. With active restoration, the erosion could be reduced to more near natural levels.

Water Quantity/Streamflow: The effects to water quantity from commercial pack station water use would be the same under Alternative 3 as under Alternative 2. All the pack stations would continue to use surface water at current locations. The decreased herd size would allow for less water use for watering stock at 5 pack stations. The difference in use is so small (on the order of 0.01 AF/year) that no differences in effects to beneficial uses can be determined. Therefore, the effects to water quantity would be the same minor effects as expected under Alternative 2.

Stream/Spring/Meadow Geomorphology: On an analysis unit scale, the effects to stream, spring and meadow geomorphology should be minor, and the same as Alternative 2 in most areas. In four pastures, however, rest from grazing would allow for some beneficial effect to geomorphology relative to current conditions, and for better stream condition than under Alternative 2.

In general, rest allows increased vegetation on the meadow surface that can help reduce the impact of raindrops and better hold soil in place, reducing erosion from the meadow surface and reducing fine sediment input into surface water. Rest also allows increased streambank cover and decreased sedimentation into creeks. Increased vegetative cover could help stabilize streambanks and headcuts and prevent further creation and advancement. If a meadow contains the major geomorphic alterations of a lowered water table and incised and widened streams, they would likely remain and only slowly recover over the long-term, on the order of decades to centuries.

Rodeo Meadow, West Agnew Meadow, Lower Rock Creek Pasture, and the small pasture at North Lake, were found to have a functional at-risk stream, pond, or meadow segment (Table 3.31). Other meadows, such as Donkey Meadow, have streams that were rated at PFC but could still show some improvement toward potential under Alternative 3 due to restoration or other grazing management. Overall, five pastures (Rodeo Meadow, Agnew Meadow West, Rock Creek Upper pasture, and Rock Creek Lower pasture within fenced areas, and Small North Lake pasture) are predicted to have an upward trend under Alternative 3, where three (portions of Rodeo Meadow and

Agnew Meadow West, and small North Lake pastures) were predicted to have an upward trend under Alternative 2.

Under the SNFPA S&G #117, aquatic features should be in PFC. Under Alternative 3, the aquatic features within two of the four pastures containing water bodies that were rated functional at-risk should be more likely to move toward PFC than under Alternative 2 (Table 3.31).

For a more detailed discussion of stream PFC effects, see the Grazing section in this chapter (Section 3.4.2.1).

Soils: There should be very little overall difference between Alternative 2 and 3 effects to soil productivity. Soil productivity should continue to have negligible adverse effects on an analysis unit wide scale, and minor to severe adverse effects at pack stations themselves. There could be some reduced adverse effects in a few pastures, and less potential for adverse effects from cross-country trailing. There should be no differences at pack station base facilities or on authorized trails between Alternatives 2 and 3, because the same locations will be used.

A difference in effects between Alternatives 2 and 3 could occur with different pasture management. There is a greater potential for beneficial effects under Alternative 3. The resting of Rodeo, West Agnew, Upper Rock Creek, and Cardinal Mine pastures could allow for some gradual soil decompaction and reduced erosion, although full recovery would likely take decades.

Trail management could also make a local, minor difference in soil productivity under Alternative 3 relative to Alternative 2. Pack station operators would be required to remain on trails except in the Monache Meadows portion of the analysis unit. Currently, most use does occur on trails, and therefore in the majority of the areas, trailing would only occur on previously created trails. Widening or incision of these trails should not occur in new locations unless use on a specific trail increases dramatically (such as tripling). Under Alternative 3, there would be less potential for creation of new trails with compacted or fragmented soil than under Alternative 2.

Cumulative Effects- Alternative 3

The cumulative effects of Alternative 3 should be the same as under Alternatives 1 and 2 on a Forest-wide scale. The cumulative effects should be the same as Alternative 2 at all but a few pasture locations. At no place should pack station permits be the small action that causes irreversible adverse effects to soil or water resources.

Past and present actions on or adjacent to INF land that could affect water quality are the same under Alternative 3 as under Alternative 1, other than this proposed action (Table 3.1, Past, Present, and Reasonably Foreseeable Actions Contributing to Cumulative Effects).

Pack station activities would add about 250 acres of ground disturbance to the analysis unit (as long as Rodeo, West Agnew, and Upper Rock Creek were rested) and allow stock manure to be deposited in concentrated areas. The area of disturbance includes the area within the pack station footprint, the area used as corrals and pastures, and the area used for exclusive use campsites. Foreseeable future actions relevant to soil and water resources would be the same under Alternative 3 as under Alternative 2. They would be constrained mainly to commercial pack station activities, cattle

and sheep grazing, especially in areas used for commercial pack stock drives, and increased recreational use as the population of California increases.

The only difference in cumulative effects under Alternatives 2 and 3 should be in a few pastures that would be rested under Alternative 3 but open for grazing under Alternative 2. It is possible, although unknown, that cattle and sheep grazing occurred in pastures before pack station existence decades ago, and contributed to impacts seen today such as soil compaction, stream bank trampling, widened and incised streams, and headcutting. It is known that past commercial pack stock grazing occurred in all pastures, and that it either caused or contributed to adverse effects to hydrologic resources and soil quality. Re-authorization of grazing in some meadows that already have adverse geomorphic effects could continue those effects. Some pastures, such as Rodeo, West Agnew, and Upper Rock Creek pastures, would be rested under Alternative 3. This would be a beneficial cumulative effect, because it would allow some recovery in meadows that have likely been grazed by cattle, sheep, and/or commercial pack stock over more than a century. Past effects could prevent these meadows' streams from recovering to PFC. Meadows where water tables have lowered through stream incision may have altered enough hydrology from past effects that the minor beneficial effects from rest might not mask past effects.

The cumulative effects of this alternative in the AA/JM Wilderness are discussed in the 2005 AA/JM FEIS/ROD. The actions in that decision should slightly improve water quality, stream geomorphology, and soil quality in small areas of the AA/JM Wildernesses, mostly in the upper watersheds that continue into this analysis unit. The improved meadow hydrologic function and soil quality that would occur in a few pastures under Alternative 3 could be a small addition to those improvements. Overall, there would be a minor improvement in stream and meadow hydrologic function in watersheds with reduced grazing impacts from management changes in the headwaters to the middle portions.

3.3.2.3 Montgomery Pass Wild Horse Viewing Area

Affected Environment

The MPWHVA has few perennial streams, and none have surface water connection to major water bodies. The perennial streams flow from springs, but they infiltrate before reaching any major water bodies. Rainfall ranges from 8 to 12 inches (USDA Forest Service 1994). Water is scarce in this area. There are seven major springs in the roughly 9,300 acre zone. Three of these springs, Jacks Springs, McBride Springs and Sagehen Spring, are on inholdings of private land. Two of the major springs, Pizona Spring and Truman Spring, are currently used to provide drinking and washing water for commercial pack stock horse viewing operations. These are the only two areas with concentrated commercial pack stock use in the MPWHT.

The Pizona Camp corral near Pizona Creek is not in compliance with water quality standards in the INF LRMP and SNFPA due to its proximity to the creek and potential for water quality degradation. The corral is within 10 feet of the creek. A shower and some camp sites are also within

50 feet of the creek. The kitchen location, most tent camping areas, outhouse, and parking area farthest from the creek are in compliance with water quality and soil standards in the LRMP and subsequent guidance documents.

Water Quality: There is some sediment entering surface water at the Pizona Camp, but it is unlikely that it affects beneficial uses of Pizona Creek. A corral and main road are the greatest potential source of sedimentation into Pizona Creek. The corral is within ten feet of Pizona Creek, and there is evidence of sediment and manure entering the creek. Pizona Creek has no surface connectivity with other water bodies, and infiltrates into the ground below the camp site. If it does currently increase stream turbidity, it will not reach any other water bodies.

At Truman Camp, the camping sites, outhouses, and corrals are all over 100 feet from surface water, and because there is no stream at the camp, and the camp is flat, there is likely little erosion from the site and any erosion would not travel into surface water. The spring pond near the camp has bare, muddy, easily erodible soil around the edge, but this can be attributed to wild horses, as the hoof prints in the mud show unshod hooves.

The beneficial uses identified in the Lahontan Water Quality Control Plan (LRWQCB 1994) are identified for minor surface waters (the only water bodies that could be affected by commercial pack station use in the area) in the project record.

Water Quantity: The Pizona camp uses water from a spring channel about 1/3 mile upstream from the main camp, where Pizona Creek is loosely dammed and diverted into a pipe that carries the water into a 1,100 gallon water tank. The tank is filled as needed, and the average daily volume of water diverted from the creek is unknown. There is therefore reduced stream flow during the month when the camp is occupied. A rough estimate assuming that the entire Rock Creek herd drinks 45 liters per day at the camp is that the total water use each year is about 0.2 AF/year. This is equivalent to about 175 cubic feet per day or 0.002 cubic feet per second (cfs) every day during the 60 day period when the camp is in use. The stream flow averages around 1 cfs during April to June, the operating months. The small diversion on the order of magnitude of 0.002 cfs is too small to affect beneficial uses.

At Truman Camp, the pack station trucks in water and also diverts water from a spring just north of the camp, where there is a developed spring box and a pipe to the camp. There are at least two distinct springs at Truman Camp, and one is diverted. As at Pizona Camp, the estimated water use is about 175 cubic feet per day, or 0.002 cfs. Truman Spring flow is not measurable, because the flow filters into soil or runs into small rills. Truman Meadow receives water from these springs, and is saturated during the months of operation, mid-April to mid-June. The reduction of about 0.002 cfs flowing into this meadow is inconsequential. No water is diverted during late summer, when spring flow and meadow moisture levels are much lower, and diversions could affect beneficial uses.

Stream/Meadow/Spring Geomorphology: At Pizona Camp, there is a slight effect to Pizona Creek geomorphology from the road crossing. The road diverts some surface water because it has ruts that allow a small percentage of the flow to be diverted out of the stream. The road is not used exclusively by the commercial pack station.

At Truman Camp, there are no creeks adjacent to or within the camp, although it is directly adjacent to a meadow and other riparian vegetation. There is a spring fed pond near the camping area that is trampled by wild horses, possibly affecting the pond's aquatic habitat by altering the substrate and adjacent vegetation. It appears that only wild horses are accessing the pond because the hoofs that made the prints were not shod (as viewed on 07/07/05).

The campsite at Truman Meadows is mainly within riparian vegetation. A road leading from the corral to the main camping area is through Truman Meadows, and is possibly affecting surface water flow in the meadow.

A trail runs west from the Truman camp, and due to the large amount of hoof prints it appears as though the trail is used by commercial pack stock as part of wild horse viewing operations. Much of the trail travels through riparian vegetation, and there are a few stream crossings. One stream crossing may be affecting the stream geomorphology by creating a nick point for possible headcut migration. There are check dam structures on the stream that are now suspended above the stream bed, suggesting that the stream has downcut since installation of the structures. It is uncertain whether the existing trail has any relation to the stream incision, but continued use of the trail prevents stabilizing vegetation from growing on the trail tread.

Soils: Soils in the MPWHT are generally well-drained and moderately developed, and often contain gravel or boulders. Soils on slopes are often highly erosive (USDA Forest Service 1994).

The Truman Meadows camp is generally in compliance with soil quality standards and guidelines. The exception is that a pond near the camp is trampled by stock, and a possible fen within a wet meadow has evidence of grazing. It is unknown whether the trampling is due to wild horses or Frontier Pack Station stock, although it is assumed to be caused by wild horses. The road through the meadow associated with the campsite is within a wet meadow and locally altering surface water flow through soil compaction and slight incision. The total area of bare and compacted soil at the Truman Meadows camp is between three and four acres.

At Pizona Camp, soil is compacted and bare within the camp perimeter, as expected. Soil productivity does not appear to be affected off site. The bare, compacted soil encompasses two to three acres.

Environmental Consequences

Alternative 1 –MPWHVA

Direct and Indirect Effects

In the MPWHTVA Analysis Unit, the hydrologic and soil effects of removing all commercial pack stock use would likely be very small. It should have beneficial effects on hydrologic and soil conditions only at two locations, Pizona Camp and Truman Meadows. The rest of the area should have no effects from this alternative.

At both the Truman and Pizona Camp, Alternative 1 would result in very local and minor reduced soil compaction, increased soil productivity, a very local reduction in meadow hydrologic function

alteration, and a very local decrease in spring channel trampling. Overall, there would be little change to soil and hydrologic processes with removal of commercial pack stock use.

Water Quality: Under Alternative 1, Pizona Camp would no longer be used by commercial pack stock operators. More wild horse use would likely occur in these areas during mid April to mid June. It is unlikely that other campers would use the entire extent of the camp, and therefore much of the area should have no use. The corral fence would be removed and the corral area would no longer be used for stock holding.

Cessation of commercial pack stock use could reduce sedimentation into surface water through reduction of soil erosion. It will reduce the potential for manure to enter Pizona Creek from the corral. With removal of commercial pack stock use from the site, the corral fence would be removed and the riparian vegetation within the corral area should gradually revegetate. Although the time for revegetation is unknown, it should decompact and revegetate on the order of decades.

At the Truman Camp, there are few to no water quality impacts from commercial pack station operations. Therefore, removal of Truman Camp would have neither a beneficial nor adverse effect to water quality. The only exception might be from the reduction in use on trails from the Truman Camp site. With reduced trailing, there would be a slight decrease of sediment into the streams crossed by the trail as the trail grows vegetation to stabilize surface sediment. Because only one pack station use trail is known to cross a stream, the reduction in sediment into surface water would be negligible and would not affect beneficial uses.

Soil Quality: With no active restoration completed at these sites, it could take decades for the soil to decompact and revegetate. At Pizona Camp, most of the area is dry and therefore decompaction and revegetation would take longer than at a wet site (Alexander and Poff 1985). The tent sites within wetter willow areas should have more rapid decompaction. Within a few years, litter would likely cover many of the bare areas, and the litter would help reduce soil erosion. Litter would not affect compaction. Therefore, soil productivity could remain reduced for decades on the compacted sites such as the parking lot and kitchen areas. With active restoration, decompaction would occur much more quickly. It is assumed that active restoration would not occur, and that occasional people would still camp at the site.

The pond trampled by stock at Truman Camp would have increased trampling and reduced riparian productivity with removal of commercial stock use. With removal of commercial pack stock use there could be more wild horse use during the months of April through June, and greater sod fragmentation. The bare soil area within the corral would gradually decompact and revegetate (over decades), improving soil productivity and reducing soil erosion over less than an acre.

At Truman Meadow, the main improvement to soil and hydrologic condition would be road closure through the meadow. There road is currently seldom used, and some of that use is by the pack station while they occupy the camp. With removal of the camp, the road could be closed to motorized vehicle traffic. The road is in a meadow that appears to have its underground water source intact, and therefore the road should revegetate relatively quickly, increasing the extent of riparian vegetation and reducing erosion potential.

Water Quantity/Streamflow: Under Alternative 1, there would no longer be water diversion from the Pizona site and stream flow would remain natural throughout the year. This could allow for greater riparian growth, although the short term of the diversion and relatively small volume of flow diverted suggests that the beneficial effect would be negligible.

At the Truman Camp, the existing spring box and diversion would remain without commercial pack stock use of the camp, but less water might actually be diverted during early summer. The effects to beneficial uses should not be notable, because during mid-April through mid-June, when the camp is used, the meadow fed by multiple springs is saturated. Reducing use by about 0.002 cfs would not cause notable effects to this meadow.

Stream/Spring/Meadow Geomorphology: Removal of commercial pack stock use in the MPWHT should have little to no effect to spring, stream, or meadow geomorphology. The two areas with concentrated commercial pack stock use, Pizona Camp and Truman Camp, have very local and negligible effects to geomorphology. At the Pizona Camp, the road causing the effects to stream morphology would remain, and would likely be used regularly. Even without commercial pack stock operator use of the road, the ruts would likely continue due to off-road vehicle activity.

At Truman Camp, the one trail stream crossing that is known to have potential for adverse geomorphology effects would likely be used very little, if at all, if commercial pack stock use no longer occurred. The trail would likely grow in with vegetation over time, and this added stabilization on the stream banks would therefore be less likely to erode at the trail. However, it is likely that the headcuts currently in the stream are a result of past cumulative effects, possibly including the trail, and the headcuts may continue to migrate unless new structures are built in the channel.

Cumulative Effects-Alternative 1

Past and present actions within the MPWHT that have affected soil and hydrologic resources are mainly road construction and cattle grazing, with some dispersed recreation impacts. Extensive roads throughout the area have compacted soils along the road beds and created potential for soil erosion during rainfall or snowmelt. These soil effects are adverse, local, minor, and long term. The extent of roads should remain about the same in the future. Cattle grazing, which occurred until the early 1980s, likely caused trampled streambanks, incised channels, and lowered water tables that currently occur in meadow areas. Wild horse grazing, while at a lower intensity than cattle grazing, could have similar effects. The effects of grazing are adverse, local, minor to major, and can be short- or long-term. Cattle grazing no longer occurs in this area and is not expected to occur in the future. Wild horse grazing continues and is likely to continue into the future.

Dispersed recreation has created bare soil and increased potential for soil erosion through camp site and trail creation. In this area, the impact of dispersed recreation is adverse, very minor, local and short- to long-term. Dispersed recreation is likely to continue into the future at the same low levels.

There are no known future actions in this area.

This alternative, in conjunction with other past, present and reasonably foreseeable future actions, would likely have very local and minor long-term beneficial effects to soil and hydrologic processes.

With the static extent of roads and dispersed recreation in the area, and continued exclusion of cattle grazing, the only changes in the area should be the termination of commercial pack stock activities. The effects of previous cattle grazing, including channel incision and lowered water tables, remain today, and are likely to show moderate long-term improved conditions. Wild horse trampling of soil and grazing of riparian vegetation will continue at the current rate. Therefore, the only changes to the condition of the area would be the very local, long-term, minor, beneficial effects from cessation of camping and possible revegetation of bare soil at the Pizona and Truman Meadows camps and associated trails and roads. There could be a minor reduction in soil compaction, bare soil, soil erosion and subsequent sedimentation into surface water.

Alternative 2 — MPWHVA

Direct and Indirect Effects

Hydrologic and soil processes should remain the same as today under Alternative 2, with two locations showing minor alteration in soil quality and potential local effects to water quality. The camps would continue in the same location with the same activities occurring, and wild horse viewing should continue with about the same patterns as today. The corral at Pizona Camp would be moved away from Pizona Creek, and drainage from the water trough will be redirected away from the corral instead of through the corral. Local erosion at campsites, trails, and along roads used by commercial pack stations would continue, but the majority of the area would continue to have no effects to the soil and water resources from commercial pack station operations. The camps would continue to be the only concentrated use areas within the MPWHT, and would each continue to have that concentrated use on two to three acres.

Water Quality: The Pizona Camp and corral would continue to contribute sediment and manure into Pizona Creek, and would prevent riparian vegetation from growing back onto bare areas. The areas contributing sediment would be the road stream crossing and corral.

Currently, the corral is within 10 feet of water, and to be consistent with the (RCO) S&G #106 in the SNFPA (US Forest Service, 2004), removal of the corral is being considered under this alternative. That S&G requires that during project analysis, stock holding facilities within riparian areas should be analyzed and considered for removal outside of the riparian area.

The corral location, trough drainage system, and/or slope would be altered, to ensure that runoff from the corral cannot enter the creek without more than a 50 foot vegetative buffer. Further, showers will be moved to over 100 feet from the creek, and all tent sites will be moved at least 50 feet from the creek, 100 feet where topography allows. With these mitigations, manure, soapy water, and sediment would no longer enter Pizona Creek other than at the road crossing.

The road across Pizona creek would continue to allow some increased sedimentation into surface water relative to Alternative 1. The use of the road by Rock Creek Pack Station would occur from mid-April to mid-June.

At Truman Camp, commercial pack stock operations would continue to have very little or no effect on water quality. This is because the only surface water is a small spring pond that is over 100

feet from corrals, tent sites, or other camp facilities. There is also an outhouse at Truman Camp that may be used for about one month a year. The outhouse is over 100 feet from surface water, and because of its distance from water, it should not affect surface water quality.

Water Quantity/Streamflow: At the Pizona Camp, there should continue to be negligible adverse effects to riparian vegetation in Pizona Creek. Pizona Creek would continue to be partially diverted from mid April to mid June to provide for washing and stock water. The volume of water diverted would continue to be around 0.02 AF/year, or about 0.002 cfs throughout the period of operation. As long as the volume of water diverted always allows water to continue flowing in the channel, and the diversions continue to be intermittent throughout the stay, there should be negligible effects to beneficial uses. Springs in the area generally flow at about the same discharge year-round, and therefore riparian vegetation does not depend on flood flows in Pizona Creek that could be affected by diversions. A steady flow that keeps the vegetation's roots wet should be sufficient to prevent mortality, and as long as the creek is never wholly diverted, sufficient flows should continue. It is uncertain whether the diversions would have any effect to beneficial uses in Pizona Creek, although it is unlikely because the diversions occur intermittently and do not divert the entire stream. Rapid diversions, however, could drawdown water quickly enough to strand some aquatic life. As long as diversions occur in their current way, with a diversion system that allows the majority of the flow to pass the structure, rapid stream drawdown should not occur.

At Truman Camp, the continuation of spring flow diversions during the month of mid April through mid June should have little effect on riparian vegetation, aquatic biota, or spring geomorphology. Although the volume of diversions is unknown, it does not divert the entire spring flow, and therefore water is available for vegetation and other aquatic biota. The use by Frontier Pack Station would occur for only one to two months and therefore would have minor effects to beneficial uses. The existence of the spring box and diversions likely affected spring dependent species when it was installed, but its continued presence should not further affect those species.

There are only seven major natural springs within the MPHWVA, and two of them supply water for commercial pack station operations. Therefore, although each camp would only use a small amount of water for one to two months each year, springs are a limited resource and most of these springs have a diversion.

Stream/Spring/Meadow Geomorphology: There should continue to be very minor and local adverse effects to stream and/or meadow geomorphology related to commercial pack station operations. These effects would only occur at and near the Pizona and Truman camps. The same slightly adverse effects that are occurring currently would continue in the future. It is possible that over time, the continued driving on roads and use of trails could worsen compaction, trampling, and incision. However, the limited season of use (about one month) and localized nature of the impacts should allow only minor degradation over time.

Soil Quality: There would continue to be bare soil directly in and adjacent to the camps, for tent sites, gathering areas, parking areas, and corrals. These areas are compacted and have no vegetation and likely have subsequent increased erosive potential. Completely bare areas cover about one acre at

each camp, with some compaction possible over up to two acres at each camp. As long as the campsites remain in the same location and do not expand, the bare and compacted areas should continue at about the same extent and severity.

This compaction has the effect of reducing infiltration over the bare area. However, the sites are small enough and surrounded by enough vegetation that this should not affect overall runoff from the sites.

Cumulative Effects- Alternative 2

Past, present, and foreseeable future actions in the Montgomery Pass Wild Horse Area are the same under Alternative 2 as under Alternative 1, other than the difference in Alternatives. The effects of previous cattle grazing, including channel incision and lowered water tables, remain today, and are likely to show moderate long-term improved conditions. Therefore, the only changes to the condition of the area would be the continuation of camping, causing bare soil at the Pizona and Truman Meadows camps and associated trails and roads. There could be a minor increase in soil compaction, bare soil, soil erosion and subsequent sedimentation into surface water if activities continue at their current levels, simply through increased impacts over time. The surface diversion of water would continue, slightly affecting streamflow between mid April and mid June of each year but likely having negligible to no adverse effect to beneficial uses.

Of the seven major springs within the Montgomery Pass Wild Horse Territory (some of which is on the Toiyabe National Forest and outside of the MPWHT), three are on private land and likely diverted for human or stock use. Three are on public land and it is unknown whether they are naturally flowing or not. The remaining two, Pizona and Truman Springs, are diverted for about a month between mid-April and mid-June as part of commercial pack stock activities. The diversion of two of seven major springs could have measurable effects to beneficial uses because these springs are important in the mainly dry MPWHT. There are at least two distinct spring heads at Truman Camp, and one is diverted. Water use increases during the time when Frontier Pack Station uses this camp, the effect is only of slightly reducing water flow into a possibly man-made pond and into Truman Meadow. The natural flow pattern is already altered with partial diversion of spring water, and the diversion would continue whether the pack station uses the spring water or not. The volume of water used is small relative to natural spring flow of the two springs. While there is a profound effect on spring flow due to the presence of the historically constructed spring box, the additive effect from the use of Truman Camp by Frontier Pack Station is likely negligible.

The spring pond at Truman Meadows would continue to be trampled by wild horses, and likely by very few pack station clients and horses. The majority of trampling and subsequent sedimentation into surface water would continue to be due to wild horse use of the spring. The spring infiltrates into Truman Meadows without any surface flow, and therefore there are no water quality effects downstream from the wild horse use of the spring.

At Pizona Camp, Pizona Creek flow has previously been affected by past stream incision, likely related to cattle grazing and/or climate change. The additive effect of partial diversion of Pizona

Creek during the wild horse viewing trips on beneficial uses is negligible, because it occurs only during about a month in spring when flows are highest, and because the volume of diversion is small relative to the flow of the stream. Therefore, the additive effect is not enough more than the effect from previous stream incision to have any effects to beneficial uses.

Alternative 3 –MPWHVA

Direct and Indirect Effects

The effects on implementation of Alternative 3 on soil and water resources would be less negative than under Alternative 2. The difference would be very small, and would only occur at the two camps. The difference between the alternatives is that all facilities at the Pizona and Truman Camps would be moved at least 100 feet from perennial surface water and 50 feet away from riparian vegetation, including willows and meadows.

At Pizona, the movement of the camp and corral away from Pizona Creek could remove the potential for entry of sediment and manure into water. At Truman Camp, the campsite access road through Truman could revegetate and decompact over time, increasing the extent of meadow vegetation and reducing any potential for erosion along the road. The creation of new campsites would increase the extent of compacted, bare soil in the short term, but with active restoration of the existing sites, compaction and bare soil should be reduced to near natural levels over a few years. In the long-term, the extent and severity of bare, compacted soil should be about the same, but it would be moved away from surface water and therefore remove the potential for water quality degradation.

Water Quality: Under Alternative 3, almost all of the local adverse water quality impacts from commercial pack station operations would be alleviated. Because commercial pack stock operations would no longer be concentrated within 100 feet of surface water at Pizona Camp, any erosion from the bare soil areas or manure would not reach water. The only remaining impacts to water quality should be trails that cross perennial streams. At these locations, compacted trails can act as conduits for surface runoff, and they can carry sediment from the trail into the stream. There is only one known trail that crosses an intermittent stream, at Truman Camp, and therefore there should be very little contribution of sediment to surface water.

Water Quantity/Streamflow: Under Alternative 3, the commercial pack stations could continue to use water from Pizona and Truman springs. Although the camps would likely move farther away from the springheads and/or spring channels under this alternative, the pack stations would still use the water. The effects would therefore be the same as described for Alternative 2.

Stream/Meadow/Spring Geomorphology: Alternative 3 should have minor positive effects to stream, meadow and spring geomorphology in the MPWHT. At the Pizona Camp, the road causing effects to stream morphology would remain, and would likely be used regularly. Even without commercial pack stock operator use of the road, the ruts would likely continue due to off-road vehicle activity. These ruts could continue to alter the stream morphology and possibly divert flow, affecting only a very small portion of the stream, about 10 feet.

At Truman Camp, the effects to stream and stream geomorphology should be the same as under Alternative 2. However, the road through Truman Meadow would no longer be used if the Truman Camp was moved away from its current location. The road is used almost completely for access to the campsite. With relocation of the campsite, the road would receive little if any use. This could allow the road to de-compact and regrow vegetation. The meadow could then recover more natural surface flow patterns and surface runoff would not be diverted onto the road. This could have minor beneficial effects to meadow hydrology.

The one trail stream crossing that is known to have potential for adverse geomorphology effects would be moved away from the stream channel under Alternative 3. Therefore, the stream bank trampling and widening would discontinue at the crossing. The stream could continue to incise, but that incision would not be related to commercial pack stock use.

Soils: The extent of bare soil would be about the same under Alternative 3. In the short run, the extent of bare, compacted soil would increase, because new camp areas would be created. The old campsites would be rehabilitated through decompaction, mulching, and other actions to reduce erosion and restore vegetation. Within a few years, the old sites would revegetate, and the new sites should create about the same extent of bare, compacted soil as today. The camps would be moved out of meadows and riparian areas, and therefore the soil affected would be more common upland dry soil types, while the organic rich soils that are rare in the MPWHT could recover from past compaction.

Cumulative Effects - Alternative 3

Past, present, and foreseeable future actions in the Montgomery Pass Wild Horse Area are the same under Alternative 3 as under Alternative 1, other than the difference in Alternatives. The cumulative effects from this action would be the same as Alternative 2 except for water quality effects at the Pizona and Truman Camps.

Under Alternative 3, the past adverse cumulative effects to Pizona Creek would likely be very slightly countered by moving Pizona Camp away out of the riparian conservation area. Fine sediment and manure would no longer reach the creek from the camp, and slightly more riparian vegetation could grow along the creek. This could improve support of beneficial uses, but would be a minor improvement that would not substantially counter past stream incision, riparian vegetation loss, and fine sedimentation into the creek from past cattle grazing, roads, or climate change.

At Truman Camp, past cattle grazing and wild horse activity has increased soil compaction and increased erosion at Truman Camp. Recovery of soil quality in the surrounding area is slowly occurring due to removal of cattle grazing, and movement of Truman Camp would neither add nor subtract from that recovery. The camp would be moved elsewhere, and would cause new compaction and possibly erosion at the new site. Therefore, while one small area would have beneficial effects, one small area would have adverse effects. The adverse effects would occur away from the RCAs, however, and therefore this action would contribute to an overall trend toward meeting RCO S&Gs throughout the MPWHT.

3.3.2.4 Ansel Adams and John Muir Wildernesses

The Trail and Commercial Pack Stock Management Final EIS (2005) described the affected environment and environmental consequences for the portions of the Ansel Adams and John Muir Wildernesses that are within the project area considered in this EIS. That analysis is incorporated into this document by reference. A description of the air, soil and hydrologic resources affected environment can be found on pages III-95 to III-133 of the Final EIS. An environmental consequences discussion of commercial pack stock use in the AA/JM Wildernesses for air, soil and hydrologic resources can be found on pages IV-259 to IV-419.

The 2005 AA/JM ROD selected Alternative 2 – Modified. In the AA/JM Wildernesses, 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.

Past and present grazing from production livestock and pack stock is thought to be the largest contributor to meadow hydrologic function alteration. Alternatives 2 – Modified limits grazing to those meadows that have been analyzed and designated as suitable for grazing. 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.

3.2.2.5 Golden Trout and South Sierra Wildernesses

Affected Environment

The GT/SS Wildernesses have different hydrology, soil types, and geomorphology than most of the Inyo National Forest. The main difference is that the Kern Plateau, which makes up most of this area, was not glaciated during the most recent glaciations. Therefore, soil has had a longer time to develop

and there are fewer steep, unvegetated granite outcrops. There are also fewer steep, rocky streams and more low gradient, gravel or sand bedded streams. Because streams here are less rocky, their banks are more easily altered by trails and other stream bank disturbance. The GT/SS Wildernesses contain large meadows, over 1,000 acres, while other portions of the Inyo National Forest contain meadows more on the order of 50 acres. While most of the rest of the Sierra Nevada Mountains contains numerous lakes, there are only a few lakes in the Golden Trout and South Sierra Wildernesses.

Average annual precipitation ranges from about 12 inches to about 50 inches within the area, with most precipitation falling as snow in the upper elevations. At the trailheads on the Eastern Edge of the Sierra Nevada Mountains, such as the Olancha Pass trailhead, precipitation is much lower, near 5 inches, and falls mainly as rain.

The South Fork Kern River runs through the Golden Trout Wilderness, and is designated Wild and Scenic. Further, most streams within the Golden Trout Wilderness are designated as Wild Trout or Heritage Trout waters.

Water Quality: As in the rest of the project area, water quality is assumed to be good throughout the GT/SS Wildernesses, with some local areas having some minor to moderate water quality degradation. Water quality data could only be found for this area in Derlet and Carlson (2006). They tested water for E Coli and other bacteria. They found that Chicken Springs Lake did not have detectable, E Coli, Horseshoe Meadow streams had 300 coliform forming units (CFU)/100 mL, and Mulkey and Little Whitney Meadow streams both had 100 CFU/100 mL. Commercial pack stations regularly use Little Whitney Meadows for camping, and took 4 trips to Chicken Springs Lake from 1999 through 2004. One-time water quality measurements were also collected at five meadows in the Golden Trout Wilderness in summer 2003 to test for presence of coliform and other bacteria (Derlet et al. 2004). Only one of those samples, at Horseshoe Meadow, contained detectable levels of coliform bacteria. Horseshoe Meadow is currently grazed by cattle, but is not grazed by commercial pack stock. There is no water quality standard in California for E.coli. The National EPA standard is zero E.coli present in drinking water, and there are no separate standards for non-drinking water. The California Draft Guidance for Freshwater Beaches (March 2006), ([http://www.dhs.ca.gov/ps/ddwem/beaches /Freshwater/ default.htm](http://www.dhs.ca.gov/ps/ddwem/beaches/Freshwater/default.htm)), which has not yet been adopted, suggests posting of beaches when E.coli levels reach 235 CFU/100 mL.

The most widespread and severe water quality impacts are probably from increased fine sedimentation due to stream bank erosion. This is because there is widespread destabilization of stream banks, which increased fine sedimentation into streams (Pearce et al. 1998). Increased sedimentation can affect the Kern River beneficial uses of Cold Freshwater Habitat, Wildlife Habitat, Rare species habitat, and spawning. Cattle or pack stock manure could also enter surface water directly or during snowmelt or rainfall, and could increase bacteria levels and nutrient levels (Kress and Gifford 1984).

Twelve of the 80 campsites requested for use by commercial pack station operators in the GT/SS Wilderness were analyzed for compliance with Best Management Practices (BMPs). These sites were chosen because they are sites that are used frequently for commercial pack station operations. The

campsites analyzed are listed in Table 3.37. Of the 12 analyzed campsites, five do not currently have effective implementation of BMPs, and may be contributing sediment or manure to surface water. In addition, four other campsites inventoried through previous processes are known to be within 100 feet of water.

Table 3.37. Best Management compliance results for Best management practices. Campsites analyzed (BMPs), results of that analysis, and management recommendation

Location	Distance to Water (ft)	BMP Implementation	BMP Effectiveness	Management
Mulkey Meadow	>100	meets requirements	Effective	Maintain as is
Bullfrog Meadow	>100	meets requirements	Effective	Maintain as is
McConnel/Tunnel Meadow	25-50	minor departure	Effective	Contain
Groundhog NE	25-50	major departure	Not effective	Obliterate
Little Whitney Meadow	25-50	major departure	Not effective	Obliterate
Little Whitney SW	>100	meets requirements	Effective	Maintain as is
Little Whitney West	50-100	minor departure	Effective	Contain
Groundhog Mdw East	>100	meets requirements	Effective	Maintain as is
Kern Peak Stringer	>100	meets requirements	Effective	Maintain as is
Templeton/Lewis Stringer	>100	meets requirements	Effective	Maintain as is
East of Tunnel Mdw	25-50	major departure	Not effective	Obliterate

Commercial pack stock grazing has the potential to have similar effects to water quality as cattle grazing. However, the low levels of commercial pack stock grazing in the GT/SS Wildernesses suggests that water quality effects are negligible.

Water Quantity/Streamflow: Because the area is wilderness with very little development, there are few diversions or other alterations to water quantity. Commercial pack stock activities do not affect stream flow in these areas because they do not involve any direct stream diversions or other alterations to stream flow.

In the meadows with incised, widened streams and lowered water tables, streamflow can be reduced during low flow periods. This occurs because the incised stream captures groundwater and drains a meadow more quickly than it would have drained with a shallower channel. By the end of the dry season, the meadow no longer holds as much groundwater and flow is reduced or ceases (Hagberg 1995). It is unknown whether this has occurred on the Kern Plateau in areas with incised channels, although it is assumed that it has, due to the extent and severity of incision and widening.

Stream/Meadow/Spring Geomorphology: The GT/SS Wildernesses have different geomorphology than the rest of the project area and the more northern portions of the Sierra Nevada Mountain Range. The Wildernesses are made up mainly of the Kern Plateau, a high elevation (7,000 to 9,000 feet), relatively flat area with some higher peaks. Because the area is flatter than most of the Sierra Range on the INF, streams tend to be lower gradient, have smaller substrate, and have a more meandering pattern. The area is covered with large meadows (over 1,000 acres) and is dominated by decomposed granite and volcanic substrate.

In general, the Kern Plateau has widespread soil and hydrologic impacts within meadows that have been grazed by cattle over the past 150 years. Many stream segments within meadows are incised and/or widened due to bank destabilization assumed to be related to historical and recent cattle grazing and/or climate change. Many of the meadows with incised and widened stream channels, compacted soils, and lowered water tables are unlikely to show much recovery without active restoration (Kondolf 1993).

Soils: The Kern Plateau has more highly developed soils than in the rest of the Sierra Nevada, because it was not glaciated in the most recent glaciation about 10,000 years ago. Soils in meadows can be deeper than 60 inches. Soils are derived mainly from granitic parent material, with some areas of andesitic parent material. Soils vary from very high permeability in the forested areas with sandy soils, to low permeability in meadows with high water tables (US Forest Service, 1996).

Many meadows are over 1,000 acres, and meadows cover a relatively large portion of the GT/SS Wildernesses. About 10% of the two wildernesses are meadow, while meadows cover about 1.4% of land in the AA/JM Wildernesses to the north.

Many of the meadows in the GT/SS Wildernesses have reduced soil productivity due to compaction, vegetation loss and subsequent litter loss, or from vegetation conversion that reduces organic contribution to the soil. Meadows that have been rested from cattle grazing have increasing vegetative cover and in the long term, will have increased soil productivity.

Soil also has reduced productivity in campsites and along trails where soil is compacted and denuded of vegetation. While there are many campsites and trails, they cover a small proportion of the GT/SS Wildernesses and the impacts are very small in extent.

Environmental Consequences

Alternative 1 –GT/SS Wildernesses

Direct and Indirect Effects

Under Alternative 1, soil and hydrologic effects would likely remain unchanged from their current condition. Commercial pack station operations would be discontinued, but because there are so few known effects from current commercial pack station use, the difference would be negligible overall. There would be a minor reduction of trail use, a reduction of use at a maximum of 80 campsites and a slight reduction in grazing. These changes could lead to local beneficial effects at five to ten campsites, where commercial pack stations are currently the primary user. Cessation of grazing would

likely not be a large enough difference to cause any measurable change in condition, because there is currently little commercial pack stock grazing.

Water Quality: Under Alternative 1, water quality would likely remain unchanged from its current overall condition. There are very few and mostly minor water quality impacts from current commercial pack station operations in the area. The greatest impact to water quality from commercial pack station operations is likely from use of campsites that are within 100 feet of water. Although it is unknown how many campsites used by commercial pack stock operators are allowing substances to enter water, four were observed by the IDT. These sites may be rehabilitated, but would likely be left to naturalize on their own. Other users may use the site, although over time, all sites should be moved at least 50 feet away from water, and 100 feet in most cases. Therefore, over the long term, there could be a very slight decrease in sediment entering water from a few campsites. Overall, however, the effects would be negligible due to the few number of sites actually contributing sediment to surface water.

Water Quantity/Streamflow: Under Alternative 1, there would be no effects to streamflow. Commercial pack station operations do not divert water or otherwise affect streamflow except through drinking water for stock and clients. This volume of water is small, and cannot measurably affect streamflow. Removal of commercial pack station use would therefore not affect water quantity.

Geomorphology: There could be localized beneficial effects to stream and meadow geomorphology under Alternative 1. The effect would be negligible on a wilderness-wide scale, but at a few local sites, there could be a decrease in adverse effects. These locations include stream crossings used primarily for commercial pack stations activities, and where commercial pack stock users travel cross country through wet meadows or other sites vulnerable to trampling and chiseling. In the field visits by the IDT, we found about ten campsites and trail crossings that are known to be used by commercial pack stations and are affecting stream or meadow geomorphology. Most of these sites are campsites that are closer than 50 feet from water, and a few are stream crossings. The campsites often have compacted and trampled streambanks due to clients and stock accessing water. This has caused slight stream widening or collapsing banks at the access point. The trail crossings cause stream bank chiseling and widened streams, along with a few headcuts advancing up the trail.

Under Alternative 1, no campsites would be used by commercial pack stock. While this would prevent future worsening of impacts, the compacted soil and collapsed stream banks would only recover slowly with removal of the impact. Further, other users would likely continue using the sites unless they are closed and rehabilitated.

Under Alternative 1, there would be no potential for commercial pack stock to alter streambank vegetation or stability, or stream geomorphology. The termination of commercial pack stock grazing would likely cause no change relative to current conditions. Little commercial pack stock grazing occurs in the GT/SS Wildernesses currently, although exact grazing levels are unknown. The highest overnight use levels were reported in 2004. Three all expense trips occurred within the GT Wilderness. Two of those trips were to Little Whitney Meadow, and a total of 43 stock were used for these two trips. It is assumed that the average trip length was 5 nights, which would equal 215 grazing

nights if the stock grazed every night. Little Whitney Meadow covers about 91 acres. This is a very low level of grazing that has little potential to cause widespread changes in stream hydrology.

Soils: Under Alternative 1, there would be a few locations where soil productivity could increase. However, on the scale of the GT/SS Wildernesses, the effect should be negligible.

Campsites would no longer receive commercial pack station use. About 80 campsites were requested for use as spot/dunnage and stock holding sites, and an unknown, but lesser number are actually currently used. Removal of use on the order of 20 acres is a negligible effect to soil quality overall. There could be some local decrease in soil compaction and increase in soil organic content. It is also possible that hikers or private pack stock users could continue to use these sites, and they could remain in their current condition with decreased soil productivity. If the sites were no longer used by any parties, they would slowly decompact and have increased soil productivity, with total recovery occurring on the order of decades.

Trails currently contribute to loss of soil productivity within the trail tread, as trails are compacted and denuded of vegetation. Although commercial pack stock use would be terminated under Alternative 1, most trails within the GT/SS Wildernesses would continue to be used by hikers, cattle, and/or private pack stock users. Therefore, removal of commercial pack stock from trails would have little to no effect to soil productivity.

Commercial pack stock grazing removal would also have little to no effect on soil quality, although a few specific locations might have improved soil quality. As stated above in the “geomorphology” section, it is difficult to determine whether commercial pack stock grazing has any effect to soil quality, because the effects are masked by the overriding effects of current and historical cattle grazing. Because there is so little commercial pack stock grazing, and because no packstock specific effects were noted due to grazing, it is projected that removal of commercial pack stock grazing would have no measurable effect to soil quality.

Cumulative Effects- Alternative 1

Implementation of Alternative 1 would have little to no additive contribution to cumulative effect in the GT/SS Wildernesses. The major past action that has occurred in this area relevant to soil and water resources include recreational and production livestock grazing over the past 150 years. These uses have substantially declined over the 150 years and continue to decrease. Other contributors to adverse cumulative effects include soil erosion and sediment input to streams from trail construction and recreational activity. Present actions occurring include cattle grazing on the Monache and Mulkey Allotments, recreational activity including backpacking, camping, non-commercial stock use, and fishing. There are no reasonably foreseeable future actions in this area that would cause relevant effects to soil and water resources.

Recreation impacts to water quality could be numerous, but are always local effects. Recreational pack stock users, backpackers, and pack station clients likely deposit human waste too close to water, and some of that waste could enter water bodies. Pack station clients are educated about waste disposal, and commonly use latrines dug far from water. They are therefore likely less likely to

deposit waste too close to water than other recreational users. Other impacts can occur from depositing gray water from cooking or washing too close to or into water or increased sedimentation into streams from trailing near to or across streams. Fine sediment can enter water from campsites or trails, where vegetation removal and soil compaction allow for increased movement of sediment into surface water. This occurs at campsites and along trails throughout the GT/SS Wildernesses, and although the effects occur throughout the area, they are only local, minor impacts to water quality.

Much of the GT/SS Wilderness area has altered geomorphology and soil quality related to past and present cattle grazing. Commercial pack stock grazing could maintain altered stream morphology, water quality and soil quality if it occurred at high enough levels. On the Templeton and Whitney Allotments, rest from grazing for five years has reduced adverse cumulative effects and allowed improvement in stream morphology. With or without commercial pack stock use of this area, stream conditions would likely continue to improve.

Under Alternative 1, there would be no commercial pack stock use of this area. This could allow slightly faster stream stabilization if it prevented some stream bank trampling, and could allow for slightly reduced levels of manure in the water than currently. However, the effects of cattle grazing and cattle manure are so much more severe and widespread than recent commercial pack stock use that there should be no difference between Alternative 1 effects and current conditions.

Alternative 2 –GT/SS Wildernesses

Direct and Indirect Effects

Under Alternative 2, there would continue to be about the same commercial pack stock use as today in the GT/SS Wildernesses. Because this use is low relative to the size of the area, and because most of the activities have minor or no impacts to hydrologic or soil processes, the effects of Alternative 2 should be minor on a wilderness-wide scale, and occur only in a few localized areas.

Water Quality: Under Alternative 2, water quality would likely remain unchanged from its current overall condition. There are very few and mostly minor water quality impacts from current commercial pack station operations in the area, and that condition should remain the same under Alternative 2. The greatest impact to water quality from commercial pack station operations is likely from use of campsites that are within 100 feet of water. Four such sites were observed by the IDT. These sites would be closed to commercial pack stock use. All campsites used by commercial pack stations will be at least 100 feet from water. Therefore, over the long term, there could be a very slight decrease in sediment entering water from a few campsites. On a Wilderness-wide scale, the effects would be negligible due to the few number of sites actually contributing sediment to surface water. The effects would be almost the same as under Alternative 1, because campsites close to water with potential water quality effects would no longer be used by commercial pack stock.

Commercial pack stock would also continue to deposit manure in water at trail crossings and while grazing. While it is certain that some commercial pack stock manure would be deposited in streams, and it is likely that the manure increases nutrient levels directly adjacent to the manure, it is uncertain whether enough manure ends up in any surface waters to affect beneficial uses. It is

assumed than any increase in nutrients or bacteria is short term and very local, affecting beneficial uses only directly at the point of manure deposition. Due to the relatively low levels of commercial pack stock use in this area, it is assumed that drinking water quality may only be affected directly downstream of an area used for concentrated pack stock use, such as a corral on the water or a watering hole where stock congregate.

Water Quantity/Streamflow: Under Alternative 2, there would be no effects to streamflow.

Commercial pack station operations will not divert water or otherwise affect streamflow except through drinking water for stock and clients. This volume of water is negligibly small, and cannot measurably affect streamflow.

Stream/Meadow/Spring Geomorphology: There could be very slight, local adverse effects to streams and meadow geomorphology, primarily at stream crossings used by commercial pack stock and possibly at localized grazing areas. The effects could be more adverse than under Alternative 1.

In the limited field visits by the IDT, we found about ten campsites and trail crossings that are known to be used by commercial pack stations and are affecting stream or meadow geomorphology. None of the four camps affecting water quality or geomorphology would be used by commercial pack stations under Alternative 2, because all sites would be required to be 100 feet from water, when possible, and in no case less than 50 feet from water. Further, if sites are not meeting Best Management Practices, regardless of their distance from water, they would not be permitted for use by commercial pack station operations. While closure of campsites affecting geomorphology would prevent future worsening of impacts, the compacted soil and collapsed stream banks would only recover slowly with removal of the impact.

The continuation of commercial pack stock grazing in all open meadows would have little effect to stream or meadow geomorphology. It is assumed that about the same amount of grazing would occur under Alternative 2 that occurs currently. Commercial pack stock will trample stream banks and cause some minor local effects to stream geomorphology, the effects would continue to occur only very locally, and seldom enough that the condition recovers each season.

It is possible that more overnight trips within the GT/SS Wildernesses could occur under Alternative 2 than have occurred in the recent past. This could increase the grazing levels in meadows, especially those along commonly used travel routes in Big Whitney, Little Whitney, Templeton, Tunnel and a portion of Ramshaw Meadows. If these routes become increasingly popular, pack stock grazing could slow recovery of stream geomorphology in meadows such as Tunnel Meadow, or create increased trampled and raw banks. The maximum allowable stream bank trampling is 10% within the Golden Trout Wilderness, and as long as this standard is met, overall stream geomorphology should not degrade. However, local areas with up to 10% stream trampling could erode during high flows. Such erosion occurred in a wet portion of South Fork Meadow along the South Fork Kern River, where a one-time stream crossing by about five stock headcut propagation away from the channel. It is unlikely that commercial pack stock grazing would increase to the point of causing more than a few of these local adverse geomorphic effects.

One beneficial effect relative to current conditions would be that under Alternative 2 (and Alternative 3), commercial pack stock would be required to stay on trails in meadows before range readiness is reached in those meadows. While this would not likely change current conditions, it could reduce the potential of future trampling and chiseling of meadows and stream banks within meadows.

Soils: Under Alternative 2, there should be a few locations where soil productivity could increase, specifically at four campsites that would be closed. However, on the scale of the GT/SS Wildernesses, the effect should be negligible. The effects of commercial pack stock grazing on soil productivity should not be noticeable.

It is assumed all 80 campsites identified by the commercial pack stations as desired for use would be used for stockholding or spot/dunnage sites, although this likely greatly overestimates campsites use. These sites would continue to have compacted soil without vegetative cover, and with increased erosion potential. Those four sites that do not meet BMPs would be closed to use or contained.

Trails would continue to contribute to loss of soil productivity within the trail tread, because trails are compacted and denuded of vegetation. Most trails within the GT/SS Wildernesses would continue to be used by hikers, cattle, and/or private pack stock users, and commercial pack stock use would cause an unknown portion of trail compaction. Under Alternative 2, use would be allowed some increase from current levels, and there could be more use on some trails. As long as new trails are not created, the area of compacted trail should not change. New trails should not be created under Alternative 2, and if it does occur, toolbox use will allow recovery and obliteration of the trail.

Commercial pack stock grazing would also have little to no effect on soil quality. A few specific locations might have reduced soil quality if used heavily for commercial pack stock grazing. As stated above in the “geomorphology” section, it is difficult to determine whether commercial pack stock grazing has any effect to soil quality, because the effects are masked by the overriding effects of current and historical cattle grazing. Because there would be so little commercial pack stock grazing, and because only very local and minor packstock specific effects were noted currently, it is projected that commercial pack stock grazing under Alternative 2 would have no measurable effect to soil quality. Further, each meadow where grazing would be allowed would have the suitable area of the meadow delineated, and the packers would be expected to graze their stock within the suitable areas. The four meadows with severe existing impacts related to cattle grazing that could be affected by even low levels of use, and the meadows with very wet and easily impacted soils, would be closed to commercial pack stock grazing. This would avoid increased adverse impacts from grazing and would help allow slow recovery of soil compaction and organic matter deficit related to past cattle grazing.

Cumulative Effects- Alternative 2

Past, present and reasonably foreseeable future actions would be the same under Alternative 2 as under Alternative 1, other than the actions in this alternative. There should be little to no difference between cumulative effects under Alternative 2 and Alternative 1.

It is possible that more restrictive management that will occur from the 2005 AA/JM ROD might increase commercial pack stock use in the GT/SS Wildernesses. While the maximum allowable use would not be different than is currently authorized, the use might come nearer to the authorized use.

Under Alternative 2, increased commercial pack stock use could add to cumulative grazing effects from previous cattle grazing. However, the use would be so low in any meadow that recovery from past cattle grazing should be allowed to continue at almost the same rate as it would without commercial pack stock grazing. Somewhere on the order of 500 stock nights (~17 AMs) of commercial pack stock grazing would be expected to occur in the GT/SS Wildernesses annually. This could cause some stream bank trampling, soil compaction, and manure deposition into water. However, those 500 stock nights would likely be spread over at least three meadows, including Little Whitney, Templeton, and Big Whitney Meadows. The combined area of these meadows is over 3,000 acres. While the stock would be expected to spend more time near streams, the stocking density would still be so low that, even when added to past and present cattle grazing, it should create only local and minor cumulative effects to stream morphology.

Alternative 3 –GT/SS Wildernesses

Direct and Indirect Effects

The effects of Alternative 3 would be similar as under Alternative 2. The only differences in commercial pack stock operations between Alternatives 2 and 3 is that: 1) Under Alternative 3, pack stations other than Cottonwood and Mt. Whitney would not be allowed to use the GT/SS Wildernesses in any circumstance and 2) 36 trips instead of 45 would be allowed over Cottonwood Pass into SEKI

These two actions should not cause different effects under Alternative 3 than under 2. In wet years, Frontier Pack Train and Glacier Pack Train take one to two trips into the area. They would not be expected to be granted more than a few trips per year under Alternative 2. Sequoia Kings Pack Trains would also be expected to take a few trips per year that exit through the GT Wilderness, and stay one or two nights within the wilderness under Alternative 2. A difference in a few trips is not sufficient to cause different effects to soil and water resources.

Cumulative Effects

The cumulative effects would be the same as under Alternative 2 because there would be no difference between direct and indirect effects between the alternatives.

3.4 Biological Environment

3.4.1 Wildlife

Species Considered

The wildlife species considered in this analysis fall into three categories: Federally listed threatened, endangered and proposed species, Pacific Southwest Region 5 Forest Service sensitive species, and management indicator species (MIS) identified in the 1988 Inyo National Forest Land and Resource Management Plan (LRMP) on pages 98-102 (USDA Forest Service 1988). Further information supporting the MIS analysis including the status of Forest-wide MIS population and habitat trends, can be found in the MIS report in the Project Record. The federally listed threatened, endangered and proposed species, and Forest sensitive species (TEPS) portions of this analysis are taken from the Biological Evaluation (BE) document prepared in accordance with Forest Service policy (Forest Service Manual Direction 2670). The BE is on file as part of the project record.

3.4.1.1 Threatened and Endangered Proposed, Sensitive and MIS Species

Federally listed threatened, endangered and proposed species were reviewed from web lists published on U. S. Fish and Wildlife Service Ventura and Sacramento Field Offices that have jurisdiction over Inyo, Mono, and Tulare Counties. In addition an official hard copy list from the Ventura Field Office dated November 1, 2005, was reviewed. Pacific Southwest Region 5 sensitive species were identified from the Regional Forester's list of sensitive plants and animals (USFS 1998, amended 3/2001).

The Biological Evaluation prepared for this EIS indicated the following species are present and have suitable habitat within the analysis area and may be potentially affected by commercial pack station operations. Species with an "*" at the end of the scientific name are also listed as MIS in the 1988 INF LRMP. The following species will be further analyzed in Chapter 3.

Threatened, Endangered or Proposed Federally Listed Species

- Sierra Nevada Bighorn Sheep (Endangered), *Ovis canadensis sierrae**
- Northern Bald Eagle (Threatened), *Haliaeetus leucocephalus**

Pacific Southwest Region 5 Sensitive Species

- Willow Flycatcher (*Empidonax traillii brewsteri* and *adastus*)
- Northern Goshawk (*Accipiter gentilis*)*
- Great Gray Owl (*Strix nebulosa*)*
- California Spotted Owl (*Strix occidentalis occidentalis*)*
- California Wolverine (*Gulo gulo luteus*)*
- Sierra Nevada Red Fox (*Vulpes vulpes necator*)*
- American Marten (*Martes americana*)*
- Townsend's Big-Eared Bat (*Corynorhinus townsendii*)
- Mountain Yellow-Legged Frog (*Rana muscosa*)

- Yosemite Toad (*Bufo canorus*)
- California (Volcano Creek) Golden Trout (*Oncorhynchus mykiss aguabonita*)

The following TEPS species may be present and/or have suitable habitat within portions of the overall analysis area boundary but will not be analyzed further in the environmental consequences section. The Biological Evaluation determined that commercial pack station operations analyzed in this EIS do not overlap with the species habitats, and there are no effects to the species or habitats from implementation of any of the Alternatives.

Threatened, Endangered, or Proposed Federally listed Species

- Lahontan Cutthroat Trout (Threatened), *Oncorhynchus* (=Salmo) *clarki henshawi*
- Paiute Cutthroat Trout (Threatened), *Oncorhynchus clarki seleneris*
- Owens Tui Chub (Endangered), *Siphateles bicolor snyderi*

Pacific Southwest Region 5 Sensitive Species

- Panamint Alligator Lizard (*Elgaria panamintina*)
- Inyo Slender Salamander (*Batrachoseps campi*)
- Kern Plateau Slender Salamander (*Batrachoseps robustus*)
- Pallid Bat (*Antrozous pallidus*)
- Northern Leopard Frog (*Rana pipiens*)
- Wong's Springsnail (*Pyrgulopsis wongii*)
- Owen's Valley Spring Snail (*Pyrgulopsis owensensis*)
- Peregrine Falcon (*Falco peregrinus anatum*)*

The following sensitive species do not have suitable habitat on the INF within the overall analysis area boundary and will not be analyzed further in the environmental consequences section. The Biological Evaluation determined that commercial pack station operations analyzed in this EIS would have no effects to the species or habitats from implementation of any of the Alternatives.

- Western Yellow-Billed Cuckoo (*Coccyzus americanus occidentalis*)
- Swainson's Hawk (*Buteo swainsoni*)
- Western Red Bat (*Lasiurus blossevillei*)

Other Management Indicator Species

Three other MIS that are not federally listed or sensitive species but are listed in the 1988 INF LRMP were selected for the effects analysis because the habitat for these species is likely to be affected by commercial pack station activities within the analysis area. See the Project Record for detailed habitat and population data utilized in the affected environment and effects analysis.

- Mule Deer (*Odocoileus hemionus*)
- Yellow Warbler (*Dendroica petechia*)
- Blue Grouse (*Dendragapus obscurus*)

The following other MIS species that are not listed as threatened, endangered, proposed, or sensitive species were not selected for further analysis because commercial pack station operations do

not affect habitat of these species to any substantive degree that would display a qualitative or quantitative change between implementation of the different alternatives.

- Golden Eagle (*Aquila chrysaetos*)
- Prairie Falcon (*Falco mexicanus*)
- Tule Elk (*Cervus elaphus*)
- Nelson Mountain Sheep (*Ovis canadensis nelsoni*)
- Williamson sapsucker (*Sphyrapicus thyroideus*)
- Hairy Woodpecker (*Picoides villosus*)

3.4.1.2 Species Analyzed in Detail

Analysis Assumptions and limitations

The prediction of direct, indirect, and cumulative effects on TES and MIS wildlife species is a difficult prospect for a number of reasons. There is a lack of peer reviewed scientific studies that have examined the questions of the effects of recreational use and more 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 is well appreciated but poorly understood. Most popular forms of recreation in wildlands have yet to receive even one detailed study.” They went on to state that the understanding of effects of recreation on wildlife is rudimentary.

Gaines et al. (2003) attempted to develop models that looked at 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 on wildlife populations and wildlife habitats that is relevant to the trail and road use effects analysis. 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 the following effects analysis areas with information gaps in the scientific literature that hindered their understanding of wildlife and recreation trail interactions as follow:

1. 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 attempts to analyze the effects on wildlife populations of activities such as commercial pack stock operations that occur on trail systems given they are but one user group of a multitude of users using the same trails, roads, destinations and camping areas. Commercial pack stock use amounts to a relatively small percentage of use in these areas. In addition effects from these activities are highly variable since the timing and locations of such uses including trail use and destinations is variable from one year to the next based on client demand and annual weather conditions.

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, primarily cattle and sheep grazing on multiple resources including wildlife populations and wildlife habitats in the Sierra Nevada (Diaz et al.1999). The report lacked information concerning the specific effects of pack stock grazing on wildlife and wildlife habitat.

This 1999 assessment is useful in the extrapolation of its findings to pack stock grazing use since horses and mules are a class of livestock. However, it must be recognized that pack stock graze differently than cattle or sheep. For example pack stock do not forage on riparian shrubs like cattle, pack stock use is highly variable from one meadow to the next, and from one year to the next. Pack stock in wilderness meadows for instance 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. There is an absence of controlled scientific studies that document the effects of commercial pack stock grazing on wildlife and wildlife habitats.

The Science Review acknowledged that the available literature is replete with statements about the probable effects of grazing, many of them observational or anecdotal, but rarely are 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, streambank 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 can be added to that list of research needs. In conclusion the Science Review concluded that livestock grazing in the Sierra Nevada generally negatively impacts wildlife, based on the review of available literature.

The following concepts, assumptions and limitations were used to guide the effects analysis of commercial pack station operations within non-wilderness areas, Montgomery Pass Wild Horse Viewing Area (MPWHVA), and GT/SS Wildernesses on wildlife species and wildlife habitats:

1. The affected environment and environmental consequences discussions will be displayed by the geographic area i.e. Non-Wilderness, GT/SS Wildernesses, and MPWHVA, and by wildlife species within those areas. Wildlife populations and habitat are a function of a landscape, and the effects will be discussed by site-specific locations within the particular landscape scale, rather than fragmenting and discussing the effects analysis from one pack station use area to the next. In some instances pack stations overlap their use of habitats such as use of the same trails, camps, and roads.
2. The non-wilderness section will provide most of the pertinent analysis discussion particularly with reference to applicable science for each species, including species habitats and effects of land uses. This section will also identify the conclusion of the Biological Evaluation for each species as required per direction in Forest Service Manual 2670. The GT/SS Wildernesses, and MPWHT discussions will provide additional information on species distribution, and specific areas where commercial pack stock use impacts would occur in these areas. The discussion of effects in these two analysis areas will be referenced back to the non-wilderness section where the effects apply. Some species are only discussed in one or more of the analysis units since they may only occur in one or more areas. The mountain-yellow legged frog for example is only found to overlap pack station operations in the Golden Trout Wilderness portion of the GT/SS Wildernesses analysis unit. The sage grouse is found in the non-wilderness and MPWHVA analysis units.
3. The actual area of use by all commercial pack stations including base facilities, meadow pastures, day use trails, stock driveways, stock drive camps, wild horse viewing areas and camps, and low levels of commercial pack stock summer use that may directly, indirectly, and cumulatively affect wildlife habitat on the INF is comprised of very small areas of land use. These facilities and uses occur mostly within narrow corridors along roads and trails that occur within a much larger landscape matrix of uses.
4. A myriad of other multiple uses overlap and occur adjacent to pack station operation areas that include campgrounds, picnic areas, dispersed recreation and day use sites, recreation residences, resorts, ski areas, OHV use areas and an expansive road system, livestock grazing, other wilderness uses, and inholdings and adjacent private land activities including rural sprawl and developments, as well as other agency and private land uses. The actual affected acres by the pack station activities within this matrix of land uses is a small percentage of this

- total landscape. Commercial pack stock operation impacts to wildlife species particularly with respect to human disturbance effects to wildlife species is difficult to separate out from the cumulative overall effect of all these activities occurring simultaneously within this matrix.
5. System trail, user trail, and Forest road use, as well as the use of campsites and destinations by commercial pack stock operators and clients can result in variable levels of displacement and avoidance responses 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, fawning, young rearing, and foraging. (Gaines et al. 2003). The magnitude and extent of the disturbance and avoidance effect is highly variable by wildlife species, and individuals within a species based on such factors as the nature of previous encounters, species activity at the time of the encounter, condition of the animal, and the time of year of the disturbance. Some species of wildlife and individuals of a species can habituate to predictable patterns of human disturbance that can lessen the impacts on the species. As previously stated, 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).
 6. 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 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. It is very difficult to analyze the effects of commercial pack stock grazing on wildlife habitats in these meadows where hydrologic conditions are already substantially degraded and meadow recovery remains uncertain as a result of continued hydrologic instability.
 7. Commercial pack stock grazing at moderate forage utilization levels prescribed in the 2004 Sierra Nevada Forest Plan Amendment Final EIS and Record of Decision (2004 SNFPA FEIS/ROD), and in the 1988 Inyo National Forest Land and Resource Management Plan (1988 INF LRMP) Amendment #6 can impact some riparian dependent and associated wildlife species and their habitats that are found under relatively unmodified habitat conditions. The site specific and overall grazing impacts affect habitat suitability, modify some species numbers, individual vigor and survival ability, and use patterns of habitat, however there is no research or monitoring evidence at this time to suggest this grazing is leading to a loss of viability for any wildlife species within the overall analysis 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.
 8. Actual commercial pack stock grazing use associated with wilderness camps within the GT/SS Wildernesses is very minor compared to what land use plan standards and guidelines allow. The very low grazing use has probably had very minor effects to riparian meadow

habitats that is completely obscured and overwhelmed by the regular past and current intensive grazing use by cattle within the commercial livestock allotments. Allotment Environmental Assessments (EA's) including the Templeton-Whitney EA have discussed widespread riparian degradation in these meadows that has been on-going for most of the twentieth century associated with livestock grazing. Recent pack stock grazing use of these meadows has not been observed to be impacting any of the meadows in any substantive way.

9. The actual commercial pack stock grazing use in the GT/SS has not been reported. Grazing use has been highly variable from one year to the next in many meadows, with some years where the meadows are not grazed at all. Grazing use is likely to continue at low levels but it can potentially be more substantive in some meadows in the GT/SS Wildernesses when the AA/JM Wildernesses have access problems as a result of high snow years such as in 2005 that prevent access until mid summer. There is potential in such years to have substantial localized impacts from grazing in portions of the meadows along streambanks, springs and wet meadows. It is difficult to model the effects of actual grazing use effects on any particular meadows wildlife habitat because of this unpredictable, highly variable pattern of use.

3.4.1.3 Non-Wilderness Analysis Unit

Sierra Nevada Bighorn Sheep

Affected Environment

The Sierra Nevada bighorn sheep species has been federally listed as endangered since 2001. The population has steadily recovered from a low of approximately 100 animals in 1999 to approximately 400 sheep in 2006 (Tom Stephenson CDFG biologist, personal communication 2006). This increase appears to be largely as a result of improved management to control mountain lion predation, and more favorable milder winter conditions over the last several years that have allowed for a higher level of lamb survival. A Final Draft Recovery Plan has been prepared by the U. S. Fish and Wildlife Service (U. S. Fish and Wildlife Service 2005). Critical habitat has not been designated. Six existing herds located on the INF include: Mt. Langley, Mt. Williamson, Mt. Baxter, Wheeler Ridge, Mt. Gibbs and Mt. Warren herds. The vast majority of the herd ranges occur within the Ansel Adams and the John Muir Wilderness Areas covered under the Trails and Commercial Pack Stock Management in the Ansel Adams and the John Muir Wildernesses FEIS (USDA Forest Service 2005).

Commercial pack station operations in this analysis overlap Sierra Nevada bighorn sheep habitat in the non-wilderness analysis area along the lower slopes of Wheeler Ridge to the west of the Pine Creek road that includes the old tailings piles adjacent to the Pine Creek Pack Station and continuing up Morgan Creek along the old mining road toward Morgan Pass. Bighorn use the lower slopes near the tailings piles throughout the winter gradually moving to higher elevations on Wheeler Ridge as snowmelt begins in the spring. During summer they typically spend most of their time on the high slopes above the old mining road, and do not generally occupy the low elevation habitats adjacent to

pack station operations. The Wheeler Ridge herd has been steadily increasing in population size and numbers over 100 sheep. It has grown in numbers to become the largest herd in the Sierra.

Environmental Consequences

All Alternatives – Direct, and Indirect Effects

The Biological Evaluation determination has concluded that implementation of any alternative would not affect the Sierra Nevada bighorn sheep. There would be no effect to bighorn sheep individuals with the cessation of commercial pack stock operations under Alternative 1, or in the continuation of Pine Creek Pack Station operations and facilities under Alternatives 2 and 3 since bighorn traditionally use the high summer range habitats above the pack station use areas, and are not subject to any disturbance effects from the operations below. The Sierra Nevada bighorn sheep would not be affected by stock drives in Pine Creek Canyon, or day rides in lower Morgan Creek road, and along the old tailings piles since these activities would occur after bighorn sheep have moved to high elevation summer range habitats. The other non-wilderness use authorizations and the GT/SS Wildernesses commercial pack stock uses do not overlap with existing Sierra Nevada bighorn sheep range and habitat use.

Pack stock including horses, mules, and burros cannot transmit disease to bighorn sheep according to the Sierra Nevada Bighorn Sheep Draft Recovery Plan (USDI Fish and Wildlife Service 2005). The use of these animals for commercial pack stock operations does not pose a threat to the species in the event Sierra Nevada bighorn were to expand their range into portions of the non-wilderness, or GT/SS Wildernesses analysis areas.

Approximately 3,222 acres of suitable habitat in the non-wilderness and 167 acres in the GT/SS Wildernesses overlap with trails within the two geographic areas. This represents slightly over 1% of the total bighorn sheep habitat on the INF. A percentage of the acres occur in unoccupied herd ranges such as Olancha Peak and the Coyote Plateau identified in the final draft Sierra Nevada Bighorn Sheep Recovery Plan (U. S. Fish and Wildlife Service 2005). All Alternatives would not directly, indirectly, or cumulatively affect Sierra Nevada bighorn sheep habitat on these acres since commercial pack stock use of trails in these areas has no effect on habitat structure, or quality of the habitat.

Bald Eagle

Affected Environment

There are two known recently discovered bald eagle nest territories on the INF, one at June Lake, and the other in the Upper Owens River watershed near Alpers Ranch. Both are located in the Non-wilderness portion of the overall analysis area, however neither nest is within or adjacent to areas of commercial pack stock operations. The territories were discovered in 2004 and 2005. These recent territories may be the result of an expanding regional population of eagles that are now beginning to colonize formerly suitable unoccupied habitats. The CWHR Forest-wide habitat query has identified

12,386 acres of suitable habitat adjacent to lakes and rivers on the Forest that are predominantly in Non-wilderness.

Environmental Consequences

All Alternatives – Direct, and Indirect Effects

There are approximately 875 acres of suitable bald eagle habitat that overlap with commercial pack stock use of trails in the Non-wilderness analysis area. This represents approximately 7% of the suitable CWHR habitats identified as suitable bald eagle habitat use areas. There is no direct, indirect or cumulative effect to the habitat since trail use by commercial pack stock does not affect habitat suitability. A “No effect” determination was concluded for commercial pack station activities in the AA/JM Wildernesses Biological Evaluation as part of the analysis incorporated by reference covered under the Trails and Commercial Pack Stock Management in the Ansel Adams and the John Muir Wildernesses FEIS (USDA Forest Service 2005).

Willow flycatcher

Affected Environment

This project area has suitable nesting habitat present for two of three known subspecies in the Sierra Nevada *Empidonax trillii brewsterii*, and *Empidonax traillii adastus*. *Empidonax traillii extimus*, the federally listed endangered southwestern willow flycatcher does not likely occur within the project area since its known occupied habitat is at lower elevations in valleys surrounding the Sierra Nevada such as in the Owens Valley north of Bishop. As a result this subspecies will not be considered further in this analysis.

According to the Willow Flycatcher Conservation Assessment the preferred meadow breeding habitat for the two subspecies identified above that will be analyzed occurs below 8,000 feet in elevation in the Sierra Nevada (Green et al. 2003). Eighty eight percent of all known meadows used by breeding willow flycatchers occur between 4,000 and 8,000 feet in elevation, although meadows as high as 9,500 feet have been used. More than 95% of the known breeding meadows are greater than 10 acres in size, with the most successful nesting meadows greater than 15 acres. Table 3.38 summarizes the willow meadow suitable habitats identified on the INF within the broad geographic areas of the Forest. Lower Rush Creek at Mono Lake in the Eastern Sierra area has two high suitability habitats areas, and is the only location that has a nesting willow flycatcher population that currently exists on the INF. It is located outside of the areas used by commercial pack stock operations. All other meadows/riparian habitat areas in Table 3.38 are classified as suitable, unoccupied willow flycatcher habitats that do not currently have a willow flycatcher nesting population.

Table 3.38. Meadows/riparian areas potentially suitable for willow flycatcher nesting habitat on the Inyo National Forest. Numbers in parenthesis indicate number of meadows where commercial pack stock use presently occurs.

Geographic Area	Number of Suitable Habitat Areas	Total Acres	# High Suitability Habitats*	# of Moderate Suitability**	# of Low Suitability***
Eastern Sierra and Front Country (Non-Wilderness)	39	506	7 (1)	9 (1)	23 (3)
GT/SS Wildernesses	17	289	-	3 (3)	14
White Mountains	4	49	-	-	4
Total	60	844	7	12	41

* Riparian deciduous shrub meadow or floodplain habitats that are 15 acres or larger, below 8,000 feet with a willow shrub habitat component, interspersed with open herbaceous flooded areas.

** Similar to high quality but between 10 and 15 acres, and/or above 8,000 feet elevation, and/or exhibiting lower willow and flooded meadow structural characteristics, and/or adjacent or within high recreation use areas where human disturbance potential is present, and/or other land uses are adversely affecting habitat quality

***Habitat areas that are less than 10 acres in size and generally above 8,000 feet and may also be subject to land use pressures identified in the moderate category that are adversely affecting habitat quality.

Table 3.38 shows five out of thirty nine suitable unoccupied willow flycatcher habitat meadows in the non-wilderness analysis area have been identified as areas used by commercial pack stock operations. Two of the meadows are within the preferred nesting elevation zone of the flycatcher. The GT/SS Wildernesses analysis area meadows will be discussed in that section of the document.

Table 3.39 displays the suitable willow flycatcher meadow habitats in the Non-wilderness that are used as grazing pastures by pack stations, or are near enough to the pack station operations to be potentially affected by a cowbird population that uses a pack station as a feeding site. Additional discussion of these suitable meadow habitats can be found in the Biological Evaluation on file in the project record. The suitable “occupied habitats” have been identified from the Sierra Nevada Forest Plan Amendment (2004 SNFPA FEIS/ROD) (USDA Forest Service 2004). The “occupied habitat” designation indicates a willow flycatcher was detected in a meadow during the breeding season at least once since 1982. The designation does not indicate that a pair of willow flycatchers successfully nested in the meadow, or that willow flycatchers currently occupy the habitat, only that a willow flycatcher song was heard during the designated survey period.

Table 3.39. Willow flycatcher suitable habitat meadows existing condition within the non-wilderness analysis area and overlap with commercial pack station operations

Habitat Meadow (Elevation)	2004 SNFPA FSEIS/ROD Classification	Acres	Habitat Quality	Overlap With Pack Station Operations and Condition Comments
Silver Lake (7440 feet)	Occupied: Sighting of one male flycatcher in 1982, never detected again in follow-up protocol surveys.	38 (9 Forest Service, 27 Private)	High	Not used, but within cowbird flight distance from pack station. Cowbirds present
Rodeo/Evans (7720 feet)	Suitable unoccupied habitat within 5 miles of occupied Silver Lake habitat, surveyed two years to protocol. No willow flycatchers detected.	19 acres	Moderate	Grazed pasture, Meadow willow and hydrology north of road in Rodeo Pasture adversely affected by pack stock grazing. Cowbirds present
Lower Silver Lake (7240 feet)	Suitable unoccupied habitat within 5 miles of occupied Silver Lake habitat, No surveys.	10	Moderate	Not used, but within cowbird flight distance from pack station, Pack Station Day Use trail ride adjacent.
Reversed Creek Lakes (8500 feet)	Occupied: Sighting of one male flycatcher in 1982. Highly probable bird was a transient, non-nester. No surveys.	6	Low	Not used, but within cowbird flight distance from pack station. Marginal because of high elevation, small size.
Agnew Meadow (8265 feet)	Suitable unoccupied habitat: Protocol surveys not required, but meadow visited on several occasions to search for willow flycatcher presence. No willow flycatchers detected.	10	Low	Grazed Pasture. Meadow willow and hydrology adversely affected by pack stock grazing. Marginal because of isolation in river canyon and poor willow structure. No cowbirds observed
McGee (7790 feet)	Suitable unoccupied habitat: Protocol Surveys completed, No willow flycatchers detected.	33	High	Grazed Pasture. Small localized patches of willow somewhat adversely affected by pack stock grazing. Cowbirds present.
Willow Campground Meadow (9040 feet)	Conditionally Occupied: Protocol surveys completed, No willow flycatchers detected. Reclassified as Historically Occupied.	10	Low	Not used, but within cowbird flight distance from pack station. Marginal because of high elevation, small size.
Big Meadow (8840 feet)	Conditionally Occupied: Protocol surveys completed, No willow flycatchers detected. Reclassified as Historically Occupied.	3	Low	Restored from grazing for at least 6 years, marginal because of high elevation, small size and high recreation use. No cowbirds observed.
North Lake Meadow (9260 feet)	Not identified in 2004 SNFPA FEIS/ROD. Suitable unoccupied habitat. Three years of bird surveys and cowbird study (Culp and Heath 2005). No willow flycatchers detected.	10	Low	Grazed Pasture. Localized small patches of willow somewhat adversely affected by pack stock grazing. Cowbirds present. Marginal because of high elevation, high fragmentation with roads and high recreation use.

Confirmation of a singing male during the key survey period indicates the possibility that the bird is a territorial breeding male, and therefore the possibility that a nesting pair of flycatchers could be present for that year. None of the 2004 SNFPA FSEIS/ROD designated “occupied habitats” within the commercial pack station operating areas have had confirmed nesting pairs observed in them in

survey work conducted since the early 1980s. The remaining meadow habitats in Table 3.39 are classified in the SNFPA as suitable “unoccupied” meadow habitats that include meadows within a 5 mile radius of an SNFPA “occupied” habitat referred to as “emphasis” habitats in the SNFPA, as well as meadows outside of the 5 mile radius. The 5 mile radius meadows were identified in the SNFPA as those meadows closest to “occupied” meadow habitats that had a higher probability of future occupancy by willow flycatchers, and that also warranted protocol survey per SNFPA direction and timetable requirements.

Table 3.39 also summarizes the protocol survey results in each occupied meadow habitat that has occurred since 2001 that has been required by the SNFPA FEIS ROD (USDA Forest Service 2001) and FSEIS ROD (USDA Forest Service 2004) in the occupied meadow category where pack station overlap occurs. In addition there has been at least one year of survey in other good quality habitats. The surveys have failed to detect willow flycatchers within the commercial pack stock operating areas. The only known population of willow flycatchers on the INF occurs at lower Rush Creek at Mono Lake outside of the commercial pack stock operating areas.

McCreedy (2005) hypothesized that one reason the “occupied” meadows identified in the SNFPA such as in the June Lake Loop do not have willow flycatchers occupying them is the lack of a source population of the species to spread out and re-colonize suitable habitats. Harris et al. (1986) noted that the willow flycatchers observed in the June Lake Loop in a 1982 survey effort had a high likelihood of being transient, non-breeders that were on spring migration movement through the landscape. Harris did not detect any flycatchers in this area or in the South Fork of Bishop Creek in 1986.

The brown-headed cowbird is a common, abundant nest parasite of the willow flycatcher that is attracted to pack stock corral feeding areas at pack stations and at grazing pastures, and can adversely impact willow flycatcher nesting success (Verner and Rothstein 1988). The cowbird is present in many suitable habitats, especially those meadows and other riparian and non-riparian habitats within 4.2 to 6 miles of pack stations and other human developments (Verner and Rothstein 1988). The cowbird typically travels up to a 4.2 miles radius out from a feeding site such as a pack station to parasitize native song bird nests, and up to a maximum 6 mile radius to parasitize nests, according to the Verner and Rothstein study that was conducted within a zone of 21 miles from Mammoth Lakes in areas that included pack stations. The cowbird appears to have occupied Sierra habitats since the 1940s when it expanded its range from the Great Basin to the east. The species may have sporadically occurred in Mono County prior to that time period. The species lays its eggs in other bird species nests. The usual result is the other bird species such as the flycatcher rears the brown-headed cowbird young to the detriment of its own young. In most instances the flycatcher nest attempt fails, it raises fewer young, or it has to re-nest to produce its own young.

The cowbird seeks out feeding sites where grain and seed is available such as at pack stations, other stock holding areas such as small pastures or corrals where livestock are held, livestock grazing areas such as allotments, and residences, campgrounds, and resorts where bird feeders are maintained. The cowbird can then fly from these areas routinely up to 4.2 miles away to parasitize native songbird

nests by laying one egg in each nest it finds. One female can parasitize multiple songbird nests. The willow flycatcher is particularly vulnerable to nest parasitism (Verner and Rothstein 1988).

McCreedy (2005) stated in his lower Rush Creek willow flycatcher monitoring at Mono Lake that brown-headed cowbirds significantly and negatively impacted willow flycatcher nest success. Nine of fourteen active nests (64%) were parasitized by the cowbird. None of these parasitized nests produced young willow flycatchers. This is in spite of the fact the habitat was a considerable distance away from known cowbird feeding stations in the Lee Vining area. This shows the potential for cowbirds to travel long distances (in this case 3 miles) and still heavily impact riparian songbird nesting success.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternative 1 could have a potential beneficial effect on the willow flycatcher and suitable habitat within the overall analysis area. Table 3.40 summarizes the grazing strategy for the three alternatives for six meadows with willow flycatcher habitat.

Table 3.40. Summary of non-wilderness commercial pack stock grazing actions in suitable Willow flycatcher habitat - meadows affected.

Willow Flycatcher Habitat	Alternative 1	Alternative 2	Alternative 3
Rodeo and Evans Pastures	Ungrazed	Graze both pastures, fence stream in Rodeo.	Graze Evans same as Alternative 2. Rest Rodeo portion until recovered.
Agnew Meadow	Ungrazed	Graze both pastures, fence stream corridor in West Agnew out of grazeable area.	Graze East Agnew. Rest West Agnew from grazing until recovery.
McGee Meadow	Ungrazed	Graze	Same as Alternative 2.
Big Meadow	Ungrazed	No grazing	No grazing.
North Lake	Ungrazed	Graze	Same as Alternative 2.
Art's Pasture	Ungrazed	Graze	No grazing

There would likely be localized improved shrub and herbaceous habitat conditions for willow flycatcher occupancy and nesting in approximately 72 acres of suitable habitat at Rodeo-Evans, McGee, Agnew, Art's Pasture, and North Lake meadows. This represents approximately 14% (72 acres of a total of 506 acres) of the identified suitable habitat on the INF. Willow shrub density, and

foliage density that provide vegetative cover for willow flycatcher nesting would increase in some portions of these meadows with the cessation of stock holding and grazing activities. There would likely be localized areas of rapid improvement in wet meadow/wetland habitat conditions that provide for willow flycatcher foraging habitat in these meadow areas particularly in Rodeo, and Agnew meadows where hydrologic functioning of stream channels would improve in degraded functional-at-risk stream portions of these meadows. The suitable habitat at Big Meadow in the South Fork of Bishop Creek has not been grazed for six years, has made substantial recovery, and therefore suitable habitat would continue to be maintained and possibly show additional improvement.

Elimination of pack stock corrals at Frontier, Reds Meadow, McGee, Bishop, and Rainbow Pack Stations would eliminate these brown-headed cowbird feeding sites as a contributing factor to attracting and maintaining this nest parasite species population on the landscape. The 2004 SNFPA (USDA Forest Service 2004) stated that the reduction of cowbird brood parasitism pressure in the Sierra Nevada was an accepted conservation measure. This could have a potentially beneficial effect on all suitable willow flycatcher nesting habitats including meadows discussed above in the affected environment section within at least a 4.2 mile radius and up to a 6 mile maximum radius zone from these corrals based on Verner and Rothsteins (1988) study of cowbird dispersal distances from feeding sites in the Eastern Sierra.

A study of cowbird parasitism impacts on nesting riparian songbirds relevant to the willow flycatcher analysis was conducted on the INF from 2002 through 2004 at Rock Creek and Bishop Pack Outfitter pack stations and adjacent meadows (Culp and Heath 2005). The study found most cowbirds had already arrived in meadows to parasitize songbird nests well before the commercial pack stations began their operations and moved their stock up to the corrals. The study suggested more research was needed to document where the cowbirds were coming from, but the hypothesis and preliminary evidence was the cowbirds were coming from the other feeding stations in the watershed such as the campgrounds, resorts, and subdivisions, and then capitalizing on the pack stations as they began feeding of stock at the corrals in mid-June. Verner and Rothstein (1988) found that cowbirds began to move into the mountains by early May, with a peak egg laying period coinciding with the arrival of horses and cattle sometime in mid to late June.

The monitoring lends credence to a conclusion that even if pack stations were removed and operations ceased, cowbirds would still be able to survive on the landscape and parasitize songbird nests such as the willow flycatcher at meadow habitats that are used by commercial pack stock operations. As a result it is difficult to say if any substantive advantage would be gained in the removal of a pack station in such landscapes. There has never been a controlled experiment to examine the removal of a pack station and its relationship to brown-headed cowbird parasitism impacts in a landscape, especially where alternative feeding sites are available.

Alternative 2 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternative 2 may affect individual willow flycatchers but would not lead to a trend toward federal listing or loss of viability within the overall analysis area.

Implementation of 30% forage utilization in fair ecological condition meadows, and 40% in good ecological condition meadows, along with a maximum streambank disturbance standard, and range readiness on-dates in suitable habitat meadow pastures is likely to adversely modify willow flycatcher nesting habitat characteristics in portions of meadows, if meadows are grazed to these maximum utilization standards. These levels of forage utilization would decrease habitat suitability below optimal conditions for potential occupancy by the willow flycatcher. Willow flycatchers, however do nest in grazed meadows in the Sierra Nevada (Green et al 2003). Habitat modification is most likely to continue in portions of Agnew, Rodeo, Evans, Art's Pasture, and North Lake Pastures, and to a much lesser extent in McGee Meadow. McGee has traditionally been used at much lighter forage utilization levels than the other three pastures and would likely continue to be grazed relatively lightly. Alternative 2 would implement 2004 SNFPA FEIS/ROD direction to implement late-season grazing if willow flycatchers area detected in meadows grazed by commercial pack stock.

Portions of all 72 acres of suitable unoccupied willow flycatcher habitat in the meadows in Table 3.40 pastures that would be grazed would continue to be maintained in a fair vegetative ecological condition. This represents approximately 14% (72 acres of a total of 506 acres) of the identified suitable habitat on the INF. This would include stream habitats at Agnew Meadow, and Rodeo/Evans where hydrologic functioning problems would continue such as active headcuts, incised stream sections, and areas of meadow where the water table has been reduced. Pack stock would continue to affect portions of willow stands as a result of stem breakage as stock trail through willows and push into willows to graze available forage at the base of the shrubs and shrub interspaces. This is likely to reduce shrub foliage cover, and reduce habitat suitability for potential occupancy by willow flycatcher. This type of effect is evident in Rodeo/Evans Pasture, Agnew Meadow Pasture, and to a lesser degree in the McGee Creek Pasture, Art's Pasture and North Lake Pasture.

Less used portions of pastures would retain areas of willow habitat that would continue to exhibit good stand structure for potential use by flycatchers. There could be some slow improvement in portions of willow habitats in Rodeo and West Agnew Pastures over the long-term with adaptive management measures that may be implemented such as exclusion of the stream corridor in these meadows out of the allowable grazing area. It is unknown how this would affect potential occupancy of any of these meadows by willow flycatcher.

Green et al. (2003) in their discussion of the effects of livestock grazing on willow flycatcher habitats cited several authors that concluded livestock grazing could adversely alter willow flycatcher habitat including changes in willow spatial patterns and vigor, the facilitation of brown-headed cowbird parasitism, and the exacerbation of erosion gullies that prematurely dry portions of wet meadow habitat. They emphasized two issues must be addressed; meadow condition must be

improved, and the maintenance of wet meadow conditions must be restored during the breeding season. Implementation of Alternative 2 would address the two issues over a long-term recovery approach with an uncertain timeframe and outcome.

A recent study by Cole et al. (2004) examined four years of repeated grazing use by pack stock in mountain meadows of Yosemite National Park. The study results indicated that repeated pack stock grazing of high montane meadows on an annual basis resulted in an annual reduction of herbaceous cover and productivity. Long-term repeated annual grazing of montane meadows at pack station pastures at moderate utilization levels of 30 and 40% has the potential to lower overall meadow productivity, and result in lowered vegetative cover, litter cover, graminoid cover, an increase in bare soil, and altered meadow species composition. These effects are most likely to continue at Rodeo/Evans Meadow, and Agnew Meadow, and to a lesser degree in McGee Meadow, Art's Pasture, and North Lake Meadow.

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 (Green et al. 2003). Green et al. stated "Further research, directed at livestock impacts on willow flycatchers and their habitat in the Sierra Nevada is needed before sound conclusions can be drawn."

Vegetative productivity losses along streambank riparian in particular could affect the stability of streams over time, with increased risk of headcut development, stream incision, and stream widening with 30 to 40% utilization levels. The 20% maximum allowable stream bank disturbance standard may not mitigate this risk factor. 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 these impacts described above when meadows are grazed at maximum allowable forage utilization levels during the summer months of July and August.

The continued presence of commercial pack station corrals and pastures would maintain feeding sites for brown-headed cowbirds that could affect any willow flycatcher breeding pairs attempting to successfully nest in habitats within a radius of at least 4.2 miles from these stock holding areas. These suitable habitats include at a minimum all 2004 SNFPA FEIS/ROD "occupied," "historical," and "conditionally occupied" sites identified in Table 26 in the Affected Environment section as well as the other suitable emphasis unoccupied habitats. The 4.2 mile radius is a minimum estimate of effect extent since cowbirds have been documented to move up to 6 miles from a feeding center, although the number of cowbirds that move beyond the 4.2 mile radius distance drops off substantially according to Verner and Rothstein (1988).

Nest parasitism on willow flycatcher nests by brown-headed cowbirds was between 4 to 15% on an annual basis in the Central Sierra Nevada, although local rates have been documented up to from

44% to 66% such as at the Lake Tahoe Basin willow flycatcher population, and the Lake Isabella population (Green et al. 2003). Rates above 30% are believed to be significant. However, it has been suggested that even low parasitism rates can have a significant impact on population trend in very small populations (USDA Forest Service 2001).

There is considerable difficulty in assessing this type of potential effect given a number of confounding factors, and uncertainties. The most obvious is there are no nesting pairs of willow flycatchers in the analysis area. If one pair was to colonize any of these meadows, and a brown-headed cowbird parasitized their nest, it could be a highly significant effect if it resulted in complete nesting failure for the year. However the confounding aspect of this is a willow flycatcher can re-nest a number of times as evidenced in a study of the breeding willow flycatcher population at Rush Creek. McCreedy (2004) found at lower Rush Creek that three of thirteen females abandoned their nests several times because of affectors such as predation and cowbird parasitism. Nine of fourteen active nests (64%) were parasitized by the cowbird. Two of those thirteen nesting females abandoned their parasitized nests several times, rebuilt new nests and laid a new clutch of eggs, and then ultimately successfully re-nested and fledged one and two young respectively.

This study demonstrated that willow flycatcher have the ability to somewhat negate the adverse effects of cowbird parasitism, as well as other nest failure factors such as predation through multiple nest building and egg laying attempts. McCreedy (2005) stated however, that brown-headed cowbirds significantly and negatively impacted willow flycatcher nest success at Rush Creek. There is always the management option to improve nest success through human removal of cowbird eggs from willow flycatcher nests should flycatchers nest in any of the meadows discussed. This could effectively mitigate any adverse effects, but this type of mitigation would require intensive management.

Use of campsites, roads and trails in this analysis area for stock drives, day rides and destination use would not affect the willow flycatcher or its habitat.

Alternative 3 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternative 3 may affect individual willow flycatchers, but it would not contribute to a trend toward federal listing of the species, or loss of viability within the overall analysis area.

Implementation of Alternative 3 would allow for rapid improvement in vegetative conditions on 13 acres of low and moderate suitability unoccupied willow flycatcher habitat in West Agnew, and in the Rodeo portion of the Rodeo/Evans pasture. There would be a relatively rapid improvement in willow shrub structure with an increase in willow foliage density and shrub density once the pastures are rested. There would also be an improvement in herbaceous vegetation species composition and vigor that may result in an improvement in willow flycatcher foraging habitat suitability. Three acres of low suitability habitat at Art's Pasture would also be rested from grazing and allow for some level of improved vegetative structure. This represents a total improvement on approximately 3% (16 acres of a total of 506 acres) of the identified suitable habitat on the INF.

Approximately 56 acres of moderate and high suitability unoccupied habitat at McGee, Evans, and North Lake pastures would likely have low levels of localized vegetative impacts to the willow shrub and herbaceous vegetative component with the implementation of Amendment #6 grazing standards. This represents approximately 11% (56 acres of a total of 506 acres) of the identified suitable habitat on the INF. Amendment # 6 forage utilization levels are likely to be lower than Alternative 2 so there is likely to be more improved vegetative condition in willow flycatcher habitat. In the longer term there may be additional improvement in the Evans pasture if a rest-rotation management strategy is implemented in combination with the Rodeo pasture portion when the latter has recovered sufficiently to graze.

Alternative 3 would implement the 2004 SNFPA FEIS/ROD late season grazing standard like Alternative 2 if willow flycatchers are detected in these meadows. There would also be the management option identified in Alternative 2 of cowbird egg removal from any active willow flycatcher nests.

The effect of pack stations providing feeding sites for brown-headed cowbirds that could potentially affect any willow flycatchers attempting to nest in adjacent suitable habitats would be the same as Alternative 2. The effects of the use of camps, trails and roads for day rides, stock drives and destination use would be the same as Alternative 2.

Northern Goshawk

Affected Environment

The goshawk inhabits mature and old growth forests in the red fir, mixed conifer, Jeffrey pine, lodgepole pine, and riparian cottonwood and aspen forests on the INF that overlap with areas of commercial pack stock operations. There are approximately 264,434 acres of suitable goshawk habitat on the INF based on a GIS query of satellite vegetation imagery of suitable California Wildlife Habitat Relationships (CWHR) habitat types. Most suitable habitat occurs in the forest lands of the Non-wilderness around Mammoth Lakes west and east of Highway 395, and a large block of suitable habitat in non-wilderness on the Kern Plateau, and in the GT/SS Wildernesses. Habitat trend at the Forest-scale has declined slightly due to several large landscape fires such as the McNally Fire in 2004, and the Rainbow Fire in the early 1990's. Older Forest types were converted to early successional stages that will become suitable foraging habitat in roughly 5 to 6 decades.

Suitable goshawk nesting habitat within the Non-wilderness occurs at or directly adjacent to the following pack station locations: Reds and Agnew Meadows, Mammoth Lakes Basin, McGee Creek, Rock Creek, North Lake, Rainbow, and Cottonwood pack station areas. Occupied goshawk nest territories occur in the North Fork of Bishop Creek adjacent to the pack station, and at Sawmill Meadow area in the Glass Mountains in non-wilderness areas that overlap with commercial pack stock operations. Goshawk also move through the suitable forested habitat areas around the pack station facilities and pastures as they hunt bird and mammal prey. Goshawk have been observed

perched on the forested edge of the Agnew Meadow Pasture, and on two occasions birds were observed flying over the cottonwood forest at McGee Pack Station.

Visual surveys to locate territorial goshawk or their nests were conducted on the INF from 2001 through 2006 while visiting all pack station facilities, pastures and when traveling in suitable habitat along the day use and other use trail system corridors. No new goshawk nests or territorial birds that might indicate the presence of a nesting pair were discovered within the commercial pack stock operating areas. The status of the goshawk population on the INF appears to be stable based on annual surveys of 34 known nesting territories, which continue to show goshawk are present during the nesting season.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternative 1 could have a potential beneficial effect to goshawk, and the species suitable habitat within the overall analysis area.

The removal of pack stations, and elimination of commercial pack station operations may result in an increase in suitable habitat of a minimum of approximately 58 acres of goshawk nesting and foraging habitat at Reds/Agnew Meadow, Mammoth, McGee, Rock Creek, Rainbow and Cottonwood pack stations in suitable red fir, lodgepole pine and cottonwood riparian forests. There would also be an unknown area of perimeter suitable forested habitat surrounding the pack stations that would no longer be influenced by the human disturbance activities associated with the pack station. These perimeter forested areas would become more suitable for goshawk occupancy with the reduction in adjacent human disturbance activities. The acres of perimeter suitable habitat are difficult to define because of the variable response of individual goshawk to human presence.

Approximately 6,088 acres of suitable habitat overlap with trail and road corridors used by commercial pack stock operations. Elimination of day use trail rides, overnight trips and destination camps, and stock drives in suitable goshawk habitats such as in the South Fork of Bishop Creek, McGee Creek, Mammoth Lakes Basin, Sherman Lakes, the Sand Canyon road corridor, Cottonwood Basin, and the Glass Mountains may have a minor and negligible positive effect on these acres of suitable habitat through a slight reduction of human disturbance within the habitat corridor from late spring through summer, and as a result provide a more favorable suitability for goshawk use of these habitat areas.

Alternatives 2 and 3 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternatives 2 and 3 may affect individual goshawk, but would not contribute to a trend toward federal listing of the species, or loss of viability within the project area.

Reds and Agnew Meadow, Mammoth, McGee, Rock Creek, Rainbow and Cottonwood pack stations' facilities would continue to occupy approximately 58 acres of suitable goshawk nesting

habitat or .02% of the total suitable goshawk habitat on the INF. The pack station forested areas of suitable habitat where the facilities are located and a perimeter area of habitat would remain low suitability for occupancy by the species since human disturbance activities would remain high.

Goshawk would likely seek out lower human disturbance areas away from the pack station areas to find suitable nesting habitat. Direct human disturbance effects to goshawk, and a minor and negligible effect to goshawk habitat suitability would continue along trail and road corridors on approximately 6,088 acres of suitable goshawk habitat, or 2.3% of total suitable goshawk habitat acres on the INF. There would be temporary disturbances to habitat suitability during the late spring and summer months on these acres associated with commercial pack stock activities along the trail corridors used by the pack stations for day rides, overnight trips, and stock drives such as in the Mammoth Lakes Basin, Sherman Lakes areas, Sand Canyon road corridor, and in the Glass Mtns. This type of human disturbance is likely to cause goshawk to temporarily leave and avoid such use corridors, and may disrupt goshawk feeding or perching activities for variable periods of time.

Individual goshawks have demonstrated varying levels of tolerance to adjacent human presence such as around campgrounds, and trails. On the INF nests are occasionally constructed along trails to take advantage of open flight-paths to the nest. The 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 humans who come within close proximity to the nest. This can result in humans 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 or reports of commercial pack station operators or clients attempting to harm goshawk.

Goshawk like other raptors may adapt to tolerate adjacent human disturbance activity, especially once young are present in the nest. Hargis et al. (1991) examined several goshawk territories around Mammoth Lakes California in non-wilderness areas where commercial timber harvest and dispersed recreation uses occurred. 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 small developments such as pack station facilities, and commercial pack stock use on trail corridors in suitable habitats. There are substantial undisturbed areas of adjacent habitat around pack station facilities and trail corridors in some areas such as the Reds Meadow pack station area where a goshawk has the ability to avoid human disturbance areas, and have a successful nesting territory. The probability of this happening in an area such as around Mammoth Pack Station is less—probably because of all the developments and high recreational use in the Mammoth Lakes Basin.

There are nest territories that have been monitored for years on the INF where goshawk successfully nest and fledge young adjacent to low to moderate levels of human use along trails and roads, and adjacent to campgrounds that are as close as 100 yards from a nest tree. The birds

continue to occupy the territories without closure buffers year after year and appear to produce young at levels similar to nest territories more distant from human use areas. There has not been a comparative study, however to assess the nest success and productivity of these sites against undisturbed nest territories.

Great Gray Owl

Affected Environment

There is no record of a resident, nesting population of this species on the INF. There are three historical records of single owls on or near the INF (Winter 1986). The locations indicate transient owls moving across landscapes. The Valentine Reserve private land observation occurred near the town of Mammoth in 1975, another at Agnew Pass in 1950, and one near Mt. Alice in Big Pine Creek in 1974.

The habitat on the Inyo appears to be relatively marginal compared to known nesting areas in lower elevation forests on the west side of the Sierra Nevada. Meadows are generally substantially smaller on the Inyo, as well as the fact that winters are substantially more severe at the higher elevation forests and meadows above 7,500 feet on the INF. Higher elevation snow packs may hinder great gray owl foraging ability and preclude breeding territory establishment (Jon Winter great gray owl researcher, personal communication 2004). There are approximately 38,021 total acres of suitable great gray owl habitat on the INF largely around meadows in the lower elevations of the Kern Plateau, and the Middle Fork of the San Joaquin River. These forested areas occur up to 9,000 feet in elevation. Habitat trend has declined due to the McNally Fire of 2002 that converted suitable nesting habitat around Jordan Meadow to early successional unsuitable vegetation types.

Preferred forested nesting habitats are generally below 8,000 feet in the Sierra Nevada according to Winter (1986). Great gray owl nests in the Sierra that have had persistent occupancy were generally associated with meadows greater than 25 acres in size. Meadows as small 10 acres have been known to support infrequent nesting (USDA Forest Service 2004). Nests in the Sierra Nevada have been found to be generally within 840 feet of a meadow edge with a mean distance of 500 feet (USDA Forest Service 2004). The only known breeding populations are found in Yosemite National Park, and the Stanislaus and Sierra National Forests, far to the north and south of the Park.

Suitable nesting habitat for the great gray owl within the Non-wilderness portion of the analysis area is likely limited to the mid elevation red fir, and mixed conifer forests adjacent to meadows of the Middle Fork of the San Joaquin watershed area such as at Agnew Meadow (approx. elevation 8650). Agnew Meadow is the only meadow in this portion of the analysis area that is large enough and has suitable adjacent forested habitat where great gray owls could nest.

The INF LRMP (USDA Forest Service 1988) as amended by the 2004 SNFPA FEIS/ROD S&G 35 directs forest managers to conduct additional surveys to established protocols to follow up reliable sightings of great gray owl. No reliable great gray owl sightings have occurred within the Non-wilderness portion of the analysis area therefore surveys have not been conducted. There is little

probability of a “population” of great gray owls on the INF. Monitoring for the species population distribution has been conducted by a review of sightings to determine if follow-up survey is warranted, since there has never been a record of nesting great gray owls on the INF, or anywhere in the vicinity to suggest a resident population exists.

Environmental Consequences

Alternatives 1 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternative 1 could have a slight potential beneficial effect on the great gray owl and suitable habitat. The removal of pack station facilities on 2.7 acres, and the cessation of grazing on 32 acres at Agnew Meadow, as well as the cessation of pack stock use on the trails at Agnew Meadow could improve the potential use of the Agnew Meadow area for nesting and foraging use by the owl. The facility area of habitat would be restored with the removal of the buildings and parking area. Elimination of commercial pack stock use of trails and destinations would have a minor and negligible positive effect on 723 acres of suitable habitat primarily in the Middle Fork of the San Joaquin. This represents 1.9% of the 38,021 suitable habitat acres on the INF.

Alternative 2 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternative 2 may affect individual great gray owls, but it would not contribute to a trend toward federal listing of the species, or loss of viability within the overall analysis area.

Implementation of Alternative 2 at the full forage grazing utilization on 32 acres at Agnew Meadow could lead to annual reductions in meadow vegetative cover by end of season that could potentially lower vole populations, one of the two principal prey genera identified by Winter (1986). Winter also identified the pocket gopher as another principal prey item. Great gray owls could potentially shift their diet to capitalize on gophers, a species that is relatively abundant in meadow and forested habitats.

The effect of commercial pack stock grazing on great gray owl prey species abundance would probably not preclude use of the area for nesting by great gray owls, or result in the species being unable to successfully nest and rear young since in addition to pocket gopher prey availability, there are other nearby ungrazed meadows where vole populations are likely to be maintained at a high level and provide additional high quality foraging habitat.

Continuation of use of the pack station facilities on 2.7 acres, and the existing trail system for day rides and wilderness pack trip access along the perimeter forested zones around Agnew Meadow may cause great gray owls to be occasionally flushed and displaced to other areas, if the species occupies the habitat. The owl may be displaced to utilize habitats further away from the trail corridor, or be flushed from perches around the meadow for some period of time. Use of trails and destination would have a temporary, minor and negligible effect on habitat suitability from late spring through summer on 723 acres or 1.9% of the total suitable habitat acres on the Forest.

Alternative 3 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternative 3 may affect individual great gray owls, but it would not contribute to a trend toward federal listing of the species, or loss of viability within the overall analysis area.

Great gray owl foraging habitat would be gradually restored to highly suitable conditions on 32 acres at Agnew Meadow since grazing would be discontinued until meadow conditions are restored. Ungrazed vegetation provides cover that promotes occupancy of meadow habitats by voles. The cessation of grazing in the meadow would also improve meadow hydrologic functioning and vegetative species composition over the long-term. This would improve conditions for vole occupancy in the portions of the meadow where stream channel incisement and widening, soil compaction, and heavy forage utilization levels have adversely affected vegetative species composition, and led to lower vegetative vigor and growth. Otherwise the effects of implementation of Alternative 3 on habitat suitability are the same as Alternative 2.

California Spotted Owl

Affected Environment

A single spotted owl was detected in the Middle Fork of the San Joaquin in suitable red fir habitat below Agnew Meadow as part of Forest-wide spotted owl surveys in the mid 1990s. The conclusion of the survey effort was that the owl was a non-breeder, possibly moving through the area. Follow-up surveys failed to detect the owl. There is no record of spotted owls nesting in the watershed. The old growth and mature red fir and mixed conifer forests between Agnew Meadow, and Reds Meadow pack station, and the non-wilderness trail segments in the Middle Fork are considered marginal suitable spotted owl foraging habitat, especially since the Rainbow Fire in 1994 converted several thousand acres of high quality suitable habitat in the watershed to unsuitable conditions for owl use. As a result the remaining old growth forests are unlikely to be suitable nesting habitat since they are small patches that are highly fragmented and small in acreage amidst a larger matrix of unsuitable forests. The total forest acres of suitable habitat are on the order of 105,037 acres. Habitat trend has declined largely as a result of the loss of highly suitable late seral forest habitat in the McNally Fire in 2002, in the GT Wilderness around Jordan Meadow.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternative 1 could have a slight potential beneficial effect on the spotted owl and suitable habitat.

Removal of pack station facilities on 2.7 acres on the forested edge at Agnew Meadow, and facilities on 18.2 acres in the Reds Meadow area, and cessation of commercial pack station use of facilities and trails in the watershed may provide a minor and negligible improvement in overall habitat suitability for spotted owls. Elimination of commercial pack stock use of trails and

destinations would have a temporary, minor and negligible positive effect from late spring through summer on habitat suitability on 2,063 acres within these habitat corridors, primarily in the Middle Fork of the San Joaquin. This represents 2% of the 105,037 suitable habitat acres on the INF. The Alternative would not have any substantive effect on the owls since the species is nocturnal and would not be affected by the elimination of commercial pack station activities.

Alternatives 2 and 3 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternatives 2 and 3 may affect individual spotted owls, but would not contribute to a trend toward federal listing of the species, or loss of viability within the overall analysis area.

Continuation of pack station facilities on 2.7 acres on the forested edge at Agnew Meadow, and facilities on 18.2 acres in the Reds Meadow area, and commercial pack station use of facilities and trails in the watershed may provide a minor and negligible, temporary reduction in habitat suitability on 2,063 acres from late spring through summer. This represents 2% of the 105,037 suitable habitat acres on the INF. The Alternative would not substantively affect the owl since the species is nocturnal and would not be affected by the continuation of commercial pack station activities.

Marten

Affected Environment

Marten appear to be common inhabitants within the non-wilderness pack station operating areas in forested habitats of the Sierra Nevada mountain range, primarily associated with mature and old growth mixed conifer, red fir, and lodgepole pine forests generally above 8,000 feet. The species can also be found at higher elevations including the sub-alpine whitebark and foxtail pine forests throughout the year, as well as into the alpine zone during the summer months. The marten population distribution in the Central and southern Sierra appears to be continuous. The total acres of suitable marten habitat on the INF are on the order of approximately 187,502 acres based on a GIS query of satellite vegetation imagery of suitable CWHR habitat types. Habitat trend has declined since 2001, largely as a result of the McNally Fire. The largest area of overlap with pack station facilities and day ride operations is in the Mammoth Lakes Basin. Reds Meadow Pack Station, Rock Creek Pack Station, Rainbow Pack Station, and Cottonwood Pack Station facilities and day ride trail use areas also are located in suitable marten habitat.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternative 1 could have a slight beneficial effect on the marten.

Removal of the pack station facilities on approximately 53 acres at Agnew Meadow, Reds Meadow, the Mammoth Lakes Basin, Rock Creek, the south fork of Bishop Creek, and Cottonwood

Creek, and the cessation of pack station use of trails for day rides and wilderness pack trip access in these watersheds would provide a temporary, minor and negligible improvement in habitat suitability within these habitat corridors from late spring through summer for marten within the Non-wilderness on 3,652 acres. This represents roughly 2% of the total suitable habitat for marten on the INF. Human disturbance effects to marten individuals would be similarly, slightly reduced in suitable habitat in and around the facilities and along trail corridors and destinations.

Marten have been observed during recent radio-telemetry studies on the Inyo in 1995 and 2004 to routinely inhabit areas of regular human disturbance around recreational developments where cabins, other facilities, and trail systems occur. Insufficient research is available on human disturbance effects to fully understand how recreation and small scale recreation facilities such as pack station offices and cabins affect marten populations.

Alternatives 2 and 3 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternatives 2 and 3 may affect individual marten, but would not contribute to a trend toward federal listing of the species, or loss of viability within the overall analysis area.

The continuation of use of 53 acres of commercial pack stock facilities in suitable forested marten habitats at Reds and Agnew Meadow, Mammoth, Rock Creek, Rainbow, and Cottonwood pack stations would result in a minor reduction in suitable habitat.

Continuation of the pack station facilities on approximately 53 acres at Agnew Meadow, Reds Meadow, the Mammoth Lakes Basin, Rock Creek, the south fork of Bishop Creek, and Cottonwood Creek, and the continuation of pack station use of trails for day rides and wilderness pack trip access in these watersheds would provide a temporary, minor and negligible decrease in habitat suitability within these habitat corridors from late spring through summer for marten within the Non-wilderness on 3,652 acres. This represents roughly 2% of the total suitable habitat for marten on the INF. Human disturbance effects to marten individuals would be similarly, slightly increased during this time period in suitable habitat in and around the facilities and along trail corridors and destinations.

The effects are likely to be of minor consequence to the overall marten population since there is abundant high quality habitat surrounding the facilities and marten appear to have somewhat habituated to human presence. The species can range over large areas adjacent to these corridors to find suitable denning areas, foraging habitats, and rest sites.

Wolverine and Sierra Nevada Red Fox

Affected Environment

The wolverine and Sierra Nevada red fox could potentially range throughout the entire analysis area, although the highest probability habitats for their occurrence would be in the forested sub-alpine landscapes according to The California Department of Fish and Game Status Report of Rare, and Threatened, Endangered Plants and Animals of California (CDFG 2005). The report notes the

wolverine has been reported in habitats from 1,600 feet to over 14,000 feet. Habitat where sightings have occurred generally consists of open terrain near or above timberline. The report notes that the species can inhabit a variety of habitat types in the above elevation range. The same report states that the Sierra Nevada red fox is known to inhabit similar vegetative types as the wolverine from 3,900 feet to 11,900 feet, with the preferred habitat as red fir and lodgepole pine forests. The report lists the status of both species as unknown. Neither species has had a verifiable detection on the INF for many decades in spite of a variety of survey efforts.

Habitat trend for both species has remained relatively stable since 2001.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternative 1 could have a slight potential beneficial effect on the wolverine and Sierra Nevada red fox, and their suitable habitat within the overall analysis area.

Removal of commercial pack station facilities on 58 acres, as well as the cessation of all activities at trails and destinations on 4,561 acres of wolverine habitat and 3,174 acres of Sierra Nevada red fox habitat, would result in a minor and negligible improvement in habitat suitability for both these species. This amounts to roughly 1.7% of 271,550 acres of wolverine habitat, and a 1.3% of 242,467 acres of Sierra Nevada red fox habitat.

The effects analysis is based on potential disturbance within suitable habitat since neither species can be detected.

Alternative 2 and 3 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternatives 2 and 3 may affect individual wolverine and Sierra Nevada red fox, but would not contribute to a trend toward federal listing of the species, or loss of viability within the overall analysis area.

Continuation of commercial pack station facilities on 58 acres, as well as the continuation of all activities at trails and destinations on 4,561 acres of wolverine habitat and 3,174 acres of Sierra Nevada red fox habitat, would result in a minor and negligible decrease in habitat suitability for both these species. This amounts to roughly 1.7% of 271,550 acres of wolverine habitat, and a 1.3% of 242,467 acres of Sierra Nevada red fox habitat.

There is a very low probability of any human disturbance effects from commercial pack stock operations at this time since neither species appears to be present. Wolverine could be adversely affected by pack station uses in the vicinity of facilities, and trail and road corridors if the species were present. The species appears to avoid areas of human occupation. Human disturbance encounters can have negative effects on this species when they occur to the point where wolverine may avoid areas of continuous human use (Ruggerio et al. 1994). It is unknown how pack station facilities and trail uses could affect the Sierra Nevada red fox. A telemetry study of this species is

underway on the Lassen National Forest, and Lassen National Park. Study results are not available at this time. The study may provide insight into this species tolerance of human disturbance.

Sage Grouse

Affected Environment

There are approximately 375,000 acres of suitable sage grouse habitat on the INF primarily in the White Mountains, Mono Basin, and Long Valley. Habitat trend appears to be moving in a downward trend because of loss of sagebrush habitats to wildfire with subsequent conversion of some acres to cheatgrass annual grassland habitats, as well as a climatic and fire suppression conversion in sagebrush habitats to pinyon-juniper woodlands and savannahs. Habitat has declined at a minimum from roughly 367,429 acres in 2001 to 364,391 acres in 2006, less than 1% based on CWHR analysis. The minimum estimate is based on the fact that the CWHR query of suitable habitat cannot detect invasive weed spread, or gradual low density pinyon expansion throughout mature sagebrush habitats.

Sage grouse habitat within the commercial pack stock operating areas is found in sagebrush habitats in and around the perimeter of Long Valley which primarily overlap areas where trail rides and stock drives occur. These sagebrush habitat areas include locations west of Highway 395 on Lower Hilton Creek, McGee Creek, Convict, and Laurel Creeks, and east of 395 Hot Creek at Little Hot Creek, and all of the sagebrush habitats in the Glass Mountains. Approximately 58,000 acres of suitable habitat are located on the INF in Long Valley that include the areas where stock drives and trail rides occur.

According to data published in the Greater Sage Grouse Conservation Plan for Nevada and Eastern California the population of sage grouse in the Mono Basin Population Management Unit (PMU) which includes the Long Valley area was estimated in 2004 to be between approximately 1177 and 1324 grouse, with eight active leks (NDOW 2004). Long-term lek count data for Long Valley shows the trend in breeding population to be above the long-term average since 1995, with a steady upward trend since that year. The largest concentration of sage grouse breeding habitat (courtship leks) occurs on Los Angeles Water and Power lands and BLM lands where 7 of the 8 active leks occur below the Forest boundary around Crowley Lake.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternative 1 could have a slight potential beneficial effect on sage grouse and its suitable habitat within the overall analysis area.

The cessation of commercial pack stock use of stock drive road corridors, and the use of day ride trails from McGee to Hilton Creek, and up the Laurel Creek road in Long Valley would amount to a slight reduction in potential human disturbance to sage grouse in suitable sagebrush habitats, and a

minor and negligible improvement in habitat suitability. Approximately 5,358 acres of suitable habitat or 1.5% of the total 364,391 acres of suitable habitat on the INF would improve in habitat suitability from late spring through summer.

Local sage grouse research and anecdotal observations suggest sage grouse show substantial habituation to vehicle and hiker traffic along predictable routes. Recent U. S. Geological Survey sage grouse research work in Long Valley and other grouse habitats on the INF with radio-collared sage grouse showed approximately 33% (863 out of 2193 locations) of all telemetered sage grouse locations were located within 100 meters of a road (Cory Overton, USGS researcher, personal communication). General observations of sage grouse in the White Mountains by Forest personnel also have revealed large flocks of sage grouse numbering up to 50 routinely observed along the roads near the University of California Crooked Creek Research Station, a well used public road. The birds generally remain in place or flush a very short distance as vehicles pass along the road.

The reduction in disturbance potential at stock drive routes in Long Valley is probably not substantial based on the observations above, and the fact that stock drives occur for very short passes through habitat over a two to four day time frame in spring and late summer during the year on any given road.

There may also be a slight reduction in the possibility of any additional spread of invasive weeds such as cheatgrass and tumbling mustards along roads and trails from the elimination of stock drives and day rides. These species of weeds degrade sage grouse habitat by reducing native vegetation available for use for sage grouse nesting and brood rearing cover, and forage availability.

Alternatives 2 and 3 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternatives 2 or 3 may affect individual sage grouse, but would not lead to a trend toward federal listing or loss of viability of the species within the overall analysis area.

Continuation of commercial pack stock drives on Forest roads in Long Valley, and day use ride trails such as between McGee and Hilton Creeks, and up the Laurel Creek road through suitable sage grouse habitat would likely result in occasional human disturbance events to sage grouse that have the potential to flush grouse from the trail and road corridor on approximately, 5373 acres of suitable habitat. This effect would occur on 1.5% of the estimated 364,391 acres of suitable sage grouse habitat on the Forest. This is a temporary, minor and negligible disturbance effect to the individual sage grouse, and a minor and negligible effect to habitat suitability since it is limited to the immediate perimeter of the road and trail, and the areas on Forest where the roads and trails are used are relatively lower sage grouse use areas in Long Valley. Alternative 3 would allow half the number of stock drives than Alternative 2 and therefore somewhat lessen the effects described.

The use of these areas in sage grouse habitat would slightly increase the probability of additional invasive weed spread along these corridors of habitat, and potentially lower habitat suitability. Many of the roads in Long Valley, and the road up Laurel Creek as an example already have cheatgrass in low to moderate density on Forest land along the sagebrush margins so the effect may be moot.

Yosemite toad

Affected Environment

The majority of suitable Yosemite toad habitat occurs outside of the non-wilderness analysis area in the John Muir, Ansel Adams, and Hoover Wilderness areas. Yosemite toad populations also occur in Upper Glass Creek and Deadman Creek watersheds that are outside the commercial pack stock operating areas. Commercial pack stock operations overlap in only one location in the non-wilderness portion of the analysis area where a day ride trail occurs along the edge of a forested meadow area south of Lake Mary in the Mammoth Lakes Basin.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternative 1 would have no effect on the Yosemite toad or its suitable habitat.

Removal of pack station facilities would have no effect on the Yosemite toad. Elimination of commercial pack stock use for day rides on the trail just above the Yosemite toad breeding meadow south of Lake Mary would not have any substantive effects to then Yosemite toad or its habitat. The trail would continue to be used by other trail users such as hikers and mountain bikers.

Alternatives 2 and 3 – Direct and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternatives 2 or 3 may affect individual Yosemite toads, but would not lead to a trend toward federal listing or loss of viability of the species within the overall analysis area.

Continuation of commercial pack stock facility use would have no effect on the Yosemite toad. Continued use of the day use trail at Lake Mary may contribute a slight amount of sediment into the suitable Yosemite toad meadow pools below the trail. It is unlikely this would have adverse effects on the toad's habitat or use of the habitat. It is unknown if Yosemite toads occasionally are found on the trail as has been observed in other areas of the Forest. If they do on rare occasions, there could be a very low probability a toad could be trampled by a passing day ride.

Mountain Yellow-legged Frog

Affected Environment

According to Inyo National Forest files, several stream dwelling and lake dwelling mountain yellow-legged frog populations exist within the Coyote Flat area, as well as a population in Birch Creek (Sand Canyon). According to Curtis Milliron of California Department of Fish and Game (pers. com. Feb. 2006), as of the summer of 2005, the Coyote Flat population is strong and healthy with no signs of the Chytrid disease (*Batrachochytrium dendrobatidis*), which has been implicated in amphibian declines (LJ Rachowicz, 2003). Mountain yellow-legged frogs require fishless lakes and ponds, as research has shown that the presence of fish that which have been introduced into lakes that frogs

inhabit have led to major declines in population numbers and distribution of these frogs (Knapp 2004). The Chytrid disease is a concern for the populations in the Coyote Flat area because of the easy accessibility of this area to people, cattle, vehicles and any other type of vector that may carry this fungus into mountain yellow-legged frog populations. In 2002, the Forest Service did install a bridge at a vehicle crossing on Cow Creek in attempts to reduce the risk of contamination from vehicles, and also to reduce the impacts on the frog habitat from multiple crossing areas.

The Birch Creek population was impacted in the summer of 2002 by a wildfire which burned through the riparian area where the frogs resided. Because there was no population data prior to the fire, it is not known if the few remaining observed frogs indicate a declining or stable population. Reproduction has been observed in 2003 and 2004 (personal communication Curtis Milliron), but it is unknown if the tadpoles will survive to adulthood. Currently, there are no pack-stock activities that overlap with this population.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

Currently, no commercial pack-stock operations are in operation within the Coyote Flat area or Birch Creek. Elimination of pack-stock operations would have no effects on this species within these areas.

Alternatives 2 and 3 – Direct and Indirect Effects

No proposed commercial pack-stock operations overlap in the Birch Creek area, so these alternatives would have no effect on this area. There are no current uses by pack-stock in the Coyote Flat area; however, there is a proposal for a potential stock drive event. This proposal would use existing stock drive trails up Shannon Creek to Onion Creek, around the west and north-west flank of Sugarloaf mountain, northerly along the road, and then across the meadow to the DWP land where the proposed overnight camp would be. There is no authorized grazing on Forest Service administered lands, and the event would not intercept the mountain yellow-legged frog populations.

MIS Mule Deer

Affected Environment

A number of Inyo and Mono County herds and the Monache deer herd at the south end of the Forest range throughout the Non-wilderness analysis area. There are approximately 1,530,540 acres of suitable deer habitat on the INF based on California Wildlife Habitat Relationships (CWHR 2005) vegetation classes queried from remotely sensed vegetation satellite imagery. Deer habitat trend has declined slightly, and has changed by approximately 47,000 acres from mature shrub communities to early successional habitats as a result of wildfire. Such fires change habitat structure, but the habitat still remains suitable for mule deer, usually providing an increase in forage quality, and a corresponding reduction in hiding cover.

The slight decline to habitat quality in recent years is a result of the gradual spread of cheatgrass, Russian thistle, and tumbling mustards, as well as other non-native plant species into large landscape wildfires. These species have the ability to dominate the biomass of the plant associations of some portions of wildfire areas depending on slope, aspect, and soil type. Normally the fires would be highly beneficial to deer since native grasses, forbs and shrubs would be regenerated and become more palatable, however cheatgrass, Russian thistle and tumbling mustards are largely unpalatable to deer and reduce the quality of the foraging habitat. Deer population distribution on the Forest has remained stable since the LMP according to CDFG Deer Analysis Unit 11 data that includes all herds found on the INF.

The commercial pack station operations overlap in time and space primarily with summer deer range. Summer range for deer within commercial pack station operating areas includes all forested and shrub habitat types, especially those within proximity to riparian habitats where water, high quality forage, and escape cover are intermixed. The dry, desert shrub types away from riparian areas such as stream corridors and spring areas of the Owens Valley are the least used of all the habitat types during this time period.

Montane meadow, riparian streamside corridors, and spring associated riparian areas with shrub and/or tree cover provide key mule deer fawning, and fawn rearing habitat, though does also utilize upland shrub and dense tree thickets for fawning. Field observations for this analysis indicated that all meadows that are utilized by commercial pack stations for pastures, and grazing areas associated with destination camps, and the immediate surrounding forests are key habitats. In addition riparian stream and spring areas that are within trail corridors, and adjacent to camping areas that are used by commercial pack stations also provide high quality deer summer range. These riparian habitats are the most limited habitats in these watersheds, and are probably the most valuable habitats on deer summer range since many of them contribute to the support of a doe and fawn population unit during the fawn rearing season from mid June through October.

Alternative 1 – Direct and Indirect Effects

The cessation of commercial pack stock grazing on thirteen riparian meadow pasture habitats on approximately 288 acres where grazing has been occurring would result in the gradual improvement in habitat conditions at Rodeo Pasture, Evans Pasture, East and West Agnew Pastures, McGee Pasture, Upper and Lower Rock Creek Pastures, Big and Small North Lake Pastures, Art's Pasture, Bishop Park Pasture, Cardinal Mine Pasture, and McMurray Pasture that would benefit mule deer, particularly fawning and fawn rearing habitat. The 72 acres in Donkey Upper and Lower Pastures, and Big Meadow that have been rested from grazing for the last six years may continue to improve in habitat conditions somewhat although the six years of rest have already moved the meadows toward high quality habitat conditions.

Cessation of pack station use of the pastures would also improve habitat suitability by eliminating human and pack stock disturbance events that cause mule deer to disrupt their activities and avoid portions of meadow pasture habitat areas during periods of pack stock use.

Elimination of stock drives, day rides, and destination camps in the Non-wilderness may provide some temporary, minor and negligible improvement in mule deer habitat suitability on 27,257 acres from late spring through summer. This represents 1.8% of total Forest-wide mule deer habitat.

Alternative 2 – Direct and Indirect Effects

Implementation of Alternative 2 range readiness criteria, and forage utilization grazing standards on meadow pastures would limit the adverse effects to vegetative cover and the forage resource that may adversely affect mule deer use of riparian habitat. Continued stock use of the pastures on 288 acres, plus the use of the Donkey Pasture on 72 acres is likely to have a minor effect on habitat suitability for mule deer as the summer progresses particularly in July and August by reducing fawn rearing cover from grazing and trampling effects on vegetative cover, and a reduction in available herbaceous plants available for forage (Loft et al. 1987).

Commercial pack stock grazing in meadow pastures affects forage and cover quantity and quality available to mule deer. Cole et al. (2004) studied pack stock grazing effects to vegetation in Yosemite National Park and determined that repeated pack stock grazing over 5 years increased bare soil, and led to decreased vegetative vigor and productivity that occurred at utilization levels between 15% and 69%. The study predicted between 20 and 25% productivity declines in moist Brewer's reedgrass and tufted hairgrass meadows at 45% forage utilization rates. Forty five percent utilization is close to the 30 to 40% forage use grazing standards that would be implemented under Alternative two.

Commercial pack stock use of camps, and use of trails and roads for day rides in the non-wilderness analysis area, overnight camp areas at Wells Meadow, Green Lakes, Pinyon Creek and Tamarack Bench, pack trips into the Glass Mountains, and stock drives contributes to a temporary, minor and negligible reduction in habitat suitability from late spring through summer on approximately 27,257 acres, or 1.8% of the total Forest mule deer habitat. The lowered habitat suitability is as a result of the influence of the use of the trails and camps by humans on the adjacent habitat that may cause mule deer to elicit avoidance and displacement reactions in habitat in the immediate use corridors (Gaines et al. 2003, Knight and Gutzwiller 1995).

Alternative 3 – Direct and Indirect Effects

Implementation of Alternative 3 would result in improvement of habitat conditions for mule deer, on 92 acres of riparian habitat. This would occur as a result of pasture rest determinations for Rodeo and West Agnew Meadows, and the elimination of grazing use at Upper Rock Creek Meadow, Art's Pasture and the Cardinal Mine Pasture Unit that would promote improved forage and cover habitat conditions for deer. One hundred ninety six acres in 8 pastures would have impacts to these MIS species habitats similar to Alternative 2, although impacts may be somewhat reduced by the implementation of INF LRMP Amendment #6 grazing utilization standards that would likely be less than the 30 and 40% use allowances in Alternative 2.

The reduction of stock drives from four a year in Alternative 2, to two drives for each pack station under this Alternative would slightly decrease the human related disturbance potential to mule deer

and improve habitat suitability along the drive routes, and at the camp at Wells Meadow. Day rides, and destination use in the Front Country would likely be similar to current levels and continue to impact mule deer use of habitats through a reduction in habitat suitability on approximately 27,257 acres as described in Alternative 2.

MIS Yellow Warbler

Affected Environment

This species nests within the analysis area primarily in wet meadows with a tall riparian shrub component such as willow and water birch, and in riparian forest and riparian shrub habitats along stream corridors, and spring fed areas. Gaines (1992) noted the yellow warbler was common below 7,500 feet elevation on the east slope of the Central Sierra Nevada.

Heath (In press) notes that the yellow warbler is considered to be one of the most abundant warblers in North America, and that it currently occupies much of its breeding range in California. Forest-level monitoring of population distribution was investigated by Heath and Nur (2006). Monitoring did not detect trends in yellow warbler distribution or abundance. However, by bracketing the data at sub-regional levels (according to elevation and watershed), analysis suggested significant decreases and tendencies toward increases in Yellow Warbler distribution. Combining data into an overall Forest-wide analysis likely masked the real (and in some cases opposing) trends in distribution that were demonstrated at the sub-regional level.

Heath and Ballard (2003) found yellow warblers at 121 (54%) of 224 riparian stations along 12 streams in the eastern Sierra. They noted however that only 15 of 256 stations sampled in the riparian habitats of the Eastern Sierra below 6634 feet had yellow warbler detections. The species was observed to be less numerous and to breed inconsistently below this elevation compared to higher elevation habitats. There are records of male yellow warblers singing during the breeding season as high as 9,900 feet in the Hall Research Natural Area near Saddlebag Lake, and again in early August at 10,200 feet (Gaines 1992).

An query from the 2001 INF satellite vegetation map of suitable nesting habitat in the Non-wilderness totals roughly 36,257 acres of riparian aspen, deciduous riparian shrub, montane riparian, and wet meadow habitat types, along with montane hardwood and montane hardwood conifer types that may contain willow, birch, aspen and cottonwood vegetative components within those stands that are found along stream corridors. Yellow warbler habitat trend at the Forest scale has remained stable with 820 acres temporary reduction (2.2%) from 37,077 to 36,257 acres as a result of recent wildfires. The yellow warbler population has a stable distribution trend based on the 6 years of point count transects where yellow warblers were detected wherever suitable habitat was sampled.

Yellow warbler occurrence in the Eastern Sierra was found to be highly correlated with 9 vegetation and environmental features, with elevation, grass cover, and riparian width accurately predicting the occurrence of yellow warbler 74.6% of the time (Heath and Ballard 2003). Other statistically significant variables that correlated with yellow warbler presence in order of highest

correlation coefficients were percent riparian, shrub species richness, willow cover, aspen tree cover, herb species richness, and water birch cover (Heath and Ballard 2003).

Field assessments for this EIS have shown the species nesting at fairly high density at 9,258 feet at North Lake meadow pastures in the North Fork of Bishop Creek, and at approximately 7,700 feet at McGee Creek meadow pasture. Other suitable yellow warbler habitats that are regularly used, or have been proposed for use by commercial pack stock in this analysis area include the Rodeo Pasture, Evans Pasture, Agnew Meadow pasture, Minaret Falls Meadow Pasture, Reds Meadow Government Pastures, Rock Creek Upper and Lower pastures, the Cardinal Mine pasture, Art's pasture, Donkey Meadow pasture, Big Meadow pasture, and McMurray Meadow pasture. These pasture habitats total approximately 325 acres of suitable habitat.

Yellow warblers have also been found on breeding territories in the riparian cottonwood forests along the day ride trail on McGee Creek above the pack station, and in the willow and birch shrub stringers such as along spring channels at the John Muir Wilderness Boundary at 8,200 feet about 1.25 miles above the McGee Pack Station. These nesting areas are within the trail corridors that McGee Pack Station routinely runs day rides trips along during the summer months. The day ride trail from Frontier Pack Station along Reversed Creek riparian aspen and willow habitats and the day ride trail to Parker Bench also move through yellow warbler nesting habitat.

Yellow warbler nests are commonly parasitized by the brown-headed cowbird. Two hundred seventy nine (45%) of 608 yellow warbler nests were found to be parasitized by the cowbird over the course of a 6 year riparian bird study on the INF and adjacent lands in the Eastern Sierra (Heath in press). A four year study from 2001 through 2004 at both Bishop Creek and Rock Creek meadows adjacent to pack stock corrals found that cowbird reproductive activity at the two study sites was not dependent on the presence of pack station animals in terms of its effect on this species (Culp and Heath 2005).

Brown-headed cowbirds parasitized the majority of songbird nests in these areas before the arrival of pack station stock by as much as 4 weeks prior to the start of pack station operations. Cowbirds were observed at the stock corrals before the arrival of pack stock; and it was not clear what was attracting them to the area. Sixty three to 100% of the songbird species nests that were identified as hosts for the brown-headed cowbird were initiated before pack animals arrived at the study sites. The nest initiation egg laying period is the time when cowbirds seek out and lay their eggs in native songbird nests. Peak cowbird egg-laying in songbird host nests corresponded to a period from May 24 through June 17. This period was before commercial pack stations opened and brought their stock to the corrals. Cowbird egg laying began to decline by the time pack animals had arrived at the station.

More cowbirds were detected after the arrival of pack animals at North Lake during the study, but not at Rock Creek. This increase was statistically significant. However, there was no significant difference in the numbers of cowbirds detected at riparian sample points at either pack station study site after pack stock arrival. The study suggests that whether pack stock are present or not, cowbird parasitism would continue to affect all host species, and that the presence of pack stations appears to

contribute a relatively minor amount to the adverse effects of cowbird parasitism on songbird populations in these landscapes.

Cowbird populations appeared to be maintained in these landscapes prior to the seasonal opening of pack stations by other feeding sites such as at campgrounds, resorts, and rural housing developments where stock are fed, or bird feeders are maintained.

The overall parasitism rate at North Lake and Rock Creek for yellow warblers during the course of the four year Culp and Heath study (2005) was observed to be 24% of 43 nests, substantially less than the overall 45% parasitism rate for yellow warblers for other eastern Sierra study sites. Ninety four percent of the 43 nests found at North Lake and Rock Creek were parasitized prior to the arrival of pack stock at the pack station corrals indicating that the presence of pack stock at the pack station was not the driving factor for cowbirds to be present in the area.

Cowbirds were observed parasitizing yellow warbler nests during other field studies for this EIS at McGee Creek meadow pasture, and the inlet meadow of Silver Lake across from Frontier pack station (McCreedy 2005).

The yellow warbler has developed nesting strategies to partially mitigate the effect of cowbird parasitism. The species fledged one of its own young in each parasitized nest from 37% of those nests in the Eastern Sierra. The species also can re-nest multiple times after nest failure in order to ultimately produce young from a successful nest. The yellow warbler has been observed to bury cowbird eggs under nesting material to continue rearing eggs of its own young. Cowbird parasitism does however substantively lower the number of yellow warbler young produced per parasitized nest and therefore the overall nesting success and productivity of the Eastern Sierra yellow warbler population. In addition, two hundred ninety four nests, or 78% of all failed nests were the result of predation events by other bird, mammal, and snake species. Heath (2005, personal communication) noted the yellow warbler nest success was as high as the productive yellow warbler habitat in the Mono Basin. Heath (2005, personal communication) found that as a result of this study, populations of yellow warblers in good condition habitat such as at Mono Lake continue to do well and actually increase in spite of the effects of heavy cowbird parasitism and predation.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

The cessation of commercial pack stock grazing on thirteen riparian meadow pasture habitats on approximately 288 acres where grazing has been occurring would result in the gradual improvement in habitat conditions at Rodeo Pasture, Evans Pasture, East and West Agnew Pastures, McGee Pasture, Upper and Lower Rock Creek Pastures, Big and Small North Lake Pastures, Art's Pasture, Bishop Park Pasture, Cardinal Mine Pasture, and McMurray Pasture that could benefit yellow warbler. The 72 acres in Donkey Upper and Lower Pastures, and Big Meadow that have been rested from grazing for the last six years may continue to improve in habitat conditions somewhat although the six years of rest have already moved the meadows toward high quality habitat conditions.

Late seral, ungrazed meadows provide improved nesting cover and young rearing habitat for riparian nesting birds as represented by the MIS yellow warbler. Willow would achieve maximum density and growth form on suitable sites within the meadows, and provide improved habitat foliage cover for the yellow warbler to screen nests and young from predators, and hide nests from potential parasitism events by the brown-headed cowbird. Cessation of pack station use of the pastures would eliminate human and pack stock activities that reduce the habitat suitability for yellow warbler.

Ungrazed meadows are more likely to have a more rapid MIS habitat recovery rate potential where hydrologic functioning problems exist such as at Rodeo Meadow, Agnew Meadow West, Lower Rock Creek Meadow, the Cardinal Mine Pasture, and the Donkey Pasture that adversely affect wildlife habitat components such as vegetative productivity and composition, as well as special aquatic habitats such as springs, and seeps identified as important habitats in the Riparian Conservation Area goals and objectives of the 2004 SNFPA.

Elimination of day rides and destination camps at sites such as Wells Meadow, Tamarack Bench, Lower Rock Creek corral, Pinyon Creek and Green Lake, including the 288 acres of pasture would contribute to a temporary, minor and negligible improvement in habitat suitability from late spring through summer on 2,407 acres (6.6%) out of 36,257 acres.

Besides the improved habitat conditions discussed above on 288 acres, there may be some benefit to the yellow warbler habitat suitability from the elimination of stock feeding areas at pack stations that attract brown-headed cowbirds into an area. This may result in a relatively minor improvement in overall nest success for the yellow warbler, however it is unclear if this would be the case since less than 10% of all yellow warblers nests over the four year study period discussed in depth in the affected environment section were initiated after the arrival of pack stock. In addition, while cowbird density increased at the studied pack stations once stock arrived, there was no statistical difference in cowbird density at survey points in the riparian areas. From these results a hypothesis could be that the yellow warblers would still be subjected to parasitism events at possibly the same intensity whether stock are present or not. Add the fact that yellow warbler parasitism rates in the study areas surrounding the pack stations were substantially lower than the parasitism rates for the overall yellow warbler population in the Eastern Sierra, and a reasonable hypothesis could be developed that removal of the pack stations might not change the parasitism rate on yellow warblers in the analysis area.

Stock drives generally do not affect yellow warbler habitat since they largely occur outside of riparian habitats. The one exception is the campsite at Wells Meadow where human disturbance encounters would slightly lower habitat suitability during the period of camp use

Alternative 2 – Direct and Indirect Effects

The implementation of 30 and 40% forage utilization grazing standards at the various pastures, and the range readiness grazing on dates would limit adverse effects to yellow warbler and blue grouse nesting and foraging habitat on approximately 288 acres, in 13 meadow pastures where grazing would be allowed. There would be some degradation of yellow warbler nesting cover in these meadow

pastures from a reduction in herbaceous cover, willow shrub density, and willow foliage cover as a result of pack stock grazing, trailing, and willow stem breakage from trampling impacts and grazing of forage around the shrubs. Reduced vegetative cover for nesting and brood rearing can increase the probability that yellow warbler eggs, or young of the yellow warbler and blue grouse could be detected by predators, or in the case of the yellow warbler be vulnerable to observation and subsequent nest parasitism by the brown-headed cowbird.

There is also a chance pack stock could bump a yellow warbler nest in the outer branches of a willow shrub as stock move through willow clump areas of a meadow in search of forage. This could result in the dislodging of the 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). The level of this type of impact that could occur is unknown in the pasture meadows. No yellow warblers nests were found to be “bumped” nests during the four year study mentioned in Alternative 1.

DeSante (1995) stated that the major deleterious effect of grazing on songbird use of montane meadows apparently is the decreased amount of herbaceous vegetation in the meadow. His opinion was that many of the 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 the cropping and trampling of the herbaceous layer by pack stock grazing resulted in lowered insect production and availability for songbird food. Skovlin (1984) stated that grazing could result in reduced cover, and the removal of bird food such as insects, seeds, or fruits. DeSante’s status report of Sierra Nevada birds noted that montane meadows may be the single most critical habitat in mid-summer for many species such as warblers that come to the meadow to feed after breeding and fledging of young, including many forest nesting birds. Montane meadows serve as critical molting and pre-migratory staging areas for the young birds and to a lesser extent the adults.

Continuation of day rides and destination camps at sites such as Wells Meadow, Tamarack Bench, Lower Rock Creek corral, Pinyon Creek and Green Lake, including the 288 acres of pasture grazing would contribute to a temporary, minor and negligible reduction in habitat suitability from late spring through summer on 2,407 acres (6.6%) out of 36,257 acres.

This disturbance effect does not substantively decrease habitat suitability for this species in the project area. The effects are believed to be minor and negligible based on monitoring at McGee Creek that has shown yellow warbler are routinely observed adjacent to the trail corridors in suitable habitats. Yellow warbler have been observed to nest in high density at North Lake adjacent to the pack station overlapping with a high recreation use area with roads, parking areas, and a high use day use area.

This effect would occur in the non-wilderness analysis areas along the riparian willow and aspen forested areas on the day use trail from Frontier Pack Station to Parker Lake, the Tamarack Bench/Sand Canyon area, and along the day ride loop from the pack station along the riparian willow habitat of Rush Creek.

Stock drives generally do not affect the yellow warbler since they largely occur outside of riparian and mixed conifer forest habitats. The one exception is the campsite at Wells Meadow where

human disturbance encounters would occur during the period of camp use that may elicit temporary avoidance and displacement reactions from these species.

Alternative 3 – Direct and Indirect Effects

Implementation of Alternative 3 would result in improvement of habitat conditions for yellow warbler on 92 acres of riparian habitat. This would occur as a result of pasture rest determinations for Rodeo and West Agnew Meadows, and the elimination of grazing use at Upper Rock Creek Meadow, Art's Pasture and the Cardinal Mine Pasture Unit that would promote improved forage and cover habitat conditions for these species. Habitat conditions for this species under Alternative 3 in closed grazing areas would improve substantially with increased density and vigor of willow and aspen stands, and increased herbaceous vegetative productivity for hiding and escape cover, and forage. One hundred ninety six acres in 8 pastures would have impacts to these MIS species habitats similar to Alternative 2, although impacts may be somewhat reduced by the implementation of INF LRMP Amendment #6 grazing utilization standards that would likely be less than the 30 and 40% use allowances in Alternative 2.

Day rides, stock drives, and destination use in the Front Country effects to yellow warbler habitat would be the same as Alternative 2. Continuation of stock drives, day rides and destination camps at sites such as Wells Meadow, Tamarack Bench, Lower Rock Creek corral, Pinyon Creek and Green Lake, including the 196 acres of pasture would contribute to a temporary, minor and negligible improvement in habitat suitability from late spring through summer on 2,315 acres (6.4%) out of 36,257 acres.

MIS Blue Grouse

Affected Environment

Blue grouse habitat is found within the analysis area where riparian areas, aspen forests and shrub habitats are inter-mixed with montane conifer forests containing fir trees. These suitable habitats generally are found between 6,500 and 10,500 feet in elevation within the analysis area. The species is predominately a forest bird; however females will move their young broods into riparian habitats such as meadow pastures and aspen stands during the summer where insect food availability is abundant along with good hiding and escape cover to improve the survivability of young grouse from predators. Otherwise they predominantly use adjacent upland montane conifer forest and chaparral shrub cover for much of the year. The species population distribution trend based on records of observations appears to be well distributed throughout the montane conifer forests since booming males are frequently heard during the breeding season along trail corridors such as Pine Creek and McGee Creek, along with the fact that scat is frequently observed in suitable habitats. Forest scale habitat has remained relatively unchanged and is mostly in good condition. According to CDFG (2004) the NBBS data for California between 1996 and 2002 for blue grouse shows an increasing trend in spring breeding population (trend 9.61, P=0.32, N=16).

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

The effects to blue grouse habitat in the grazing pastures are the same as the yellow warbler. Elimination of stock drives, day rides and destination camps at sites such as Wells Meadow, Tamarack Bench, Lower Rock Creek corral, Pinyon Creek and Green Lake, including the 288 acres of pasture would contribute to a temporary, minor and negligible improvement in habitat suitability from late spring through summer on 7,925 acres (2%) out of 400,096 acres. Trail use areas also include the day use trail on McGee Creek, the trail from Frontier Pack Station to Parker Lake, the Tamarack Bench/Sand Canyon area, and along the day ride loop from the pack station along the riparian willow habitat of Rush Creek.

Alternative 2 and 3– Direct and Indirect Effects

The effects to blue grouse habitat in the grazing pastures are the same as the yellow warbler such as improved meadow hydrology, herbaceous cover, forage, and willow cover. Elimination of trail use for day rides and destination access, and destination camps at sites such as Wells Meadow, Tamarack Bench, Lower Rock Creek corral, Pinyon Creek and Green Lake, including the 288 acres of pasture would contribute to a minor and negligible reduction in habitat suitability from late spring through summer on 7,925 acres (2%) out of 400,096 acres for Alternative 2, and 7,729 acres (1.9%) out of 400,096 acres for Alternative 3.

Trail use areas also include the day use trail on McGee Creek, the trail from Frontier Pack Station to Parker Lake, the Tamarack Bench/Sand Canyon area, and along the day ride loop from the pack station along the riparian willow habitat of Rush Creek.

Stock drives generally do not affect blue grouse habitat since they largely occur outside of riparian and mixed conifer forest habitats. The one exception is the campsite at Wells Meadow where human disturbance encounters would slightly lower habitat suitability during the period of camp use.

3.4.1.4 Montgomery Pass Wild Horse Viewing Area

The analysis for this area only assesses sage grouse, and mule deer and yellow warbler since these are the only MIS and/or suitable habitat for these species that occur within this portion of the project area that may be affected.

Sage Grouse

Affected Environment

Sage grouse apparently were once common in the sagebrush habitats that overlap with this geographic area. At some point the birds appear to have been extirpated from these habitats. Field surveys for this assessment failed to detect sage grouse or their sign in 2005. This species has also not been found in survey efforts for the Nevada Sage Grouse Conservation Strategy by the Nevada Department of Wildlife conducted in recent years in the Nevada portion of this geographic area. It is

unknown what factors have caused sage grouse to disappear from this landscape. One possible cause has been the gradual expansion of pinyon pine woodlands into sagebrush habitats that have resulted in fragmentation and loss of formerly expansive sagebrush plant communities. Habitat and the population are clearly on a downward trend largely due to suspected natural causes mentioned above within this project area.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

The following discussion is somewhat academic at this time since sage grouse appear to no longer inhabit the area, however the effects analysis is valid since the habitat is suitable, and the Nevada-California Bi-State Sage Grouse Conservation Plan has an objective to re-introduce sage grouse into areas they have been extirpated from.

The cessation of wild horse viewing rides and the use of campsites in Truman and Adobe Meadow areas from mid-May through mid-June may provide for some minor and negligible improvements to sage grouse habitat suitability on approximately 554 acres of designated use areas including trails and roads. This represents 0.15 % of all sage grouse suitable habitat on the Forest. Wild horse viewing involves overland riding off trails and roads that could also directly affect some portion of sage grouse habitat from trampling of vegetation and trailing, or spread of invasive weeds to a very minor and negligible level across portions of the 36,925 acres of suitable habitat in the analysis unit (10% of the total Forest suitable habitat). The potential for human disturbance effects to habitat suitability from these activities would be eliminated. The potential of the spread of invasive weeds by commercial pack stock operations into suitable sage grouse sagebrush habitats would also be eliminated. The potential sage grouse brood rearing riparian habitats at Truman and Pizona Meadows would be allowed to fully develop into late seral meadow vegetative conditions that would likely improve grouse brood rearing cover.

Alternatives 2 and 3 – Direct and Indirect Effects

The use of camps and designated routes slightly lower sage grouse habitat suitability on 554 acres within the use corridors, from a slight loss of vegetative cover from camps, trampling impacts, and stock riding off-trail. This represents 0.15 % of all sage grouse suitable habitat on the Forest. There would also be some human disturbance effects that lower habitat suitability from April through June on those acres. This could include grouse avoidance of use of portions of the meadow habitats for brood rearing. In addition day use cross country rides could disrupt nesting sage grouse by causing hens to flush off of eggs or temporarily move away from young. In addition the overland riding would continue on some portion of the 16,280 acres of suitable sage grouse habitat (4.5% of the total suitable sage grouse habitats acres on the Forest) that would have a minor and negligible effect on sage grouse habitat. Alternative 3 effects would potentially be a tiny fraction less of an effect to suitable sage grouse habitat in the designated camps and routes, affecting approximately 530 acres

(0.14%) since the camps in these riparian habitats at Truman and Pizona Meadows would be re-located out of the riparian and thereby improve those meadow habitats for use by sage grouse broods.

MIS Mule Deer

Affected Environment

All 36,925 acres of the analysis area is suitable habitat. Most of the habitat is relatively lower quality compared to the other analysis areas since water is limiting except at a few scattered springs such as Pizona and Truman Meadow areas where pack stock use overlaps.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

The cessation of commercial pack stock use of camps on approximately 20 acres in Truman and Pizona Meadows would improve mule deer fawning habitat since the commercial pack stock activities would be eliminated from this habitat at the key mule deer fawning period. There would also be a slight increase in riparian cover at Pizona Meadow and at Truman Meadow areas, where tent sites, social trails, stock tie-up areas and feeding areas and corrals would re-vegetate to willow, wild rose and sagebrush. The cessation of use of designated trails and roads and dispersed wild horse viewing rides that can occur across mule deer habitat in the analysis area on portions of the 36,925 acres from mid May through mid-June would result in a very minor and negligible improvement in deer habitat suitability, since vegetation trampling, and human disturbance would be eliminated. This represents approximately 2.4% of the total deer habitat on the Forest. The elimination of this use would not have a substantive impact on mule deer habitat structure and suitability.

Alternatives 2 – Direct and Indirect Effects

Commercial pack station use of 20 acres in Truman and Pizona Meadows and the surrounding landscape from mid-May through Mid-June would continue to impact mule deer fawning habitat suitability. The continuation of use of designated trails and roads and dispersed wild horse viewing rides that can occur across mule deer habitat in the analysis area on portions of the 36,925 acres from mid May through mid-June would result in a very minor and negligible reduction in deer habitat suitability, since vegetation trampling, and human disturbance would continue. This represents approximately 2.4% of the total deer habitat on the Forest. The elimination of this use would not have a substantive impact on mule deer habitat structure and suitability.

Alternative 3 – Direct and Indirect Effects

The re-location of the camps out of Truman and Pizona Meadows would result in an improved riparian habitat condition for mule deer on 20 acres as a result of re-vegetation of shrub and herbaceous cover where camps, tent sites corrals and social trails have been located. The improved habitat condition would be similar to Alternative 1. Mule deer habitat suitability, particularly fawning

and fawn rearing habitat would experience substantial improvement by the elimination of human and stock presence in the two meadows.

The degree of improvement in these conditions would be dependent on exactly how far away the camps were moved from these meadows and adjacent riparian stringers. The further away the more the improvement since clients would be less likely to routinely visit the meadows from camp. Other effects are the same as Alternative 2.

MIS Yellow Warbler

Affected Environment

The meadows have a relatively marginal willow shrub structural component to support a yellow warbler population. Yellow warbler were not detected in the geographic area during a 2004 survey. Approximately 13 acres of meadow habitat at Truman and Pizona meadows are suitable habitat. There is a cowbird population that is present in the habitat that is adversely affecting habitat suitability, and is likely present as a result of commercial pack stock use of these areas. Over 50 cowbirds were observed feeding at the stock tie-up area in 2004 at the Pizona Camp. Cowbirds have been observed to continue to stay at the stock feeding sites for some unknown length of time after the camps have closed as well. They were still associated with the stock feeding areas. It is unknown whether the cowbirds would still be present at these meadows because of other feeding sites on the landscape such as ranches. There would probably not be as many cowbirds.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

Yellow warbler habitat suitability would improve on 13 acres with the re-vegetation of the disturbed sites and removal of human disturbance to the habitat during the important nesting period from mid-May through mid-June in Truman and Pizona Meadow. The cessation of feeding of grain to commercial pack stock at the Truman and Pizona camps would eliminate the two primary cowbird feeding sites in this landscape that lower habitat suitability for the yellow warbler. The 13 acres represents 0.3% of the total suitable habitat on the Forest.

Alternatives 2 – Direct and Indirect Effects

Commercial pack station use of Truman and Pizona Meadows and the surrounding landscape from mid-May through Mid-June would continue to adversely affect riparian willow habitat structure and maintain a regular human disturbance effect to nesting habitat suitability for the yellow warbler on 13 acres. The feeding of grain to pack stock would continue to maintain feeding sites for brown-headed cowbirds at Truman and Pizona Meadow and adversely affect habitat suitability during the peak breeding period of riparian songbirds as represented by the yellow warbler in this landscape. Cowbirds would continue to be capable of adversely affecting habitat suitability for songbirds for up to 5.4 to 7.2 miles (9 to 12 kilometers) from these sites.

Alternative 3 – Direct and Indirect Effects

The re-location of the camps out of Truman and Pizona Meadows would result in an improved riparian habitat condition for the yellow warbler on 13 acres as a result of re-vegetation of shrub and herbaceous cover where camps, tent sites corrals and social trails have been located. In addition the removal of human disturbance to the habitat would improve yellow warbler nesting habitat suitability.

The degree of improvement in habitat suitability would be dependent on exactly how far away the camps were moved from these meadows and adjacent riparian stringers. The further away the more the improvement since clients would be less likely to routinely visit the meadows from camp.

Brown-headed cowbird parasitism effects to yellow warbler habitat suitability would likely be similar to Alternative 2. Cowbirds would continue to be attracted to stock feeding areas near the meadows and parasitize nests out from these areas the same distances.

3.4.1.5 Ansel Adams/John Muir Wildernesses

The Trail and Commercial Pack Stock Management Final EIS (2005 AA/JM FEIS) described the Wildlife Affected Environment and Environmental Consequences of pack stock operations for the portions of the AA/JM Wildernesses that are within the project area considered by this EIS. Those sections that include the analysis of commercial pack stock operation effects to wildlife and wildlife habitat in the AA/JM Wildernesses analysis area are incorporated into this document by reference. The Wildlife Affected Environment Section of that EIS can be found in Volume 1, Chapter 3, pages III-134 through III-160. The Environmental Consequences section is in Volume 2, Chapter 4, pages IV-420 through IV-509.

The 2005 AA/JM ROD selected 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. 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.

3.4.1.6 Golden Trout and South Sierra Wildernesses

Willow flycatcher

Affected Environment

Suitable unoccupied willow flycatcher habitat has been identified within the following meadows in the GT/SS Wildernesses analysis area.

<i>Meadow Name</i>	<i>Survey</i>	<i>Results</i>
Tunnel Meadow (8820 feet)	1995 and 1996	No detections
Ramshaw Meadow (8860 feet)	1995 and 1996	No detections
Little Whitney Meadow (8440 feet)	1997	No detections
Salt Lick Meadow (8880 feet)	1997	No detections

There is no nesting population or records of willow flycatcher within the GT/SS Wildernesses, or in adjacent non-wilderness habitat such as at Monache Meadow. The species is discussed in this section because suitable habitat characteristics are found in the above meadows. It is highly unlikely willow flycatchers would occupy these habitats until more suitable meadow habitats below 8,000 feet to the south begin to support nesting willow flycatcher populations.

Environmental Consequences

Alternative 1 – Direct, and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternative 1 could have a slight beneficial effect on willow flycatcher and potential suitable habitat.

Commercial pack stock use areas in the Golden Trout Wilderness at the meadows listed above has not had any substantive effect on the habitat for this species. Cessation of use of the meadows for

stock holding or grazing could result in a slight reduction in disturbance potential and allow for undisturbed habitat structural characteristics. At this time the effects analysis is based on potential disturbance within suitable habitat since this species has not been detected.

Alternative 2 and 3 – Direct and Indirect Effects

The effects described in the non-wilderness analysis area are considerably less probable for the meadows listed above since the meadows are unlikely to be grazed to any substantive degree in most years, based on current grazing use patterns. Adverse effects to habitat suitability could change if the meadow areas increase in popularity, or have increased use by pack stations as an alternative areas of operation either because of increased restriction on use in other wilderness areas, or because high snow years steer commercial operations to more snow-free areas such as the Golden Trout Wilderness.

Pack stock camps, destinations, and social and access trails can contribute to habitat disturbance effects in meadow habitats within the GT/SS Wildernesses. In these destination areas, localized areas of willow stem breakage, localized streambank impact areas where channel widening occurs, and lower productivity of herbaceous meadow vegetation from grazing and trampling by stock would continue to occur. These types of effects are considered to be of low significance in the meadows listed above. It is unlikely adverse effects would 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.

Northern Goshawk

Affected Environment

Visual surveys to locate territorial goshawk or their nests were conducted in 2004 while visiting pack station use areas and trails within the GT/SS Wildernesses. No birds or nests were observed on these visits. Surveys have not been conducted since much of the GT/SS Wildernesses are remote and very lightly used for recreation and therefore there is considerable available habitat for goshawk to nest in that is well away from human disturbance related activities. A habitat analysis from detailed aerial photo interpretation and mapping has indicated there are 39,780 acres of suitable habitat on the INF portion of the Kern Plateau that includes the GT/SS Wildernesses and surrounding non-wilderness. Since goshawk territories average about 5,000 acres in home range area it is highly likely there are several pairs of goshawk nesting within the boundaries of the operating areas of the various pack station wilderness trips.

Suitable habitat is abundant within the mixed conifer, red fir and lodgepole pine forests. Juvenile goshawk have been observed in the past along the edge of Ramshaw Meadow. Goshawk have also been observed at Monache Meadow and it is highly likely the species is nesting in the adjacent forested areas as well as in other suitable habitat areas.

Environmental Consequences

Alternative 1 – Direct, and Indirect Effects

The elimination of commercial pack stock use in the GT/SS Wildernesses would have little substantive effect on goshawk use of habitats in this analysis area. Some reduction in human disturbance effects to habitat suitability on 7,710 acres may occur along trail corridors through suitable habitat, and where camps are no longer used by commercial pack stock trips in suitable habitats at Little Whitney, Tunnel, Ramshaw, Templeton, Strawberry, Big Dry, and Gomez Meadows. This represents 2.9% of the total suitable goshawk habitat on the Forest.

Alternative 2 and 3 – Direct, and Indirect Effects

There would continue to be localized areas of habitat impact, and human disturbance effects to habitat suitability on 7,710 acres with implementation of Alternatives 2 and 3 along trail corridors, and at destinations, such as around camps, stock holding areas, and popular fishing, hiking, or riding areas. Direct structural habitat impacts with implementation of Alternatives 2 and 3 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 roughly 40,000 acres suitable habitat in the GT/SS Wildernesses. Direct structural habitat impacts are generally minor losses of understory vegetation, ground compaction, and loss of woody debris from packer's use of wood for campfires. These impacts are likely to have minor effects on some goshawk prey species abundance, such as Douglas squirrels.

The suitable habitat outside of the commercial pack stock use areas within the GT/SS Wildernesses provides abundant habitat where goshawk can shift nest locations in response to human use patterns on the landscape and still have a high probability of maintaining a successful nest territory.

Marten

Affected Environment

Mixed conifer, lodgepole pine, and red fir plant communities are suitable and it is assumed they are occupied by marten. The GT/SS Wildernesses and adjacent non-wilderness on the INF contain roughly 88,000 acres of suitable forested habitat based on a query of CWHR classes from satellite imagery.

Environmental Consequences

Alternative 1 – Direct, and Indirect Effects

The cessation of commercial pack stock use in the GT/SS Wildernesses could have a slight habitat suitability improvement effect on marten habitat on 7,599 acres. Camps would no longer be used by this user group, and there could be a higher level of downed woody material on the forest floor for use by the marten and its small mammal prey. There would also be a reduction in human disturbance

effect on marten habitat suitability on those acres. This represents 4% of the total suitable marten habitat acres on the Forest.

Alternative 2 and 3 – Direct and Indirect Effects

Commercial pack stock operations are likely to have localized direct and indirect effects on this species and habitat suitability from human disturbance effects around camps and destinations and trail corridors on 7,599 acres, or 4% of the total suitable marten habitat acres on the Forest. The effect is believed to be minor and negligible since there is abundant high quality habitat in the Geographic Area and the overall forested habitats in the mid to higher elevations of the Forest. 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 a minor reduction in prey availability and marten rest sites as a result of the removal of downed woody material for collection of firewood around camps where fires are allowed.

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.

Wolverine and Sierra Nevada Red Fox

Affected Environment

The GT/SS Wildernesses are suitable habitat for both these species. There are historical occurrences of the species dating back a number of decades listed in the California Natural Diversity Data Base maintained by the California Department of Fish and Game. There are no recent records. Multiple year, bioregional monitoring efforts for the SNFPA 2004 ROD (USDA Forest Service 2004) have failed to detect either species on the INF. This analysis assumes the habitat is suitable for occupancy by these species.

Environmental Consequences

Alternative 1 – Direct, and Indirect Effects

The effects would be similar as the non-wilderness effects section for use of commercial pack stock trail corridors and destinations in suitable habitat. Human disturbance effects to habitat suitability would decrease slightly on 12,176 acres for wolverine (4.5% of total suitable Forest habitat acres), and 6,338 acres (2.6% of total suitable Forest habitat acres) for Sierra Nevada red fox since trails and camps would no longer be used by this user group.

Alternative 2 and 3 – Direct and Indirect Effects

The effects would be similar as the non-wilderness effects section for use of commercial pack stock trail corridors and camps in suitable habitat. Habitat suitability from human disturbance effects

would be slightly lowered along trail corridors, camps and destination on the acres listed for Alternative 1.

California Spotted Owl

Affected Environment

There is a designated California Spotted Protected Activity Center on Kingfisher Ridge outside of wilderness but on the southern perimeter of the Golden Trout Wilderness west of Monache Meadow. This is the only known suitable occupied habitat area adjacent to trails that could be used by commercial pack stock operations. A large area of suitable spotted owl habitat did occur in the Jordan Hot Springs area along Red Rock Creek, as well as a small area of suitable foraging habitat near the Blackrock trailhead. Much of this habitat was lost or significantly marginalized in the McNally Fire, a large landscape fire that occurred in 2003. There is little if any overlap of habitat with areas traditionally used by commercial pack stock operations that mainly occur to the north and east of suitable habitats.

Environmental Consequences

All Alternatives – Direct, and Indirect Effects

Implementation of any alternative would not have any substantive effect on spotted owls or the suitable habitat within or along the border of the Golden Trout Wilderness. Spotted owls are largely nocturnal animals that generally are not affected by daytime human use of trails and camps. In addition, the majority of commercial pack stock operations occur outside of suitable habitats. There is 4,687 acres or 4.5% of overlap of commercial pack stock use areas with suitable spotted owl habitat.

Great Gray Owl

Affected Environment

There are no records of great gray owl occurrence anywhere on the Kern Plateau. The nearest sighting of a non-breeding owl was in the 1970s in Sequoia Kings National Park some 25 air miles to the northwest of the northern boundary of the Golden Trout Wilderness. It is always possible the great gray owl could utilize the suitable habitats on the Plateau, though most of the habitats are above the 8,000 foot elevation upper limit cutoff great gray owls have been known to utilize as preferred habitat. The SNFPA only requires a follow-up survey for great gray owls if a verified sighting has occurred. No surveys have occurred since no sightings have ever been documented. Survey logistics would be very difficult during the key survey periods since the Plateau is relatively inaccessible during the spring months when surveys would occur, and there is a very low probability surveys would detect an owl based on the lack of any historical evidence the species exists in this landscape.

The most likely suitable habitat areas would be old growth mixed conifer, red fir and lodgepole pine forests adjacent to large meadows such as along Monache Meadow, Strawberry Meadow, Templeton Meadow, and Ramshaw Meadow. The highest quality habitat in the Jordan Meadow area was probably suitable but the habitat was lost in the McNally Fire.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

The cessation of commercial pack stock operations within the GT/SS Wildernesses would slightly improve habitat suitability on 3,341 acres (8.8% of the total suitable habitat on the Forest) and the potential for occupancy and use by the great gray owl. Commercial pack stock use in these areas has been relatively light with minor effects to forests stand structure such as removal of understory wood for campfires. The associated grazing that has occurred as part of the overnight stock holding has been very light and cessation of it would not materially change the vole prey population that great gray owls hunt.

Alternative 2 and 3 – Direct, and Indirect Effects

Continuation of commercial pack stock use in the GT/SS Wildernesses, and adjacent non-wilderness would have minor and negligible effects on the acres of suitable great gray owl habitat listed in Alternative 1, and the potential for its use by the great gray owl.

Commercial pack stock use would not affect the breeding and nesting period of the owl since pack stock arrive in this landscape after these periods have concluded. There is a low probability that pack stock use of trail corridors and camps would result in any substantive human disturbance effects to the owl. Owls could potentially be flushed from a perch if they were along a trail corridor or camp perimeter, where they would likely temporarily move out of the local area and re-perch in another portion of the forest. There is a large area of suitable forested perching habitats along the meadow perimeters identified above that provide the owl with the ability to continue using the meadow areas. There would be localized effects to forested habitat structure where camps are established around the meadow perimeters from understory denudation and collection of firewood.

Commercial pack stock use levels are likely to remain at a low use with incidental overnight stock use of the meadows that would not substantively affect the meadows suitability for great gray owl foraging habitat.

California (Volcano Creek) Golden Trout

Affected Environment

California's State Freshwater Fish, the California golden trout (*Oncorhynchus mykiss aguabonita*), is listed as a species of special concern by the California Department of Fish and Game, and as a Sensitive Species by the Pacific Southwest Region of the U.S. Forest Service. The historic range of

California golden trout includes two watersheds draining the Kern Plateau; Golden Trout Creek and the South Fork Kern River that overlap with commercial pack stock operating areas.

The populations of Golden Trout within the South Fork Kern River and Golden Trout Creek are robust, although individual sizes of the fish are small. These high numbers of fish indicate that there are ample reproduction sites throughout the habitat range of this fish, but that habitat degradation may be selecting for fish that are smaller in size (Knapp and Matthews, 1999).

Management of this species is currently directed by the California Golden Trout Conservation Assessment and Strategy, with a signed Memorandum of Understanding implemented by the State of California, the Inyo and Sequoia National Forests and the U.S. Fish and Wildlife Service. The purpose of this document is to implement specific management strategies aimed at improving the genetic understanding of this fish, and improving the trout habitat within the Kern Plateau, as well as provide a method for preventing the Federal listing of this fish.

Environmental Consequences

Alternative 1 – Direct, and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternative 1 would have a slight beneficial effect on the golden trout and its suitable habitat within the GT/SS Wildernesses.

The elimination of the current uses of commercial pack stock use in the Golden Trout and South Sierra Wildernesses is unlikely to substantively change the current status of California golden trout habitat trout within the Kern Plateau. Site-specific impacts, such as trampling effects at stream crossings that lead to increased streambank instability and sedimentation, would be eliminated. Minor impact from grazing would be eliminated. Angling may be reduced; however, this does not seem to be a significant effect to golden trout as population numbers are not impaired.

Alternatives 2 and 3 – Direct, and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternatives 2 or 3 may affect individual golden trout but would not lead to a trend toward listing or loss of viability for the species within the GT/SS Wildernesses.

Alternative 2 and 3 would allow for grazing throughout the Kern Plateau excluding the meadows of Volcano Meadow, South Fork Meadow (headwaters of South Fork of the Kern River), Bullfrog Meadow, Fat Cow Meadow and parts of Ramshaw Meadow. Allowable use will be determined by restrictions as set by Amendment #6 and the Forest Standards and Guidelines. The most limiting use standard in regards to golden trout habitat is the standard that does not allow for more than 10% streambank alteration in State designated Wild Trout Waters, which in this case includes all streams in the South Fork Kern River upstream from Dutch John Flat and all waters in the Golden Trout Creek watershed. Because it is difficult to achieve uniform allowable impacts throughout a stream reach, there would most likely be areas of heavier impacts to the streambanks than in other areas. This is mostly due to stock watering and stream crossings, which can affect bank stability. However, these

impacts would be site-specific to the grazing locations, would be isolated occurrences, and majority of the streambank would not receive any alterations from grazing and watering stock. Either Alternative 2 or 3 are not likely to substantively change golden trout habitat or populations.

Mountain yellow-legged Frog

Affected Environment

The mountain yellow-legged frog occurs in fishless, high elevation lakes and selected streams throughout the range of the Sierra Nevada Mountains. Historically, small populations of these frogs had been identified within the Kern Plateau in Cold Meadows, Tunnel Meadow, Casa Vieja Meadow, Monache Meadows and most recently, Bullfrog Meadow within the Mulkey Meadow complex. For mountain yellow-legged frogs to co-exist with the golden-trout filled streams of the Kern Plateau, they must be able to find and exploit the fishless ponds, springs and small lakes that are infrequently scattered throughout this area. Prior to the historically recent down-cutting that many channels have experienced in this area, it is hypothesized that many “ox-bow” ponds existed in the inundated floodplains adjacent to the streams. There have been no sightings of frogs since 2000, except for in Bullfrog Meadow, but comprehensive and complete surveys have not been conducted specifically to locate frogs, so their presence in the meadows and wet areas on the Kern Plateau cannot be discounted.

The recently discovered population in Bullfrog Meadow has been verified by California Department of Fish and Game biologists and contains both tadpoles and adult frogs. The population is very small, where only three adults have been sighted, and a handful of tadpoles. Frogs inhabit the wet meadow at the upper end of the meadow, and scattered, fishless “spring-holes” provide habitat for tadpoles. These spring-holes are critical to the survival of the tadpoles so that they may develop to adulthood where they will be able to escape prey. However, currently these meadows are at risk due to active headcuts that are migrating up the stream toward the wet meadow area, posing the threat of channel down-cutting which could potentially drain the area of the standing water that is critical to this species.

Environmental Consequences

Alternative 1 – Direct, and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternative 1 would have no effect on mountain yellow-legged frog and its suitable habitat within the GT/SS Wildernesses.

The cessation of commercial pack stock operations is unlikely to substantively change the conditions of the meadows within the Kern Plateau in regards to mountain yellow-legged frog habitat.

Alternatives 2 and 3 – Direct, and Indirect Effects

The Biological Evaluation prepared for this EIS has determined that implementation of Alternatives 2 or 3 would have no effect on mountain yellow-legged frog and its suitable habitat within the GT/SS Wildernesses.

Pack-stock use of the meadows identified in the stock management plan (excluding those meadows that have been deemed “unsuitable” in the Proposed Action), is unlikely to substantially change mountain yellow-legged frog habitat throughout the Kern Plateau. This determination is based on the 10% trampling standard that restricts use throughout the streams in the Golden Trout Wilderness.

MIS Mule Deer

Affected Environment

The Kern Plateau deer herd ranges throughout this analysis area. Virtually all of the Kern is suitable habitat for the Monache mule deer herd. Deer commonly use the meadows and forested perimeters that overlap with commercial pack stock camp and grazing areas primarily in the GT Wilderness as key deer fawning, and fawn rearing habitat from June through October similar to the Non-wilderness analysis area. Otherwise deer are widely dispersed throughout the GT/SS Wildernesses and adjacent non-wilderness while on summer range.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

Elimination of commercial pack stock use on the Kern Plateau would result in a slight improvement in habitat conditions for mule deer. There would likely be a minor and negligible reduction in human disturbance events that can reduce habitat suitability on 16,367 acres of suitable habitat (1 % of the total Forest suitable habitat acres) adjacent to camps, and along trail corridors. Also campsites traditionally used by commercial pack stock may re-vegetate and improve cover for mule deer.

Alternatives 2 and 3 – Direct and Indirect Effects

Habitat suitability would be slightly lowered on the acres identified in Alternative 1 as a result of continued use by commercial pack stock use of trails and camps. The effect would be more pronounced around fawning habitats where traditional pack stock camps are located such as at Templeton, Ramshaw, Tunnel, and Little Whitney Meadows. Some localized reduction of structural habitat conditions would occur from continued denudation of the vegetation at campsites along with removal of downed woody material in the adjacent forest for variable distances from the camp that would be used for firewood.

MIS Yellow Warbler

Affected Environment

The yellow warbler has not been found on the Kern Plateau during field surveys. Meadow habitats that have robust willow stands, such as at Ramshaw and Tunnel Meadow appear to be highly suitable unoccupied habitats. It is unknown what factors may be precluding yellow warbler use of Kern Plateau suitable habitats.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

Elimination of commercial pack stock use on the Kern Plateau would result in a minor and negligible improvement in habitat suitability for the yellow warbler on 849 acres or approximately 2% of the total Forest suitable habitat. There would likely be a slight reduction in human disturbance events effects to habitat suitability along trail corridors that would no longer be used. The cessation of pack stock grazing on the Kern would not have any substantive effect on yellow warbler habitat since pack stock grazing has been traditionally very light in this geographic area.

Alternatives 2 and 3 – Direct and Indirect Effects

Continuation of commercial pack stock use on the Kern Plateau would result in a minor and negligible reduction in habitat suitability for the yellow warbler on 849 acres or approximately 2% of the total Forest suitable habitat. There would be a continuation of low levels of human disturbance effects to habitat suitability along trail corridors. Continuation of pack stock grazing on the Kern would not have a minor and negligible effect on yellow warbler habitat structure and suitability since pack stock grazing has been traditionally very light in this geographic area, and is likely to continue to be very light..

MIS Blue Grouse

Affected Environment

Blue grouse are commonly found throughout the Kern Plateau in suitable coniferous forest and riparian habitats.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

Elimination of commercial pack stock use on the Kern Plateau would result in a slight improvement in habitat suitability for blue grouse. There would likely be a minor and negligible reduction in human disturbance events to these species using habitats where commercial pack stock camps are located, along trail corridors, and grazing meadows on 11,152 acres. This represents 2.8% of the total

suitable blue grouse habitat on the Forest. Also campsites traditionally used by commercial pack stock may re-vegetate and improve cover for blue grouse at some level if the campsites do not continue to be used by other user groups such as recreational pack stock users.

These effect reductions are probably inconsequential to the perpetuation of the Kern Plateau blue grouse population since commercial pack stock use levels on the Plateau are relatively light, as well as the fact that there is abundant habitat for this species to find adequate cover and forage.

Alternatives 2 and 3 – Direct and Indirect Effects

There would be a minor and negligible reduction in habitat suitability on the acres identified in Alternative 1. Some localized reduction of structural habitat conditions would occur from continued denudation of the vegetation at campsites along with removal of downed woody material in the adjacent forest for variable distances from the camp that would be used for firewood.

Species-Specific Cumulative Effects

This cumulative effects analysis for each of the species discussed will include a land area encompassing the home ranges of the species within the Inyo National Forest. It also considers effects to species from actions on adjacent private land. The area of cumulative effects was bounded in this manner because past, present, and future private land activities are substantially contributing to cumulative effects on a number of species.

In assessing cumulative effects for this species, impacts of past actions were included for actions implemented in the past century that may have lingering effects to wildlife. This cumulative effects analysis does not attempt to quantify the effects of all past human actions by adding up all prior actions on an action-by-action basis. There are several reasons for this approach. First, an analysis of all past actions on all wildlife habitat on the entire Inyo National Forest would be impractical to compile and unduly costly to obtain. Current conditions have been impacted by innumerable actions over the last century (and beyond), and it would be nearly impossible to isolate the individual actions that continue to have residual impacts. The understanding of the effects of past actions on many species is anecdotal, since very few studies have been done that accurately detailed specific effects to species. Surveys to document of species presence and habitats pre-project were not conducted in many instances.

Specific actions that are known to have lingering effects, such as trapping of mesocarnivores such as wolverine and Sierra Nevada red fox are discussed. Impacts of reasonably foreseeable future actions were included up to about 2026, or 20 years from project implementation. Impacts of reasonably foreseeable future actions were not included beyond this, because the effects related to this action cannot be predicted beyond 20 years, and because the maximum permit length would probably be 20 years.

Sierra Nevada Bighorn Sheep and Bald Eagle

All Alternatives

There is no effect to the Sierra Nevada bighorn sheep or the bald eagle with implementation of any of the Alternatives therefore there would be no contribution to cumulative effects acting on these species.

The cumulative effects analysis for the Trails and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses FEIS concluded that commercial pack stock operations in those wildernesses amounted to an insignificant contribution to overall cumulative effects acting on the species. That EIS also concluded there was no contribution to cumulative effects to the bald eagle from commercial pack stock operations in those wildernesses.

Willow Flycatcher

Alternative 1

This alternative would contribute to a short and long-term positive effect for willow flycatchers that would somewhat reduce adverse cumulative effects on the species and its habitat within the analysis area since all suitable meadow habitats currently used by commercial pack stations across the Forest would no longer be affected by grazing. Habitat structure for willow flycatcher occupancy would recover with the most rapid potential where meadows have been adversely affected by past grazing practices. Brown-headed cowbirds would no longer be attracted to pack station corrals on the landscape. There may be an improved potential for willow flycatchers to occupy and successfully nest in suitable habitats within at least a 4.2 mile radius from the removed feeding sites. Other cumulative effects are discussed in Alternatives 2 and 3.

Alternative 2 and 3

The existing and future contribution of commercial pack stock operations to cumulative effects is considered minor at this time since the INF LRMP (1988) standards and guidelines as amended by the 2004 SNFPA FSEIS/ROD are in place to adaptively manage suitable habitats to maintain willow and wet meadow habitats. Implementation of Alternative 2 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. The cumulative effects analysis for the 2005 AA/JM FEIS concluded that commercial pack stock operations in those wildernesses amounted to a minor contribution to overall cumulative effects acting on this species within this EIS portion of the analysis area.

Alternative 3 implementation cumulative effects contribution would be slightly less than those described in Alternative 2. The resting of West Agnew and Rodeo Meadows together with the implementation of Amendment #6 grazing standards would likely lead to better localized habitat conditions in meadow pastures. Otherwise the effects would be the same.

An exhaustive discussion of cumulative effects on willow flycatcher habitats in the Sierra Nevada including that is relative to the analysis area can be found in the SNFPA affected environment and effects analysis for the 2001 EIS (USDA Forest Service 2001). The principal affectors noted such as commercial livestock grazing, water diversions and dams have been present and continue to this day throughout much of the range of the two subspecies. Livestock grazing on all active livestock cattle and sheep allotments on the INF that overlap with suitable unoccupied willow flycatcher habitat lowers potential willow flycatcher nesting and foraging habitat suitability through a reduction in willow shrub density and foliage volume, and herbaceous plant cover. In addition a number of meadows, where this grazing occurs in suitable unoccupied habitats have been adversely affected from stream incision and the resultant wet meadow loss adversely affecting flycatcher habitat. Grazing may also modify insect production, the food source for the flycatcher; however this effect is poorly understood. Commercial livestock grazing contributes a relatively small amount to adverse cumulative effects to the species habitat on the INF however since there is a small area of overlap with suitable unoccupied habitat meadows on the Forest, primarily in the lower elevations of the Golden Trout Wilderness, and White Mountains. Commercial livestock grazing on the INF does contribute to the maintenance of brown-headed cowbird populations since cowbirds are known to inhabit and capitalize on potential food sources associated with areas around livestock. It is unknown what effect if any this has on potential occupancy of nearby suitable habitats by willow flycatcher.

Habitat loss and adverse modification of habitat has also occurred on the INF and adjacent lands from rural sprawl and community development, meadow drainage and fill, willow eradication, and home construction in meadows. Recreational developments such as at June Lake Ski Resort and home building in the June Lake Loop have resulted in a loss of suitable willow flycatcher habitat as well as increased human disturbance pressures such as an increase in brown-headed cowbird feeding centers adjacent to suitable occupied and unoccupied habitats. The Forest Service Snow Creek Land Exchange at Mammoth resulted in the loss of the majority of a 2004 SNFPA FEIS/ROD occupied willow flycatcher habitat area that has been converted to a golf course and condominium development.

Willow flycatcher populations have been in decline across the Sierra Nevada, initially as a result of the 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).

Most suitable willow flycatcher habitat in mid elevations meadows including habitats on other land ownerships along the eastern Sierra have human disturbance factors associated with them such

as adjacent campgrounds, day use sites, private homes, and roads that may contribute to habitat degradation and disturbance.

Developed campgrounds, picnic areas and summer homes, as well as nearby subdivisions and rural communities throughout the Sierra Nevada create feeding centers for cowbirds. 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.

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.

Goshawk

Alternative 1

The removal of commercial pack stock facilities in non-wilderness, and the cessation of operations in the GT/SS and AA/JM wildernesses including the use of wilderness trails and destinations may have a minor positive contribution to a reduction of cumulative adverse effects to goshawk from human disturbance activities within suitable habitats. What is unknown is if the elimination of this land use would make any substantive difference in the goshawk population, or the use of suitable habitats by goshawk on the INF since many other land uses would continue to impact goshawk in areas where commercial pack stock uses have ceased, particularly around pack station facilities in the Mammoth Lakes Basin, McGee Creek, Reds and Agnew Meadows, Bishop Creek, and Rock Creek. The cessation of commercial pack stock operations would not have any change in the factors affecting the 34 known goshawk nest territories on the INF.

Other cumulative effect factors specifically discussed in Alternatives 2 and 3 are likely to overshadow any positive changes, if any in the cumulative effect reduction that may occur from the implementation of Alternative 1. The direct and indirect effects of commercial pack stock operations represent a very small percentage of overall use in the non-wilderness analysis area and cannot be easily separated out from the total human disturbance presence and habitat modification effects of all Forest activities occurring in the area that may affect goshawk use of suitable habitats for nesting and foraging.

Alternatives 2 and 3

Implementation of Alternatives 2, or 3 would continue to contribute approximately the same low level of pack station, and commercial pack stock use associated human disturbance and habitat modification, direct and indirect cumulative effects in suitable goshawk habitats on the INF.

Other permitted past, present and likely future land uses on the INF that contribute to direct and indirect effects to goshawk and its habitat would continue to adversely impact goshawk habitat suitability within the analysis area. Continuation of motorized and non-motorized road and trail

activities such as mountain biking, off-highway vehicle and snowmobiling uses, cross-country skiing, hiking and backpacking, and many other recreational activities in the GT/SS, AA and JM Wildernesses, and Non-wilderness dispersed and concentrated recreation areas such as campgrounds, day use sites, ski areas, and resorts cumulatively have contributed, and continue to contribute to human disturbance pressures, and habitat suitability reduction, modification, and fragmentation. These activities adversely affect goshawk use of suitable habitats for nesting, and foraging on the INF. Specific examples of recent permitted actions, and actions currently being planned that have or will adversely affect habitat suitability by permitting human disturbance, and habitat modification and fragmentation include Mammoth Mountain Ski Area Expansion, Hot Creek Geothermal Development, Recreation Residence Permit Renewals, INF Route Designation, Bishop Creek Campground Construction, and hazard tree removal in concentrated human use areas such as campgrounds. Permitted campgrounds, day use areas, resorts, recreation residences other recreation facilities, and developments such as Mammoth Mountain, and June Mountain ski areas, and adjacent private land developments along the INF boundary maintain high levels of human disturbance and fragmentation in suitable goshawk habitats. Capture of goshawk from nests for falconry sport, regulated by the California Department of Fish and Game also affects the productivity of goshawk nests by lowering the number of young recruited into the population each year. The Sierra Nevada Forest Plan Amendment analysis for goshawk in the Sierra Nevada noted however, that the legal harvest of goshawk for falconry is low in the Sierra and does not impact the bio-regional population (USDA Forest Service 2001).

Past timber harvests such as overstory removal, shelterwood and thinnings in mature mixed conifer and lodgepole habitats in the Mammoth Lakes area and to the east of Highway 395 have reduced habitat suitability for goshawk in some areas. Ongoing annual fuels treatments such as the pine underburning program, and the establishment of fuel breaks in suitable habitats affect prey species composition, density and distribution. It is unknown how all of these land use factors have cumulatively affected the goshawk population, and the species overall use of suitable habitats on the INF. Annual nest monitoring indicates goshawk continue to occupy historic nest territories in the overall forested landscape matrix where these activities occur. Thirty-four goshawk territories are known to occur on the INF with a high probability of a number of other territories that have not been located, particularly in more remote sections of wilderness.

The implementation of the 2004 SNFPA FSEIS/ROD designation of Pair Activity Centers (PACs) for active nest sites, as well as management standards and guidelines that restrict activities in PAC's, such as seasonal human use restriction buffers around nest sites, are designed to reduce the cumulative effects on the species. The cumulative effects analysis for the 2005 AA/JM FEIS concluded that commercial pack stock operations in those wildernesses amounted to a minor contribution to overall adverse cumulative effects acting on this species within the Inyo National Forest.

Great Gray Owl

Alternative 1

The removal of the commercial pack stock facility, and the cessation of grazing and trail use in non-wilderness at Agnew Meadow, and the cessation of trail use and grazing at Johnston Meadow in the adjacent AA Wilderness would contribute to a slight positive cumulative effect for potential great gray owl use in these suitable habitat areas. Great gray owls have never been documented in the GT/SS Wildernesses; therefore there is no cumulative effect change from cessation of commercial pack stock use in these areas. Other cumulative effects would remain the same as described in Alternatives 2 and 3.

Alternatives 2 and 3

Grazing at Agnew Meadow up to the allowable forage use standards is unlikely to substantively contribute to a prey reduction cumulative effect on great gray owl hunting use of the San Joaquin meadows if great gray owls occupy these suitable habitats. The continuation of the facilities and pack station operations at Agnew Meadow and the commercial pack stock use of trails around Agnew Meadow would maintain a human disturbance effect to great gray owl potential use of these suitable habitat areas.

Continuation of other historic and present day long-term human uses in the area including motor vehicle uses on the road system in the area, hiking and backpacking use of the system trails, off-trail hiking, and day use recreation activities around meadows like Agnew Meadow would continue to lower the habitat suitability for great gray owl use especially since the majority of great gray owl use of suitable habitats occurs within 900 feet of a meadow perimeter according to Winter (1986). In addition the roads and trails as well as facilities such as the pack station buildings contribute to a habitat fragmentation cumulative effect in suitable nesting habitat forested areas adjacent to the meadows. It is unknown if the continuation of the commercial pack stock operation human disturbance cumulative effect contribution in concert with the other uses listed above in these areas would prevent great gray owls from inhabiting the available suitable habitat.

Implementation of the 2004 SNFPA FEIS/ROD survey and management requirements when a reliable sighting of a great gray owl occurs, including the biological evaluation process to determine if protective management measures are necessary once an occupied territory is confirmed are designed to reduce cumulative impacts to the species on the INF. Management measures could include actions such as more restrictive standards and guidelines for grazing management, and the development of a Pair Activity Center around a great gray owl occupied habitat to maintain habitat suitability, and limit human disturbance effects.

The cumulative effects analysis for the 2005 AA/JM FEIS concluded that commercial pack stock operations in those wildernesses amounted to a minor contribution to overall cumulative effects acting on this species within this EIS portion of the analysis area.

California Spotted Owl

Alternative 1

The INF is on the margin of the range of the species and suitable spotted owl habitat. One non-breeding owl was found in surveys in the mid 1990s in the Middle Fork of the San Joaquin. The area is marginal habitat primarily suitable for hunting prey such as woodrats and flying squirrels. The removal of pack station facilities at Agnew Meadow, and the Reds Meadow area, and the cessation of day rides in the Middle Fork of the San Joaquin would contribute to a slight reduction in human disturbance, and habitat fragmentation cumulative effects in the suitable hunting habitat of this species. It is unlikely there would be any substantive change in cumulative effects acting on any spotted owl population that may be present in the suitable habitats. Other cumulative effects are the same as Alternative 2 and 3.

Alternative 2 and 3

The continuation of pack station facilities and day use rides in the Middle Fork of the San Joaquin including trail use in the AA/JM Wildernesses portion of this analysis area would maintain a slight contribution to the human disturbance pressures that may affect the use of habitats by the spotted owl in the watershed. The cumulative effects are unlikely to be substantively adversely affecting the viability of the species since the small area of suitable habitat is considered to be of marginal habitat quality, as well as the fact that it sits on the eastern edge of the species range. It is not considered an important habitat area for the maintenance of the closest source population that occurs on the Sierra National Forest at lower elevations to the west. Other cumulative effects that have occurred and continue to occur in the Middle Fork of the San Joaquin are human disturbance activities from motor vehicle use on roads in the Middle Fork concentrated recreation areas, day use activities, and hiking and backpacking use of trails. In addition the roads and trails, as well as parking areas and campgrounds contribute to habitat fragmentation where they occur in suitable habitat.

Marten

Alternative 1

Cessation of commercial pack stock operations and the removal of facilities in suitable marten habitat at Mammoth Lakes Basin, Reds and Agnew Meadow areas, Rock Creek, and Rainbow pack station in the South Fork of Bishop Creek would eliminate the human disturbance effects to marten associated with the human uses of the facility areas within suitable marten habitat. In addition removal of the facilities would eliminate the fragmentation of small areas of habitat where the facilities occur. Cessation of all non-wilderness and wilderness commercial pack stock operations on trails and roads and at destinations through suitable marten habitat would eliminate this source of human disturbance to marten. The reduction in cumulative effects is not considered to be substantive since as described for a number of other species, there are numerous other more impacting human disturbance factors

affecting marten and its suitable habitat that directly overlap the pack station operating areas. These factors that would continue are the same as discussed in Alternatives 2 and 3.

Alternatives 2 and 3

Commercial pack station facility use and operations in suitable marten habitats in non-wilderness, and wilderness that includes the AA/JM Wildernesses portion of this analysis area is a relatively small contributor to adverse cumulative effects to marten and its habitat on the INF that have been ongoing and would continue under implementation of either Alternative. The operations at facilities and activities on trails such as day rides contribute to human disturbance avoidance and displacement effects to marten. In addition the facilities in suitable habitats contribute to habitat fragmentation.

The most significant historical adverse cumulative affectors on marten and its habitat have been commercial trapping for fur harvest and commercial logging in the mixed conifer, and lodgepole forests on the INF. The marten is no longer trapped since California banned trapping of the species in 1954, and the species appears to be present where suitable habitat is available based on track sign analysis, project site specific camera sets over the last 15 years, and two radio-telemetry studies on the Forest in 1995 and 2004. Timber harvesting on the INF was a significant adverse affector of marten habitat prior to 2000, and it has decreased substantially since then. Forest thinning projects, and related fuel wood removal and fuels reduction prescribed burns and other treatments around Mammoth Lakes and adjacent forests north, east and west of Highway 395 continue to decrease total available acres of marten habitat, and lower marten habitat suitability by removing understory vegetative cover, opening the forest canopy, and removing downed woody material important to maintenance of marten prey habitat. Defensive fuel breaks such as along The Mammoth Scenic Loop Road also adversely affect marten habitat suitability in the same way.

Other substantial historic and current day cumulative affectors outside of wilderness that adversely affect marten use of habitats on the INF are primarily the continued use and development of the Mammoth and June Lake Ski Areas, and adjacent rural sprawl and resort use, and development in the Mammoth Lakes Basin, and the forest land on the perimeter of the town of Mammoth Lakes.

Current and future heavy recreation use in the above landscape as well as in the Reds and Agnew Meadow area, Rock Creek, and Bishop Creek watersheds on non-wilderness forest land is a substantive human disturbance factor on the INF within suitable forested habitats. This recreational use likely results in marten routinely encountering human disturbance events that lead to an unknown level of temporary avoidance of trail corridor and destination use areas in these areas by the species. Radio-tracking of marten has shown the species does use these areas when humans are present so it is unclear what effect recreation use is having on the species. Disturbance focal areas in forested red fir, mixed conifer and lodgepole forests on marten include campground and day use areas, dispersed camping areas, off-road vehicle use areas as the Sherwin motocross area, snowmobiling and cross country skiing areas and day use and trail corridors. All these activities have some unknown level of effect on marten seasonal use of habitats that remains largely uninvestigated. Forest thinning projects and fuel reduction treatment are on-going and are likely to be implemented on an annual basis to the

west of Highway 395 particularly that will continue to reduce dense forested conditions that marten favor, as well as 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. These affectors will continue.

Wolverine

Alternative 1

It is unknown if the removal of commercial pack station activities within the total analysis area would make a substantive change to cumulative effects on this species and its habitat. The understanding of the status of the wolverine population in the Sierra Nevada and the species ecology is fundamentally lacking at this time.

The removal of pack station facilities and cessation of operations in non-wilderness, and all the wildernesses including the AA/JM Wildernesses portion of this analysis area on the INF would eliminate the potential for this human disturbance factor to act on the species and its habitat. There would still be all other user groups in the areas where commercial pack stations had operated, as well as all the a myriad of habitat disturbance factors and development pressures that are fragmenting and modifying habitat, particularly in the non-wilderness and adjacent private lands. These factors such as increased motorized and non-motorized recreational uses on the INF, resort and ski area expansion at Mammoth and June Lakes, new campground and trail construction such as in the Bishop Creek watershed, the Mammoth airport expansion to name a few would still be operating to lower overall landscape habitat suitability for wolverine, a wide-ranging carnivore.

Ruggerio et al. (1994) stated that wolverine habitat is best defined in terms of sparsely inhabited wildernesses. In that light the least used areas on the INF such as Category 1 areas of the AA/JM Wildernesses, the GT/SS Wildernesses, and the White Mountains provide the only refugia remaining where wolverine populations are likely to persist.

Ruggerio et al. (1994) concluded that the wolverine population in the Sierra eco-province may be isolated from other wolverine populations. They suggest the species may maintain its viability in the short-term; however its 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 key wilderness refugia 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.

Alternatives 2 and 3

The re-authorization of commercial pack stock facilities, and operations in non-wilderness and wilderness areas including the AA/JM Wildernesses portion of this analysis area would continue to contribute to the cumulative effects of human disturbance acting on this species. The magnitude and severity of this contribution is probably small since commercial pack stock operations make up a

fairly small percentage of overall uses on the INF. Pack stock operations in the AA/JM Wildernesses for instance comprise approximately 13% of the overall wilderness use.

Sierra Nevada Red Fox

Alternative 1

Similar to the wolverine the status and ecology of this species on the INF is poorly understood. The 2004 SNFPA FEIS/ROD (USDA Forest Service 2001) provides a comprehensive overview about all the factors that may be cumulatively affecting this species in the Sierra Nevada. This species is likely not as dependent on wilderness refugia for survival, however human presence was listed in the 2004 SNFPA FEIS/ROD as a potential cumulative affector on this species, and therefore the discussion of cumulative effects on wolverine is likely valid for this species as well. A study on the Lassen National Forest and Park should assist in a better understanding of the factors that are contributing to cumulative effects on this species.

Heavy livestock grazing in high elevation habitats, and meadow conifer encroachment was also noted in the 2004 SNFPA FEIS/ROD as adverse cumulative effectors on the fox's principal prey species in meadow habitats.

Alternatives 2 and 3

Cumulative effects are the same as the discussion for Alternatives 2 and 3 for the wolverine.

Townsend's Big-eared Bat

Alternatives 1

The cessation of commercial pack stock operations is unlikely to substantively change the cumulative effects on the Forest to this species and its habitat. Other cumulative effects are the same as Alternatives 2 and 3.

Alternatives 2 and 3

Implementation of either alternative is not likely to substantively add to the cumulative effects on this species. The continuation of pack stock grazing in pack station pastures as well as livestock grazing across the Forest in cattle and sheep allotments may change insect prey abundance in riparian meadows and stream corridors where this species is known to forage. Insufficient research is available to fully understand how grazing induced changes in prey species is contributing to cumulative effects on the Townsend's big-eared bat. A substantial cumulative affector on this species on the INF is the human disturbance activities that result in the degradation and potential loss of hibernation and maternity habitats established in human made structures such as abandoned mines and buildings. Some prime hibernation sites in mines are threatened by mining company proposals to reopen mining operations either as open pit mines or underground operations such as recent proposals at the Tip-Top Mine. Mineral exploration activities by mining companies in such hibernation sites is

also increasing human disturbance activities that may be adversely affecting hibernating Townsend's big-eared bats.

The Forest is also reviewing mines for closure because of human safety concerns which could potentially adversely affect availability of night roost habitats as well as hibernation sites such as at the Aeroplane Mine. The Forest is also tearing down old buildings such as at the White Caps Mine which can eliminate bat night roosting habitat. Recreational mine exploration such as at the Aeroplane Mine is also contributing to disruption of Townsend's big-eared bat use of an important hibernaculum.

Sage Grouse

Alternative 1

The cessation of commercial pack stock operations may provide a slight reduction in overall cumulative effects in sage grouse habitat such as in Long Valley, and in the Truman Meadows and Pizona Meadows landscape. Sage grouse appear to be extirpated from the latter meadow areas so the cumulative effects would be applicable to any future re-introduction of grouse. The continued expansion of pinyon pine into sagebrush habitats in this landscape makes future re-introductions problematic.

The elimination of stock drives on Forest roads across Long Valley, and the day ride trail from McGee to Hilton Creek that route through sage grouse sagebrush habitats could potentially slow the advance of invasive weeds such as cheatgrass that lowers habitat suitability for grouse. In addition the elimination of these activities would slightly reduce the potential for human disturbance events in suitable sage grouse habitat.

Other cumulative affectors would continue that are more significant to sage grouse use of Long Valley such as increased recreational pressure from OHV use, fishermen and other recreationists, dispersed camping, hot springs use, as well as developments such as the Mammoth airport expansion proposal, mineral exploration such as the Royal Gold Mine proposal, and Forest livestock allotment grazing. These affectors are cumulatively lowering sage grouse habitat suitability over time, promoting the spread of invasive weeds, and resulting in an increase in human disturbance events that may cause the species to potentially avoid habitats, and experience disruptions of important life activities such as nesting, foraging, and escape from predators.

Wildfires such as recent fires at Laurel Creek and the McLaughlin Fire continue to adversely modify sage grouse habitat over the long-term. On some sites such as south facing slopes, cheatgrass in particular that may initially be restricted to roads and scattered in low density from livestock and native animal movements rapidly takes over and dominates such sites after wildfire. The result is the area of cheatgrass invasion substantially lowers sage grouse habitat suitability. These sites may become unsuitable for sage grouse use over time with additional landscape fires. Pinyon pine and Jeffrey pine continue to slowly expand into the margins of the foothill slopes of Long Valley. These species are gradually lowering the perimeter habitat suitability over time.

Alternatives 2 and 3

The continuation of stock drive and day ride commercial pack stock activities in Long Valley would continue to slightly contribute to the cumulative affectors of sage grouse and the species habitat in Long Valley. Stock drives and day rides have the potential to spread invasive weeds along trail and road corridors that can accelerate invasive weed expansion in sage grouse habitat. Sage grouse may also be subjected to periodic human disturbance events from these activities where the grouse are displaced for some period of time, and avoid the corridor of habitat where the pack station activities are occurring. In addition such displacement and avoidance events could expose grouse to additional risk of predation when they flush. Other cumulative effects are the same as Alternative 1.

Sage grouse appear to have been extirpated from the Truman and Pizona Meadows habitat areas for unknown reasons. The continuation of wild horse viewing trips in the Montgomery wild horse territory is unlikely to contribute to substantive cumulative effects on the species at this time. The camp areas and day rides cross country and along roads have the potential to promote the spread of invasive weeds such as cheatgrass that would lower habitat suitability for sage grouse over time especially if efforts are directed at restoring sage grouse populations in this area. Vehicle use along roads in this area is also promoting the spread of invasive weeds. The primary affector of sage grouse habitat in the Montgomery Wild Horse Territory is likely pinyon expansion into sagebrush habitats and conversion of shrub habitats into pinyon woodland that has been occurring for a number of decades and is likely to continue.

Yosemite toad

Alternative 1

The cessation of day ride use on one trail in the Mammoth Lakes Basin that skirts the edge of a Yosemite toad breeding meadow may result in a slight reduction in cumulative effects to the species and its habitat. This meadow area is in the Lake Mary heavy recreation use area that continuously receives disturbance from fishermen and day use recreationists that use the trail, and that park vehicles on the edge of the meadow and walk in and around the breeding pool area for a variety of reasons.

The vast majority of Yosemite toad breeding habitats are in the John Muir, Ansel Adams, and Hoover Wildernesses on the INF. The principle cumulative affectors on the species and its habitat are recreation use in and around the meadows where the toad breeding pools are located and include trail sediment delivery into the pools, potential trampling of toads by hikers and pack stock, and pack stock grazing and trampling effects to breeding pool habitat. These aspects are discussed in depth in the Chapter 4 cumulative effects analysis for the Trail and Commercial Pack Stock Management in the Ansel Adams and John Muir Wildernesses EIS (USDA Forest Service 2005). Implementation of the FEIS ROD critical area grazing management standards would reduce the potential for pack stock grazing use of meadows to contribute to adverse cumulative effects on this species and its habitat.

Alternatives 2 and 3

The continued use of the trail for pack stock day rides along the edge of the breeding pool in the meadow south of Lake Mary could contribute slightly to cumulative effects on this species. Trail use may contribute to sediment delivery into the meadow that may arrive in the breeding pools. There is also a low potential that a Yosemite toad could be trampled by pack stock as mentioned in the direct and indirect effects section. Other cumulative effects are the same as Alternative 1.

California (Volcano) Golden Trout

Alternative 1

The cessation of commercial pack stock use in the GT/SS Wildernesses and adjacent non-wilderness would not substantively change the cumulative effects that are acting on the species and its habitat. There would be the elimination of small localized areas of streambank habitat degradation from trampling and chiseling impacts associated with commercial pack stock watering areas, and stream crossings. Recreational pack stock use would continue to contribute to this relatively minor, localized type of habitat degradation.

Cumulative impacts that are affecting the golden trout include the historic cattle grazing, recreational trail and camping, recreational stock use. The biggest threat to this species results from historic planting of non-native species, such as brown trout and rainbow trout. Both the brown trout and rainbow compete and predate on golden trout, and rainbow trout are the primary cause of hybridization. Several small dams have been built to control the invasion of non-native trout, and these too have had an impact on the stream dynamics, habitat and migration patterns of golden trout.

Cattle and sheep grazing impacts to golden trout habitat is the other principal cumulative affector on this species that has been occurring since the mid-1800s at highly variable levels. Cattle grazing continues to adversely affect golden trout habitat suitability within the commercial pack stock operation areas in the GT/SS Wildernesses, specifically the Monache and Mulkey Allotments. The ongoing rest from commercial cattle grazing on the Templeton and Whitney allotments since 2001 has substantively contributed to a beneficial reduction of cumulative effects by allowing for improved streambank, and instream habitat conditions on a number of key habitat streams in the Golden Trout Wilderness. There has also been a trend over the last decade toward improved livestock management that is gradually lessening the cumulative effects of grazing on golden trout habitat. Other factors such as angling pressure and impacts of non-commercial recreational uses of trails along stream habitat corridors are not substantively contributing to cumulative effects on this species.

Alternatives 2 and 3

Continuation of commercial pack stock operations that overlap with golden trout habitat in the GT/SS Wildernesses and adjacent non-wilderness with implementation of either Alternative would not contribute substantively to cumulative effects impacting the species that are identified in Alternative 1. In the areas where there is currently no cattle grazing, pack-stock use would be the main source of impact, and impacts would not likely come close to the 10% streambank maximum allowable

trampling standard, with the pack-stock trip numbers that are currently proposed for this area. However, in meadows where there is current grazing, impacts from pack-stock would be cumulative with the impacts from cattle, which could slightly accelerate the impacts towards the maximum allowable 10% streambank disturbance standard. Other cumulative effects would be the same as Alternative 1.

Mountain Yellow-legged Frog

Alternative 1

The cessation of commercial pack stock use would not have any impacts on the cumulative affectors identified below that have reduced frog populations and adversely affected suitable habitat in the GT/SS Wildernesses and adjacent non-wilderness. These impacts would continue regardless of the level of impact that would be eliminated with the removal of commercial pack stock activities.

The overgrazing by cattle and sheep on the Kern Plateau since the mid-1800s to mid-1900s, has contributed significantly to the degradation of mountain yellow-legged frog habitat in this area. The recent historic down-cutting of the stream and loss of wet meadow systems with associated deeper ox-bow ponds throughout the floodplain has led to the loss of available habitat for the mountain yellow-legged frog. The continuation of cattle grazing at the current Amendment #6 grazing and utilization standards and the rest from grazing on the Whitney and Templeton Allotments, has slowed this phenomenon down, but the restoration of this habitat is likely out of reach in our grandchildren's lifetimes. However, the current regulations and restoration efforts in some site-specific sites, such as fencing at Casa Vieja meadows and exclusion fencing in Tunnel Meadow, does contribute to the maintenance and restoration of this frogs habitat.

Indirect cumulative effects to the viability of mountain yellow-legged frogs include the promotion and advocacy and management of salmonid fish in high elevation lakes within the range of this species. Commercial pack station operators provide trips for anglers who support the continued stocking and management of these lakes for fish production. 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. Along with these plans, there has been a strong advocacy of support for removing fish and allowing mountain yellow-legged frogs to re-colonize the lakes. It has also been noted that some pack stations have received requests to travel to these destinations to observe these frogs in their native habitat.

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 mountain yellow-legged frog. Research continues in an attempt to understand how these affectors are

impacting the viability of the mountain yellow-legged frog populations and species as a whole. How this impacts the populations in the Golden Trout Wilderness is unknown. It is also not known which affectors have contributed to the significant declines of this frog on the Kern Plateau.

This alternative would have no additional impacts or reduction of impacts from the cessation of commercial pack use on mountain yellow-legged frog populations on the Coyote Flat area. Recreational vehicle use, cattle grazing, and other human activities such as hiking, exploring, will continue to act as affectors on this species in the Coyote Flat area.

Alternatives 2 and 3

The continuation of commercial pack stock use within the GT/SS Wildernesses and adjacent non-wilderness with implementation of Alternatives 2 or 3 would not contribute substantively to the other impacts that act cumulatively on the habitat or populations of mountain yellow legged frog identified in Alternative 1. The 10% streambank trampling standard applies cumulatively to all activities that occur within the stream reach, which includes cattle grazing. For those meadows that currently have active cattle grazing (within the Mulkey and Monache allotments), this standard would limit all streambank alteration to 10%. With the current levels of pack stock use within the analysis area within the Tunnel Meadow area (where frogs had previously been observed) the 10% alteration limit would be difficult to attain as there is currently no cattle grazing authorized in this meadow, and the meadow is fenced off as an administrative pasture that is rarely used. No commercial pack stock grazing is allowed in Bullfrog Meadows under either of these alternatives, so there would be no cumulative impacts from pack-stock operations on the frog population in this area.

There are no commercial pack-stock activities occurring within the area of the frog populations in the Coyote Flat area, however, there is a proposal for a potential stock drive event in the reasonable foreseeable future. This proposal would use existing stock drive trails up Shannon Creek to Onion Creek, around the west and north-west flank of Sugarloaf mountain, northerly along the road, and then across the meadow to the DWP land where the proposed overnight camp would be. There is no authorized grazing on Forest Service administered lands, and the event would not intercept the mountain yellow-legged frog populations. There would be no additional impacts with the current affectors, as mentioned above. There is a 20% streambank trampling limit on the stream populations of mountain yellow-legged frogs from cattle grazing. If additional use were to occur within these population areas, the impacts from pack-stock would be included in the 20% limit, and may impact the length of time the cattle were allowed to spend on the allotment, but the impacts would be the same to the frog habitat, regardless of the affector.

MIS Mule Deer, Yellow Warbler and Blue grouse

Alternative 1

There would be reduction in overall adverse cumulative effects on mule deer, yellow warbler and blue grouse with implementation of this alternative. Pack station facilities would be removed from key habitats in the riparian meadow and stream corridors, and riparian forested and shrub edges enhancing

habitat conditions for these two species. The elimination of pack stock grazing in all meadow pastures would improve meadow forage and cover habitat conditions for these species over time as well as eliminate direct disturbance of these species by pack stock.

The cessation of day rides, stock drives, wild horse viewing rides, and pack trips in the non-wilderness, and in all wilderness areas would eliminate this activity from acting as a human disturbance affector on these species, as well as a minor affector of habitat conditions. Mule deer, yellow warbler and blue grouse would be subjected to fewer avoidance and disturbance events as a result. The unknown is whether the reduction in effects from the elimination of commercial pack stock activities would be offset by an increase in other human disturbance factors such as increased stock use from non-commercial interests, as well as other recreation user groups. The Eastern Sierra continues to grow in human population and all of the development and recreational activities that increase along with population growth. This fact is likely to continue to increase adverse cumulative effects on these species on the INF.

There will continue to be projects on the INF implemented over the near term through long-term timeframe that will reduce the habitat available for these species as well as lower habitat suitability, and increase human disturbance pressures. Project examples include the expansion of Mammoth Airport, and the associated visitor use increase, the construction of a new campground in Bishop Creek, continued mineral exploration predominantly in the White Mountains, increased OHV use in riparian corridors of habitat such as at Furnace Creek. In addition there will continue to be pressures placed on habitats from off Forest developments such as the housing development at Rovana and the recent development of homes at Crowley and Mammoth Lakes, along with recreation resort expansion and developments such as the recent cabins constructed at Convict lake, and the Snowcreek land trade that converted relatively undisturbed habitat to condominiums and a golf course.

Alternatives 2 and 3

There may likely be a minor positive contribution to the lessening of cumulative effects to MIS mule deer, yellow warbler, and blue grouse with implementation of either alternative with the implementation of range readiness on-dates for pack stock grazing of meadows in non-wilderness pastures, and in wilderness grazing areas including the AA/JM Wildernesses portion of this analysis area, along with the implementation of forage utilization standards in meadow pastures. Alternative 3 would have additional reduction of cumulative effects with implementation of more restrictive Amendment number 6 lower forage utilization standards, and meadow pasture rest from grazing at Rodeo, Agnew West, and Lower Rock Creek pastures. In addition the removal of the Truman and Pizona Meadow camps out of the riparian habitats and into the uplands would reduce the cumulative effects on riparian habitat in this landscape.

Alternatives 2 and 3 would continue to contribute somewhat to adverse cumulative effects on these species by the continuation of habitat loss and modification from pack station facilities, and the associated human disturbance that occurs in and around the facilities. The approval of day rides,

stock drives, wild horse viewing trips, and trips in the wildernesses including those trips approved in the John Muir and Ansel Adams Wildernesses would continue to contribute to human disturbance events on these species. It is unknown how these effects influence the populations of these species at the landscape level. Otherwise cumulative effects would be the same as Alternative 1.

3.4.1.7 Relationship of Project-Level Impacts to Forest-Scale Habitat and Population Trends for MIS species.

Sierra Nevada Bighorn Sheep

The effects analysis has concluded that implementation of any Alternative would not affect Sierra Nevada Bighorn Sheep habitat, therefore the project would not contribute to or alter the existing stable forest-scale habitat trend or contribute to, or alter the increasing Forest population trend for this species.

Bald Eagle

The effects analysis has concluded that implementation of any Alternative would not affect bald eagle habitat, therefore the project would not contribute to or alter the existing stable forest-scale habitat trend or contribute to, or alter the increasing population trend for this species within the Pacific Southwest Recovery Zone.

Northern Goshawk

The direct, indirect, and cumulative effects of the project alternatives would not substantively affect the slightly decreasing habitat trend for the goshawk habitat at the forest-scale. The cessation of commercial pack stock activities under Alternative 1 would slightly improve habitat suitability on 13,798 acres, which is 5.2 % of the total 264,434 acres of goshawk habitat on the Forest. The Alternative would not affect the stable population distribution trend at the Bio-regional scale. Continuation of commercial pack stock activities under Alternatives 2 and 3 would slightly reduce habitat suitability on the 13,798 or 5.2% of the total goshawk habitat on the Forest, but would not change the slight decrease in habitat trend on the INF, or stable population trend at the bio-regional scale.

Great Gray Owl

The direct, indirect, and cumulative effects of the project alternatives would not substantively affect the moderately decreasing habitat trend for the great gray owl at the forest-scale. The cessation of commercial pack stock activities under Alternative 1 would have a slight improvement on habitat on 4,064 acres which is 10.7 % of the total great gray owl habitat on the Forest. The Alternative would not affect the population distribution trend of great gray owls on the INF. Continuation of commercial pack stock activities under Alternatives 2 and 3 would not change habitat suitability on the 4,064

acres of habitat, therefore it would not affect the overall habitat trend for great gray owl, or affect the population distribution trend of the great gray owl.

California Spotted Owl

The direct, indirect, and cumulative effects of the project alternatives are minor and negligible and would not substantively affect the moderate decreasing habitat trend for the California spotted owl at the Forest-scale. The cessation of commercial pack stock activities under Alternative 1 would have a minor and negligible improvement on habitat suitability on 6,750 acres which is 6.4 % of the total California spotted owl habitat on the Forest. The Alternative would not affect the population distribution trend of California spotted owl on the INF. Continuation of commercial pack stock activities under Alternatives 2 and 3 would not change habitat suitability on the 6,750 acres of habitat, or affect the stable bio-regional distribution and demographic population trend of the California spotted owl.

Wolverine

The direct, indirect, and cumulative effects of the project alternatives are minor and negligible and would not substantively affect the stable habitat trend for wolverine habitat at the Forest-scale. The cessation of commercial pack stock activities under Alternative 1 would slightly improve habitat on 16,737 acres which is approximately 6 % of the total wolverine habitat on the Forest. The Alternative would not affect the Bio-regional population presence trend of the wolverine. Continuation of commercial pack stock activities under Alternative 2 and 3 would not change habitat suitability on 16,737 acres of wolverine habitat on the Forest, or affect the Bio-regional population presence trend of the wolverine.

Sierra Nevada Red Fox

The direct, indirect, and cumulative effects of the project alternatives are minor and negligible and would not substantively affect the stable habitat trend for Sierra Nevada red fox habitat at the Forest-scale. The cessation of commercial pack stock activities under Alternative 1 would slightly improve habitat on 9,512 acres which is approximately 4% of the total Sierra Nevada red fox habitat on the Forest. The Alternative would not affect the Bio-regional population presence trend of the Sierra Nevada red fox. Continuation of commercial pack stock activities under Alternative 2 and 3 would not change habitat suitability on 9,512 acres of Sierra Nevada red fox habitat on the Forest, or affect the Bio-regional population presence trend of the Sierra Nevada red fox.

American Marten

The direct, indirect, and cumulative effects of the project alternatives are minor and negligible and would not substantively affect the slightly decreasing habitat trend for the American marten at the Forest-scale. The cessation of commercial pack stock activities under Alternative 1 would have a minor and negligible improvement on habitat suitability on 11,251 acres which is approximately 6% of the total American marten habitat on the Forest. The Alternative would not affect the stable Bio-

regional population distribution trend of the American marten. Continuation of commercial pack stock activities under Alternatives 2 and 3 would not change habitat suitability on the 11,251 acres of habitat, or affect the stable Bio-regional population distribution trend of the American marten.

Mule Deer

The direct, indirect, and cumulative effects of the project alternatives are minor and negligible and would not substantively affect the stable habitat trend for the mule deer at the Forest-scale. The cessation of commercial pack stock activities under Alternative 1 would have a minor and negligible improvement on habitat suitability on 80,549 acres which is approximately 5% of the total mule deer habitat on the Forest. The Alternative would not affect the stable Forest population distribution trend of the mule deer. Continuation of commercial pack stock activities under Alternatives 2 and 3 would not change habitat suitability on the 80,549 acres of habitat, or affect the stable Forest population distribution trend of the mule deer.

Yellow Warbler

The direct, indirect, and cumulative effects of the project alternatives are minor and negligible and would not substantively affect the stable habitat trend for the yellow warbler at the Forest-scale. The cessation of commercial pack stock activities under Alternative 1 would have a slight improvement on habitat suitability on 3,054 acres which is approximately 8% of the total yellow warbler habitat on the Forest. The Alternative would not affect the stable Forest population distribution trend of the yellow warbler. Continuation of commercial pack stock activities under Alternatives 2 and 3 would result in a minor and negligible improvement in habitat suitability on the 3,054 acres of habitat, but would not affect the stable Forest population distribution trend of the yellow warbler.

Blue Grouse

The direct, indirect, and cumulative effects of the project alternatives are minor and negligible and would not substantively affect the stable habitat trend for the blue grouse at the Forest-scale. The cessation of commercial pack stock activities under Alternative 1 would have a slight improvement on habitat suitability on 18,789 acres which is approximately 5% of the total blue grouse habitat on the Forest. The Alternative would not affect the Forest-wide stable population distribution trend of the blue grouse. Continuation of commercial pack stock activities under Alternatives 2 and 3 would result in a minor and negligible improvement in habitat suitability on the 18,789 acres of habitat, but would not affect the Forest stable population distribution trend of the blue grouse.

Sage grouse

The direct, indirect, and cumulative effects of the project alternatives are minor and negligible and would not substantively affect the stable habitat trend for the sage grouse at the Forest-scale. The cessation of commercial pack stock activities under Alternative 1 would have a slight improvement on habitat suitability on 21,638 acres which is approximately 6% of the total sage grouse habitat on the Forest. The Alternative would not affect the Forest decreasing population distribution trend of the

sage grouse. Continuation of commercial pack stock activities under Alternatives 2 and 3 would result in a minor and negligible improvement in habitat suitability on the 21,638 acres of habitat, but would not affect the decreasing Forest population distribution trend of the sage grouse.

3.4.2 Vegetation

The vegetation resources in the project area are analyzed in several sections. The first section (3.4.2.1) covers general vegetation types and conditions and the relationship to grazing resources. Analysis of impacts to fens as required by the 2004 SNFPA ROD can be found in this section. Two sections addressing particular plant species follow: rare plants and weeds (3.4.2.2 and 3.4.2.3). The analysis of effects to the viability of rare plant populations and to the spread and persistence of weeds is required by the 1998 INF LRMP and the 2004 SNFPA.

Individual sections are subdivided geographically to facilitate site specific analysis and follow the structure described in the Chapter 1 description of the analysis area (Sec. 1.1.1): non-wilderness parts of project area, MPWHT, Ansel Adams/John Muir Wildernesses and Golden Trout and South Sierra Wildernesses (see Figure 2. Project Area Map).

3.4.2.1 General Vegetation and Grazing Resources

Methods

Areas with specific commercial pack stock operations proposed were visited in the field by an IDT. Their field reports are available in the project record and form the primary basis of the following analysis. All available existing data from other projects in the INF files was utilized where appropriate. Most applicable was existing data from grazing allotments where proposed pack stock activities overlap with past or present livestock allotments (INF 2210 files). Vegetation types were mapped and evaluated using aerial photography and Ecological Unit Inventories in INF GIS databases (INF 2006, INF 2000). Methods specific to particular sites or activities such as the pack stock pastures are described in the appropriate section below.

In key areas and selected critical areas several sampling protocols were used to make quantitative measurements and establish baseline information for future monitoring of trend. Key areas are established to be representative sites for the monitoring and assessment of a larger area. They are established in areas where use levels are expected to be average and in ecological types expected to respond early to use (USDA FS Pacific Southwest Region 1997). Critical areas are habitats or features of particular concern because of their sensitivity to impacts or the habitat they provide for sensitive species. Examples include fens, spring heads, and breeding pools for Yosemite Toads. The measurement and monitoring methods used include the INF LRMP Amendment #6 protocol for assessing vegetation and watershed conditions (USDA FS Inyo NF 1995), the USFS Pacific Southwest Regional Rooted Frequency protocol for quantitative measurement of plant species composition and trend (Weixelman and Bakker 2005), the USFS Pacific Southwest Regional Toe Point Protocol for more rapid assessment of plant species composition (USDA FS Pacific Southwest Region 1969 - FSH 2209.21), the Proper Functioning Condition Protocol for Lotic and Lentic riparian areas (USDI BLM et al. 1995 and 1999), and the USFS Regional Fen Checklist (in draft form).

Scale

The entire analysis area is described and effects are summarized at the analysis area-wide scale. Subsequently each geographic subdivision of the analysis area is described and analyzed at the geographic scale (see Analysis Area Map). Where site specific activities are proposed that may affect vegetation resources such as grazing in pastures, incidental grazing in particular meadows, or permanent camp site locations, those are analyzed within the geographic area at a site specific scale. For the description of effects, local scale was considered to be within the footprint of the activity such as a pasture or camp site while landscape scale was considered to be at the scale of the major drainage or analysis area as a whole.

The time scale used for the analysis is generally several decades. This is a relevant time scale for vegetation recovery and trend. Most vegetation communities can show measurable change on a decade to 20 year scale. For the effects analysis, short term was considered to be one season to several years, moderate term a decade and long term greater than 20 years.

Indicators

Several indicators were used in this analysis to track and summarize the effects to vegetation resources. One of the significant issues identified during scoping of the proposed action was that commercial pack station operations as proposed may adversely affect RCA condition and trend (Section 1.7: Issue #3). This issue focuses the analysis on meadows and riparian resources. Riparian resources are critical because of their ecological and hydrologic role and pack stock activities and effects to vegetation tend to be concentrated on riparian areas. The riparian indicators used are the following:

- **Meadow condition** (high, moderate, or low condition or early, mid or late seral as defined by USDA FS Pacific Southwest Regional protocols and the 2004 SNFPA).
- **Stream condition** (PFC, FAR or non-functional following the PFC protocol)(USDI BLM et al. 1998 and 1999)
- **Fen condition** (high, moderate, low using the draft USFS Fen Condition Checklist)

The analysis is not limited to these indicators, but these three primary indicators are tracked throughout. The existing condition for each indicator is listed in tables 3.41 (pastures, including those in the GT/SS Wildernesses), and 3.44 (GTW/SS wilderness meadows). The predicted trends in each indicator for the pastures under each alternative are reported in table 3.43. Other indicators are analyzed on a site specific basis where necessary.

All Analysis Units

Affected Environment: Analysis Area-Wide

Vegetation types

The project area spans four different Ecological Sections of California with very diverse vegetation types: the Sierra Nevada, the Mono Basin, the Southeastern Great Basin, and the Mojave Desert (Miles and Goudey, 1997). The primary vegetation types are Basin Sagebrush, Bitterbrush,

Bunchgrass and Pinyon Juniper types in the north and northeast areas, with Shadscale shrub and or Salt desert and Creosote bush shrub in the south near the floor of the Owens Valley. Along the eastern Sierra Nevada front and on the Kern Plateau, vegetation types include Subalpine to Alpine shrub and Meadows, Montane forests, Mountain mahogany and related mountain brush types, and inclusions of riparian forest types such as Aspen, Water birch, Cottonwood, and Willow. The riparian vegetation types are uncommon across the landscape and provide important habitat for plant and animal species. The riparian vegetation types, especially the meadow types, are also the most important as grazing resources.

Fens are a particular type of wetland area considered a “special aquatic feature” (2004 SNFPA). Fens are areas where peat (undecomposed or partially decomposed plant material) accumulates in groundwater-fed, perennially saturated areas. It was assumed that they were relatively rare in the Sierra Nevada, but preliminary surveys in the region, including on the Inyo NF, have located more fens than expected (INF files and Cooper and Wolf 2004).

Fen function is dependent upon maintaining a saturated hydrologic environment for most of the year. Where trampling impacts from livestock or pack stock occur in an individual fen, these impacts may add up to enough trampling, compaction, water channeling, and vegetation removal to impair fen function beyond the point where organic matter can continue to accumulate. The level of trampling impact that impairs fen function is not well established, but 20% trampling has been shown to negatively affect fens in an initial study (Cooper, 2005).

Grazing History

There has been a history of domestic livestock grazing over the entire analysis area since the late 1860s, well before the creation of the Forest Reserves or the modern Forest Service (Kinney 1996 and Menke et al. 1996). In general, grazing pressure peaked in the early 1900’s with overlapping use by large herds of sheep and cattle, many of them traveling through the region in large seasonal circuits that encompassed most of the length of the Sierra Nevada. Grazing was at levels at least an order of magnitude higher than those today. Reports and historic records indicate that domestic livestock could be found everywhere, even in the High Sierra in areas today considered almost completely inaccessible. The accounts of grazing during this era describe a landscape without a single green plant after the herds of sheep passed through (Menke et al 1996).

Grazing pressure declined slightly after the early 1900’s with the regulation by the federal government. Stocking levels fluctuated somewhat throughout the first part of the century with increases during the world wars. Since the 1940’s there has been an overall reduction in grazing (Menke et al. 1996). Grazing by cattle and sheep continues on many parts of the INF under livestock grazing permits on active allotments, by private pack stock on recreational trips, and by commercial pack stock in association with pack station resorts.

The effects of the widespread and intense grazing from the late 1800’s are still evident today. Altered species composition, soil compaction, channeling of previously unchanneled meadow swales, stream incision, and lowered water tables may all be related to historic grazing. Ecosystems

throughout the analysis area are still responding to the impacts of past intense grazing. Most are in an upward trend because grazing has been removed or reduced, however, some effects such as deep gullies and destabilized stream channels may be continuing in a downward trend with or without active grazing. Some vegetation communities do not respond linearly to removal of grazing and may have an altered species composition that is stable and will not naturally move towards a pre-grazing community without active intervention.

Environmental Consequences: All Analysis Units

Alternative 1

Direct and Indirect Effects

The primary effects of Alternative 1 on vegetation would be mostly very local. The largest effect to vegetation was determined to be some recovery from low or moderate condition vegetation in some permitted pastures with rest from grazing and recovery of understory vegetation within the footprint of the pack station facilities. Without pack station authorization, the grazing in meadows in the AA/JMW approved in the 2005 AA/JM EIS would not occur and some minor upward trend in meadows in would be expected (AA/JM FEIS IV-270).

Meadow condition: Moderate localized improvements in meadow condition in pastures and minor localized improvement in AA/JM wilderness meadows over the long term.

Stream condition: Moderate localized improvements in stream condition in pastures and minor localized improvements in AA/JM wilderness meadows over the long term.

Fen condition: Moderate localized improvements in fen condition in pastures and minor localized AA/JM wilderness meadows over the long term.

Cumulative Effects

The cumulative effects analysis for grazing/vegetation will include a land area encompassing the Inyo National Forest and grazing areas nearby, on private, BLM and LADWP lands in the Owens Valley and Long Valley. The adjacent valleys area included because many of the pack stations grazing their stock in the valleys during the non-operational season. Therefore, actions on Forest land can affect their grazing on adjacent lands, and actions on adjacent grazing lands can affect the demand for on-Forest grazing.

In assessing cumulative effects for grazing resources, impacts of past actions were included for actions implemented since the beginning of grazing in this region in the 1850's. Actions preceding that date were not included because before that time, the effects of any large-scale manipulation of vegetation are unknown. While it is difficult to tease out cumulative effects of grazing from 150 years ago or 10 years ago, it is known that certain grazing-related impacts likely began in the 1850's. Impacts of foreseeable future actions were not included beyond about 2027, or 20 years, because effects to vegetation and watersheds cannot be predicted beyond 20 years, and that is the likely maximum extent of this permit.

Residual impacts of historic grazing will affect the ability of vegetation to respond to any changes in commercial pack stock management as a result of this decision. Areas with relic compaction and altered hydrologic function will not be able to respond to the removal of grazing very rapidly. Where perennial late seral species, such as rhizomatous sedges, have been lost from a site re-colonization may be delayed and weedy species may predominate without active restoration.

Other activities may replace the effects of the commercial pack stock activities if they are removed. This includes production livestock grazing where the two uses overlap and are regulated with one cumulative use and streambank alteration standard (see GT/SS Wilderness section). It also includes use of trails in high use areas and impacts to riparian vegetation in the HDRA's where other users may reduce the ability of the vegetation to recover from removal of the facilities. These effects may cumulatively reduce the amount and rate of recovery of ecosystems across the analysis area from the removal of commercial pack station facilities.

The anticipated recovery of local meadow vegetation with the removal of pack stock pastures would increase the amount of high condition riparian vegetation throughout the analysis area. This would not be important relative to the total riparian acres across the analysis area, but it would be important relative to the total acres of high condition meadow vegetation at the middle elevations in the Eastern Sierra canyon ecosystems because a large percentage of these meadows have reduced productivity do to impacts from recreation and development on both Forest Service and other land ownerships.

The lack of authorization for commercial pack stock to pass through the INF to Sequoia-Kings Canyon National Park and to the portions of the AA/JM Wildernesses managed by the Sierra National Forest would reduce the impacts to wilderness meadows due to commercial pack stock grazing in SEKI and the SNF.

The removal of commercial pack stock grazing added to the recent reductions in grazing by the INF, BLM and LA DWP may contribute to a destabilization of the local ranching economy. However, the amount of grazing provided in permitted pack stock pastures is a very small fraction of the total grazing available in the region.

Alternative 2

Direct and Indirect Effects: Analysis Area-Wide

The primary effects of Alternative 2 on vegetation would be mostly very local. The largest effect to vegetation was determined to be in permitted pastures and as a result of the footprint of the pack station facilities. Minor effects were predicted in non-wilderness camp sites including the MPWHT. Minor to moderate local short term effects were predicted in meadows in the GT/SS Wildernesses. These effects are negligible at an analysis-area wide scale.

The implementation of the AA/JM 2005 ROD is expected to result in some local adverse long term effects in individual meadows and in some local beneficial long term effects in meadows with a decision to close or rest (2005 AA/JM FEIS IV-523-525). An overall beneficial effect to fens was predicted (2005 AA/JM FEIS IV-511).

Meadow, stream and fen conditions: At the analysis-area wide scale the effects to meadow, stream and fen condition are similar. Minor to moderate local adverse long term effects are expected in some pastures. Minor to moderate local beneficial effects are predicted in some pastures where management is expected to change. Minor to moderate local short term adverse effects were predicted in wet meadows in the GT/SSW, but are negligible at the analysis area scale. Minor to moderate local improvements in meadows, streams and fens in the AA/JM Wilderness and some long term local adverse impacts with continued grazing were predicted with the implementation of the 2005 AA/JM ROD.

Cumulative Effects: Analysis Area-Wide – Alt. 2

The residual effects of historic grazing throughout the region may have reduced the productivity and resiliency to pack stock grazing in pastures and in wilderness meadows. Vegetation is generally in an upward trend in recovery from the much higher grazing pressures earlier this century. At a local level the pack stock grazing proposed in Alternative 2 may slow or prevent this recovery, but the amount of grazing proposed affects a very small proportion of the acres in the total analysis area. It is relevant within the Eastern Sierra mid-elevational meadow ecosystems because such a large proportion of these systems have been impacted or eliminated by development.

The trips authorized in Alternative 2 that pass through the GTW to SEKI result in grazing impacts to meadows in the Park. However, it is reasonably foreseeable that SEKI will regulate these impacts in an upcoming Wilderness Plan.

The amount of grazing authorized under this alternative would not be a large change in the total grazing available in the region and would be unlikely to affect the stability of the local agricultural economy. It may, however be significant given the current and potential reductions in grazing that have occurred on the INF, BLM, and LA DWP. The INF has grazing analysis scheduled on the majority of their grazing allotments within the next decade and SEKI is planning to do a Wilderness Plan that may affect the amount of use in the National Park.

Alternative 3

Direct and Indirect Effects: Analysis Area-Wide – Alt. 3

The primary effects of the Alternative 3 are very similar to Alternative 2 at an analysis area-wide scale because the effects are mostly localized within pastures. The main difference is that no localized adverse effects are predicted in pastures under Alternative 3 and the local effects to meadow and stream vegetation at the camps in the MPWHT would recover. The effects in the GT/SS Wildernesses, and the AA/JM Wilderness would be largely the same.

Cumulative Effects: Analysis Area-Wide – Alt. 3

The cumulative effects of Alternative 3 are similar to Alternative 2 above. The cumulative effect of recovery from historic grazing and the grazing proposed in Alternative 3 would be to potentially slow the recovery from historic grazing, but not prevent that recovery because of the design of the INF

LRMP Amendment 6 standards to allow for watershed and vegetation recovery and the incentive to take active restoration actions.

The total amount of grazing authorized in Alternative 3 is lower than in Alternative 2, but it is not large relative to the total amount of grazing going on in the region.

Non-Wilderness Areas of the Forest

Affected Environment

Vegetation Types

The non-wilderness areas within the project area include the eastern slopes of the Sierra Nevada ecological subsection where the predominant natural plant communities at the northwest end are Jeffrey pine series, White fir series, mixed subalpine forest series, and Red fir series, and big sagebrush series at lower elevations. South of Owens Dry Lake, Singleleaf pinyon series predominates with Black bush series in the lower elevations. Joshua tree series, California buckwheat series, and mixed scrub shrublands occur at the south end of the Sierra Nevada (Miles and Goudey, 1997).

The Glass Mountains and Crowley Lake area outside the wilderness are in the Crowley Flowlands ecological subsection where Lodgepole pine series dominates at higher elevations and Singleleaf pinyon, Bitterbrush and Curleaf mountain mahogany dominate at lower elevations. Aspen occur in areas where snow accumulates and Willow thicket alliances occur in wet areas. Pumice forb habitats are a unique component (Miles and Goudey, 1997).

Current Condition

In the non-wilderness section of the analysis area, only a minor percentage of the area has any potential to be affected by commercial pack stock activity. Most of this area is concentrated near trailheads in the HDRAs. The proposed actions with potential to affect vegetation resources include the base facilities at the pack stations, grazing in permitted pastures associated with base facilities, the use of trails in the front country, stock drives, cross country travel, and camps. There is no grazing incidental to trips authorized in this geographic subsection of the analysis area. These activities largely occur in a matrix of montane riparian shrub, meadow and forested vegetation types in the major canyons of the eastern Sierra front. Grazing within the permitted pastures and its management has the greatest potential to affect vegetation resources and the riparian conditions related to the significant issues. The areas affected by each of these activities are discussed below with an emphasis on the pastures because of their importance to vegetation, grazing resources and riparian conditions.

Pastures

The most intense grazing pressure associated with pack station activities occurs in permitted pastures associated with some of the pack station base facilities (See Operations Maps, Appendix J). The majority of these pastures are in the non-wilderness analysis area. A few pastures in the Golden Trout Wilderness are discussed in detail in the GT/SS Wildernesses analysis area.

Methods for pasture analysis

For this analysis, the pastures were visited by the IDT. The IDT determined which areas within the pastures were suitable and usable for grazing based on criteria such as available forage, accessibility, range readiness, wetlands, fens, slope, and resource conditions. The pasture vegetation was mapped based on both air photos and the field visits (see maps in the project record). Production for each vegetation type was estimated based on average vegetation community production reported in Ratliff (1982). From the vegetation type maps, total production for the usable acres in each pastures was calculated (project record) and used to estimate the amount of grazing available at the standards in each alternative (Table 3.42).

The current meadow condition (indicator for issue #3) in these pastures is summarized in Table 3.41. The IDT estimated each pasture meadow species composition as early, mid, or late seral based on qualitative field observations. In some pastures the standard USFS Region 5 rooted frequency transects have been installed where species composition and soil characteristics are quantitatively measured in a specific location. The results are rated as high, moderate or low ecological condition according to the regional protocol (Weixelman and Bakker, 2005). The IDT also assessed the stream conditions (indicator for issue #3) in each pasture using two protocols. Stream reaches and wetlands were evaluated using the interagency Proper Functioning Condition (PFC) protocol (BLM et al. 1995) (for more detail on PFC see the Hydrology and Soil section 3.3.2). The condition of the entire riparian system including the stream and associated meadows were evaluated using the Inyo National Forest Land and Resource Management Plan (INF LRMP) Amendment #6 watershed assessment. INF LRMP Amendment #6 was designed to evaluate conditions on rangelands on the INF and set grazing utilization standards adaptively depending on vegetation and watershed conditions and a variety of management options including watershed restoration. Six different watershed characteristics including compaction, bare ground, stream incision, headcuts, and sod depth are rated at levels from I (non-functional) to IV (Fully functional). Based on the distribution of each of the individual ratings, the assessment is placed in one of four categories with different management recommendations. Many of the characteristics were based on the USDI Rangeland Health Assessments and for the purposes of this analysis the summary categories are described in terms similar to the Rangeland Health Assessments as none, slight, moderate, or extreme departure from desired conditions (BLM et al. 2000).

Where potential fens were present in the pastures, these were evaluated by probing or dig small soil test pits to measure the depth of the organic soil. The condition of the fen was evaluated and any evidence of disturbance that might compromise the fen function was recorded. The condition of the fen was assessed using a USFS Region 5 Condition Checklist that is in draft form. Condition from the checklist was described as High, Moderate, or Low according to the preponderance of evidence on the checklist. The checklist is based on current fen research and the findings of recent studies of trampling in Sierra Nevada fens. According to the research available at this time, trampling of fens by livestock above 20% of the area can impair the function and lead to a loss of organic soil (Cooper, Weixelman pers com).

Summary of pasture ecological condition

Five out of twenty pasture units are in early to mid-seral status (Table 3.41), indicating likely impacts from grazing. Of particular concern are the West unit of the Agnew Meadows Pasture and the Rock Creek Lower Pasture. The remaining units show relatively desirable mid to late seral species composition. Seven out of the twenty pasture units have poor watershed conditions and or are functional - at risk under the PFC protocols. These include Rodeo, West Agnew Meadows, Upper Rock Creek, Lower Rock Creek, North Lake (Large), South Fork Meadows, and Overholster Pastures. Nine of the pasture units include fens. Six of the pastures with fens have hydrologic status rated functional at risk (FAR) and three are considered to be at proper functioning condition (PFC).

Table 3.41. Condition of pastures based on IDT field assessments and available monitoring data. Condition assessments are the basis used to set grazing utilization rates under Alternatives 2 and 3. Fen wetlands are special features with direction to be protected in the 2004 SNFPA ROD.

Pasture Name	Meadow Ecological Condition: 1. IDT estimate of seral status 2. R5 Rooted Frequency Transect: Veg/Veg+Soil	Riparian Condition: 1. PFC 2. INF LRMP Amendment #6 Watershed Assessment	Fens: Presence/Condition
Rodeo	1. Early to mid seral, 2. High/High	1. Meadow wetland: FAR ↔ 2. Moderate departure	None
Evans	1. Late seral 2. no data	1. Meadow wetland: PCF 2. Slight departure	Small fen inclusions in meadow: Moderate
Agnew West	1. Early to mid seral 2. 1 Low/Low 1 Moderate/Mod.	1. Stream: FAR↑(2004), FAR↔(2005) 2. Extreme departure	None
Agnew East	1. Late seral 2. no data	1. Undetermined 2. Slight departure	Small fen inclusion in meadow: High
McGee	1. Late seral 2. Moderate/High	1. Meadow wetland: PFC 2. Slight departure	Marly (salt, high pH) fen inclusions in wet meadow: High
Rock Creek Upper	1. Late seral 2. no data	1. Meadow wetland: PFC 2. Moderate departure	Large sloping fen with spring channels makes up most of pasture: Moderate
Rock Creek Lower – Meadow Unit	1. Early seral 2. Low/Low	1. Stream: FAR↔ 2. Moderate departure	Fen inclusions meadow and in willow stringers on benches: High
Rock Creek Lower – Forest Unit	1. undetermined 2. no data	1. no data 2. no data	None
North Lake Small	1. Mid seral, 2. no data	1. Meadow wetland/pond: FAR↔ 2. Slight departure	None
North Lake Large	1. Mid seral, 2. Low/Moderate	1. Stream: PFC 2. Moderate departure	None
Art's Pasture (east Aspendell)	1. Late seral 2. no data	1. no data 2. Slight departure	Fen in core of wetland: High
Bishop Park – Office Unit (downstream)	1. Early to mid seral 2. no data	1. NA 2. Slight departure	None

Pasture Name	Meadow Ecological Condition: 1. IDT estimate of seral status 2. R5 Rooted Frequency Transect: Veg/Veg+Soil	Riparian Condition: 1. PFC 2. INF LRMP Amendment #6 Watershed Assessment	Fens: Presence/Condition
Bishop Park – Cardinal Mine Unit (upstream)	1. Mid to late seral 2. no data	1. Stream: PFC 2. no data	None
Intake 2	NA (uplands)	1. NA 2. no data	None
Donkey – Lower Unit	1. Early to mid seral 2. no data	1. NA 2. Slight departure	None
Donkey – Upper Unit	1. Mid to late seral 2. no data	1. Springs/meadow wetland: PFC 2. Slight departure	Fens associated with springs: High
Big Meadow	1. Late seral 2. no data	1. Meadow wetland: PFC 2. No departure	Large sloping fen makes up most of pasture: High
McMurry	1. Mid to late seral 2. no data	1. NA (irrigated) 2. Slight departure	None
South Fork Meadow (GTW)	1. Early to mid seral 2. no data	1. Stream: FAR↓ 2. no data	Small fen inclusions in meadow: High
Overholster (Little Cottonwood Crk) (GTW)	1. Late seral 2. no data	1. no data 2. no data	Large sloping fen makes up most of pasture: High

Ratings: Seral Status – Late, Mid or Early Seral; Rooted Frequency – High, Moderate, or Low Condition with associated statistically significant trend where 5 year repeat measurements are available (↑, ↓, or ↔); PFC – Proper Functioning Condition (PFC), Functional at Risk (FAR), or Non-Functional (NF) with associated trend (↑, ↓, or ↔); INF LRMP Amendment #6 Watershed Assessment – No, slight, moderate or extreme departure from desired condition based on 6 individual factors rated from IV (good) to I (poor); R5 Draft Fen Condition Checklist – High, Moderate, or Low Condition.

Individual Non-Wilderness Pastures (listed from North to South)

Rodeo

Frontier Pack Train has been authorized to graze horses and mules in Rodeo Pasture. Rodeo Meadow is a wet meadow surrounded by aspen and upland scrub. It appears that past use has occurred prior to range readiness when the meadow is still very wet and has exceeded allowable use standards.

Vegetative composition is early to mid seral. The stream PFC rating was found to be Functional at Risk (FAR) with no apparent trend and sod fragmentation, compaction, bare ground, gullies, and headcuts are present at unacceptable levels resulting in moderate departures from desired conditions under INF LRMP Amendment #6 (Table 3.41).

Rodeo Meadow is in the June Lake Loop Area which is extensively developed with campgrounds, resorts, water diversion, reservoirs, residential developments, and the town of June Lake. Many of the wet meadow type habitats have been affected by development activities.

Evans

Evans Pasture has been grazed under permit to Frontier Pack Train. It is made up primarily of wet meadow and willows with several small fens. The fens are of three different types, a spring mound fen with a small headcut apparently caused by hoof chiseling, a floating mat with little sign of use, and a sloping fen dominated by spike rush that is heavily used by pack stock. Due to the trampling impacts to two of the fens, their condition was rated as FAR.

Generally, the grazing use appears to be within desired standards. The stream in the meadow was rated PFC, and the vegetation appears to be within desired conditions, with a few local sites where springheads and the associated vegetation are being affected by trampling.

The pasture is in a very developed setting next to the June Mountain Ski Resort and is one of the few remaining functional riparian meadows in the June Lake Loop Area.

Agnew (West and East)

The Agnew Meadow Pasture has been grazed by pack stock under permit to Red's/Agnew Meadow Pack Station. The pasture is divided into two halves by a unit fence. The west half (upstream) is a mesic meadow with incised stream channels and some willow communities. The vegetative composition has been altered in response to the deeply incised stream and an associated lowering of the water table. Two rooted frequency transects were installed in the pasture in 2000 and 2003. The species composition and soil characteristics of one transect were rated at low ecological status and do not meet desired conditions for mid to late seral meadow vegetation in the INF LRMP (1988). The other transect was rated Moderate. The stream was evaluated by an IDT in two different years and was rated FAR. The INF LRMP Amendment #6 assessment rated the pasture as having extreme departures from desired conditions due to the severe compaction, thin sod layer, many active headcuts, and continued stream incisement observed (Table 3.41).

The east unit of the pasture is a wet meadow on the drainage divide with productive late seral sedge vegetation. Much of the pasture may not reach range readiness during the season, so the available forage is limited to the drier north side of the pasture. There are some small headcuts in the channels within the sedge wetland, but they are not deeper than the rooting depth of the sedges. The INF LRMP Amendment #6 watershed assessment rating was slight departures from desired conditions (Table 3.41).

The pasture is in an area with a very high level of recreational use and development, including Devil's Postpile National Monument, several campgrounds, resorts, and trailheads. The dirt road to the Agnew Meadow Pack Station and to a trailhead and campground runs along one side of the pasture. A trail crosses the pasture and runs along the fence on the far side.

McGee

The McGee Pasture has been grazed by pack stock under permit to the McGee Creek Pack Station. The pasture is dominated by mid-seral to late-seral riparian vegetation. It is a wet meadow with small fen inclusions and much of the area probably never reaches range readiness. Therefore the available forage is limited. There is a late-seral cottonwood forest along the creek and many well-developed willows throughout the pasture. There is localized hoof punching or sod fragmentation, some small hummocks, localized bare ground, and some nick points in spring channels, especially near the road.

The streambank is stable and well vegetated. Overall use appears to be within allowable levels, the stream condition is PFC, and a rooted frequency transect installed in 2000 was rated Moderate/High, meeting desired conditions. The meadow is productive and resilient and appears to recover from the grazing annually.

One of the fens in the McGee Creek Pasture is a “marl” (salt) fen that is likely habitat for rare plant species. Surveys were done in the fall of 2005 and no rare plants were found. The fens have some trampling and there are small hummocks with sheared sides in the marl fen. The pasture was visited after grazing had occurred in 2005 and most of the marl fen patches had been only lightly grazed although adjacent areas with more palatable species had been more heavily used.

McGee Creek has resorts and campgrounds and is in a High Density Recreation Area (HDRA). The pasture is adjacent to the pack station and the road to the trailhead runs along one side of the pasture.

Rock Creek Upper Pasture

The Rock Creek Upper Pasture has been grazed by pack stock under permit to the Rock Creek Pack Station. The pasture is very wet throughout the majority of the area, with much of it a fen, and is dominated by late-seral riparian vegetation. The vegetation is a mix of wet meadow and willows with a lodgepole forest overstory. There are localized areas of hoof punching and fragmented sod throughout and in a few locations peat is eroding, but over all the vegetation appears to be at desired condition. Perhaps as much as 60 percent of the meadow area remains wet and sub-irrigated by uphill springs and so never reaches range readiness. Approximately 40 percent of the meadow, nearest the pack station facilities and the corral gate, does become dry enough to reach range readiness. This range ready and accessible area appears to be frequently used in excess of allowable levels and there are indicators of reductions in late seral vegetation with a likely trend toward early and mid seral. The meadow is at PFC, but steepness is a risk factor. The INF LRMP Amendment #6 watershed assessment found moderate departures from desired conditions due to eroding channels in the peat and bare ground due to trampling (Table 3.41.)

Rock Creek drainage is also in an HDRA and there are heavily used campgrounds, resorts, and trailheads nearby. The pasture is adjacent to the Rock Creek pack station office and employee housing. Part of the wet meadow area is used for and being lost to a parking area for employee vehicles and a catch-pen type corral.

Rock Creek Lower Pasture – Meadow Unit

The Lower Rock Creek pasture has been grazed by pack stock under permit to Rock Creek Pack Station. The vegetation throughout this meadow is in a mid-seral to low-seral status, likely with a downward trend considering the active headcuts and indicators of a lowering water table. Compaction and thin sod are problems over much of the meadow, with patches of hummocks and bare ground. There are springs in the east to southeast portion of the fenced pasture. These springs are at risk of losing vegetative cover and stability due to trampling, steep slopes, and fragmented sod. There are also fens on benches above the pasture that are not fenced off, but have no sign of stock impact. The rare plants Blandlow’s feather moss and scalloped moonwort grow under the woody vegetation on

these slopes. This flat part of this meadow has been cultivated in the past to improve meadow forage (C. London, pers. comm. 2005) and contains ditches to control water distribution.

The pasture is in an HDRA in the Rock Creek Drainage where heavy recreational use occurs. The pasture is adjacent to Rock Creek Lodge and near a campground.

Rock Creek Lower Pasture – Forest Unit

The Forest Unit of the Lower Pasture has been described in the permit for the Rock Creek Pack Station, but it has not been grazed since at least 1968 when notes indicated that fences would have to be repaired and built to allow for use. The pasture was used at one time for an exercise and running area for the pack stock. It is primarily forested with some riparian stringers and has very little forage. Current conditions are at desired conditions according to a site visit by several members of the IDT.

North Lake Pastures

The North Lake Pastures (small and large) have been grazed by pack stock under permit to Bishop Pack Outfitters. A rest rotation management plan was recently implemented. With this rest-rotation system the vegetative and watershed conditions in the two pastures appear to be trending towards desired conditions.

The pastures are located in the HDRA at North Lake where the meadows and riparian areas are heavily impacted by water regulation (dams), roads, trailhead parking, and intense recreational activity including angler foot traffic along the stream banks. The hydrology of the meadows has been affected by both the dams and the roads and stream bank conditions are affected by the recreational activity.

North Lake Pastures – Small Pasture

The small pasture is a wet meadow with a willow component and a spring head that has been enlarged as a stock pond. Irises in the meadow indicate early to mid seral status and impacts from grazing. The pasture is adjacent to the Pack Station and is used heavily as a corral and holding area. There are some trampling impacts particularly to the edges of the pond. The pond was rated FAR and the INF LRMP Amendment #6 watershed assessment rating was at slight departures from desired conditions.

North Lake Pastures – Large Pasture

The large pasture is characterized by mixed vegetative composition with a low-seral status. There is an adequate frequency of late-seral species for a trend toward high-seral status and many well-developed willows throughout these pastures. Overall use appears to be within allowable levels and the meadow appears to be trending toward desired condition with current rest-rotation management.

Art's Pasture (east Aspendell)

Art's Pasture in east Aspendell has been grazed by pack stock from Bishop Pack Outfitters. It is mostly a very wet meadow and at least some parts of it are fen. There are some aspen stands within the pasture. The edge of the pasture had been heavily grazed (fall 2005 visit), and in it appears that in most years the stock do not use the wet areas heavily. However, in one visit the wet areas had been heavily used. The wet area is hummocked, indicating heavy use in the past. The INF LRMP Amendment #6 watershed assessment rating was at slight departures from desired conditions.

Bishop Park Pasture:

The Bishop Park Pasture in west Aspendell adjacent to the Bishop Pack Outfitters office has been grazed by pack stock under permit to Bishop Pack Outfitters. The pasture is divided in two parts by a unit boundary fence. The upstream section is referred to as the Cardinal Mine Unit and the downstream section is called the Office Field.

The pasture is located in the town of Aspendell with considerable impact to vegetation riparian associated with the North Fork of Bishop Creek due to residences and roads.

Bishop Park Pasture – Cardinal Mine Unit

The Cardinal Mine Unit is mostly a riparian forest, with aspen groves and Jeffery pine forest. There is a wet meadow component near the catch-pens. The meadow and the aspen stand are affected by trampling related impacts with associated reduced vegetative cover and density. The North Fork of Bishop Creek through the pasture was rated as PFC.

Bishop Park Pasture – Office Field Unit

The lower pasture has a mix of vegetation including moist meadow surrounding an ephemeral pond and sagebrush/bitterbrush scrub in the adjacent uplands. The meadow vegetation has a high proportion of forbs, wire grass (*Juncus balticus*), and iris indicating early to mid-seral vegetation conditions. Noxious weed populations nearby including spotted knapweed are a risk factor.

The watershed conditions were rated as a slight departure from desired conditions, primarily due to compaction of the meadow soils.

Intake 2

The pasture at Intake 2, known as the Burro Field, has been grazed in the past under pasture permits associated with Bishop Pack Outfitters. However, it has not been grazed recently, and there is no longer a functional fence. It is in a HDRA and receives a high amount of recreational traffic. There is a FS campground within the previously permitted area. Most of the pasture is upland scrub with very little available forage.

Donkey Pasture

Donkey Pasture has been grazed by pack stock under permit to Rainbow Pack Outfitters but has not been authorized for grazing for more than 10 years. It consists of two units, but the boundary and unit division fences all require rebuilding before use is possible. Alternatives 2 and 3 propose different management for the two units so they are discussed separately.

The pasture is located on a bench above the South Fork of Bishop Creek and the South Lake road. The drainage is an HDRA with roads, resorts, dams and associated activities affecting much of the lower elevation riparian and meadow habitats.

Donkey Pasture – Lower Unit

The forage in the lower unit is primarily in mesic meadows. There are aspen stands and upland scrub also included in the unit. Water is available in most years in a pond. Most of the vegetation in the lower unit is suitable for grazing. The mesic meadow vegetation is early to mid seral with forbs and wire grass (*Juncus balticus*) dominating the cover. However, there is a potential for trend towards late seral because of a component of sedges still present. There are some discontinuous gullies and

headcuts in part of the meadow that put the meadow at risk. The INF LRMP Amendment #6 watershed assessment was rated as a slight departure from desired conditions due to these active erosional features.

Donkey Pasture – Upper Unit

The upper unit is dominated by aspens and wet meadows associated with springs. There are fens at these spring heads. Most of the wet meadow in the upper unit appears not to dry out enough to reach range readiness in a typical year so is not suitable for grazing. The vegetation composition is mostly late seral except for some mesic meadow areas at the lower end where there is a high forb component.

Big Meadow

Big Meadow was included in the Rainbow Pack Outfitters permits at some point in the past but it has not been authorized for grazing in many years. It is a spring fed sloping wet meadow that is largely a fen. The meadow likely never reaches range readiness. The saturated soils and steep slope make the meadow unsuitable for grazing. The vegetation is mostly sedge dominated in late seral status. There are some wet vegetated erosional scarps still observable that are likely due to past grazing impacts but the current watershed conditions were rated as PFC and at desired conditions according to the INF LRMP Amendment #6 watershed assessment.

McMurry

The McMurry Meadows pasture has been grazed by pack stock under permit to Glacier Pack Train. It was created and is maintained by irrigation from a spring. It is composed of mesic and wet meadow and sagebrush scrub above the elevation of the irrigation ditches. It does not naturally have sod, but a thin layer has developed during its use as a pasture. It has some hummocks, compaction, and bare ground, particularly in the catch pen, but it is generally in good condition. There is a population of Inyo star-tulip (proposed sensitive plant species) in the meadow and the habitat for this species is probably maintained by the irrigation.

The pasture is within the McMurry Meadows grazing allotment which is currently stocked with cattle. Meadows do not naturally occur in the mid-elevation valley fan context where the pasture is located. There are several nearby meadows in the grazing allotment which are also created and maintained by irrigation. The pasture is not within a HDRA unlike most of the pack station pastures.

South Fork Meadows and Overholster

See GTW/SSW Analysis Unit.

Base facilities (excluding pastures)

At the base facilities most of the understory vegetation is missing due to traffic and compaction. The base facilities occur generally in forested vegetation types. A few of the facilities are within riparian vegetation including McGee, Rock Creek, and Rainbow. Almost all the base facilities are adjacent to riparian vegetation. They occur in a setting in HDRA's with other facilities such as roads, campgrounds and resorts that have similar loss of vegetative cover.

Travel (trails, stock drives and cross country travel)

See the trails section for a description of existing condition of the trail system. There are vegetation impacts associated with the trail system, but they are not specific to use by commercial pack stock.

Camps

There are several camps proposed in the non-wilderness analysis area. They are located in the Glass Mountains, Casa Diablo, Coyote Plateau and South Fork of Bishop Creek (Green Lake and Linder Mine), and Wells Meadow in the Buttermilk Area. They occur in a variety of east side vegetation types including Jeffery pine, pinyon pine, and montane forest and irrigated cottonwood riparian. There are localized impacts to the vegetation at these sites due to the concentrated use.

Environmental Consequences

Alternative 1

Direct and Indirect Effects: Non-wilderness

Pastures

The effects of no commercial pack stock use on vegetation would be most noticeable in the pastures associated with the base facilities. Effects would be local within the pastures themselves. Effects to the watersheds as a whole would be expected to be negligible to minor due to the small fraction of the watersheds occupied by pack stock pastures. Effects would be expected to be lasting and long term. The expected effects in terms of trends and desired conditions of the riparian indicators pasture by pasture are summarized in Table 3.44.

Meadow condition: We predict a local minor to moderate improvement in meadow condition over the long term with a trend toward desired conditions in 13 out of the 17 non-wilderness pasture units with meadow vegetation. At a local level in each pasture, the trampling and removal of vegetation would no longer occur. There would be increased retention of each year's vegetative growth of meadow vegetation increasing organic matter retention in the system. There would likely be increased recruitment and establishment of late-seral riparian vegetation.

A negligible effect is expected in 3 pasture units, the Forest Unit of the Lower Rock Creek Pasture, the upper unit of the Donkey Pasture, and the Big Meadows Pasture, since they have not been recently grazed and are at or near desired conditions.

A local moderate long term adverse effect may occur in 1 pasture, McMurry Meadows. We predict that meadow would have a long term downward trend if irrigation is discontinued without use. A discussion of the potential effects in McMurry appears below.

Stream condition: We predict a local minor to moderate improvement in stream condition over the long term in 8 out of the 14 non-wilderness pasture units with streams or springs present. Streambank trampling would no longer occur allowing for bank stabilization. Vigorous streamside vegetation would be expected to trap fine sediments resulting in narrower streams with vertical to overhanging banks and floodplain aggregation or development. With floodplain aggradation water tables may be expected to rise, but this would be a long term effect beyond the planning period for this analysis.

A negligible effect is expected in 6 pasture units due to no change in stream condition or mixed effects with no predominant trend. Streams in these pastures were found to be at desired conditions by the IDT and rest would be expected to maintain these conditions. Some of these pastures have been

rested and alternative 1 does not represent a change in management. For several, the stream is large and well armored by boulders and thick woody riparian growth so they are resistant to grazing impacts (McGee, Cardinal Mine).

For pastures where mixed effects are predicted (Lower Rock Creek Meadow unit and the Lower unit of the Donkey Pasture) a detailed discussion appears below.

Fen condition: A local minor to moderate long term effect is expected in fen condition in 5 out of 8 pasture units. The fens without current grazing would have increased vegetative cover and increased rates of organic matter accumulation critical for their function. Reduction in trampling would allow for anaerobic conditions facilitating accretion of organic matter.

No change is expected for fens in currently rested pastures (Big Meadow and the upper unit of Donkey Pasture). These fens are functioning and at or near desired conditions. The fen in the East Agnew Pasture is also apparently at desired conditions, and livestock impacts have not been observed due to the very wet soft ground of the fen which prevents livestock access. This fen would not be expected to change.

Individual pastures are discussed below where they differ from the expected general trends.

Agnew West

There is a potential for continued loss of riparian vegetation and vegetative cover at west (lower) Agnew Meadow due to the active headcuts and stream incision unless an active watershed restoration program is implemented. However, stream bank stabilization would be expected at least on the stream banks due to increased recruitment of willows and sedges. Without further active restoration work, it is likely that the streams would continue to headcut and widen in some locations. Eventually, a new, lower elevation floodplain would form, and the streams could return to PFC. This process could take decades to centuries, and the water table could remain lowered. Due to these mixed effects the medium term trend for stream and meadow condition is predicted to be static to upward. The long term effect would likely be upward once the stream system had stabilized.

Rock Creek Lower – Meadow Unit

There could be a locally moderate medium term downward trend with continued loss of riparian vegetation and vegetative cover in the lower meadow area due to the active headcuts, highly altered drainage pattern, and stream incision unless a watershed restoration program is implemented. The severe compaction in the lower flat portion of the pasture would not be expected to recover over the next decade, but would begin to be alleviated over 20-30 year time scales.

The sloping springs and willow stringers in the upper part of the pasture would likely have a minor upward trend due to increased vegetative cover and recovery from current minor trampling impacts.

Donkey – Lower Unit

Mixed minor to moderate medium term effects are predicted for the lower unit of Donkey Meadow. It has been rested over approximately the last five years; however, in the mesic and dry meadow

vegetation types there is a high percentage of mid to early seral species present. These vegetation types are expected to continue an upward trend without commercial pack stock grazing. The trend towards later seral species composition will depend on annual climate and be more likely with sustained wetter years. There are some active headcuts in the lower meadow that could continue a downward trend without active watershed restoration. This factor results in a possible mixed effect of continued rest from pack stock grazing over the medium term. Over the long term erosion would be expected to eventually stabilize resulting in a local moderate beneficial effect.

Donkey – Upper Unit

The upper unit of Donkey meadow is predicted to have a static trend for meadow and spring and fen conditions because it is dominated by wetter vegetation types currently in late seral status after rest. The wetter vegetation types tend to show faster recovery from grazing impacts and appear to have recovered from previous impacts within the last 5 years. There are also no gullies or headcuts in this unit causing instability.

McMurry

The McMurry Meadows Pack Stock pasture is maintained by irrigation. With no commercial pack stock grazing and no irrigation, the meadow vegetation would be lost except along the spring channel. It would likely be replaced by upland vegetation, but there would be a risk of weeds invading the site. There are populations of Russian thistle, cheat grass, and bull thistle nearby. Because ending the irrigation would result in the loss of meadow area, the short to long term effects to meadow condition would be negative. However, the resulting upland vegetation could be in good condition if weeds are controlled.

Other (Base facilities, travel, and camps)

There would be a localized moderate long term beneficial effect to vegetation at the sites of the current pack station base facilities. The removal of base facilities would allow for local vegetative recovery. Some understory and herbaceous vegetation would be expected to slowly colonize the current sites of the resorts. Due to the compaction and long history of use at these sites, recovery would be somewhat impaired. Colonization by weeds could result in a short term downward trend until or unless they were controlled. Most of the base facilities are located in upland forest vegetation so the riparian indicators would not be affected. At Rainbow, Pine Creek, McGee, and Rock Creek could have a minor increase in riparian vegetation, but the area affected is negligible at the watershed scale.

The trail and road systems would continue to exist with the elimination of commercial pack stock. Trail and road related impacts to vegetation are generally due to the presence or absence of the feature. It is not expected that the trail related impacts to vegetation would be measurably different with no commercial pack stock use therefore a negligible effect is predicted.

Travel off the trail and road systems in association with stock drives and cross country travel is at such a low level that it does not have a measurable effect on vegetation conditions. A negligible effect is therefore predicted for areas currently used for stock drives and cross country travel.

At camp sites a minor local long term effect would be expected. The camp sites would no longer be used by commercial trips and the area of reduced vegetative cover would likely be reduced. Weed establishment is a risk factor for a short to moderate term negative effect.

Cumulative Effects: Non-wilderness – Alt. 1

All of the direct and indirect effects predicted in this analysis were at a local scale within the pack stock pastures, base facilities and camp sites. In these local areas the following factors affect or are expected to affect the vegetation conditions.

Past grazing history

All areas of the forest were grazed by cattle and sheep in the last century. Most vegetation communities are continuing to respond to those grazing impacts. The past history of heavy grazing potentially limits the resiliency and ability of the ecosystems to respond to the removal of the more moderate current grazing by commercial pack stock. In pastures like west Agnew and Lower Rock Creek where there is a lowered water table, active stream incision and severe compaction, recovery may not be possible except over long time scales (greater than 20 years). Some (Rock Creek Lower Meadow and McMurtry Meadows for example) have been hydrologically altered with drainage ditches or irrigation to create better grazing. This altered hydrology will limit the recovery potential. In general the trend is upward although very slow. Together with the effects of ending commercial pack stock use, there would be a local moderate long term beneficial effect to vegetation.

Current grazing by pack stock:

The effects of current grazing by pack stock are described in the affected environment section above and are similar to the long term recovery from higher historical grazing levels. The history of pack stock grazing will affect the ability of the local sites to respond to the removal of grazing. Current impacts expected to have residual effects and cause slower recovery are discussed in the effects section for particular pastures. Some vegetation communities altered by grazing may be stable and not return to desired conditions without intervention. Communities dominated by competitive rhizomatous mid seral species such as iris or wire grass (*Juncus balticus*) may be stable for many years (decades) even after grazing is removed. Pastures with these vegetation types include the North Lake Pastures and the lower unit of the Donkey Pasture.

Current grazing on active grazing allotments:

The commercial pack stock use analyzed in this document overlaps in some areas with active grazing allotments. The only effects of pack stock use in the non-wilderness areas of this analysis that overlap with production livestock grazing are the minor effects of the camp sites. The camp sites in the Glass Mountains, on the Coyote Plateau, and in the Buttermilks are within active grazing allotments. The local recovery of vegetation within the camp sites could be expected to be mostly overwhelmed by production livestock use and result in alternative 1 having a negligible effect.

Off trail and road use was determined to have a negligible effect, so the removal of this travel across grazing allotments would not have a cumulative effect.

Grazing allotment decisions (past and currently scheduled):

Analysis of the grazing on the allotments in the Glass Mountains is currently scheduled and would be expected to improve vegetation conditions in order to meet desired conditions. This should result in an overall upward trend, however within the very local vicinity of the camps sites, the effects of removing the camps would be still be expected to be mostly overwhelmed by the effects of cattle and sheep grazing. Therefore, there would be a cumulatively negligible effect of alternative 1.

Existing development in HDRAs:

The commercial pack station facilities including the pastures are all located in HDRAs with dense recreational development including campgrounds, trailheads, roads, dams, ski areas, trails. Several pastures (Rodeo, Evans, Agnew, North Lake) are bordered uphill by roads that interrupt the hydrology and could reduce the resiliency of the meadow and stream systems. This effect could cumulatively result in a minor rather than moderate localized beneficial effect of alternative 1.

Other private and commercial recreational use:

High recreational use in the HDRA setting of the pack station facilities and pastures by fishermen, hikers, private stock users, and others may result in some replacement of the use if they are removed. The trampling and hydrologic alteration that results from these uses could be expected to reduce the amount of recovery predicted.

Cumulatively other recreational use and development will likely result in the alternative 1 having a more minor local long term beneficial effect.

Population growth and increasing recreation:

Continually increasing population in southern California can be expected to result in increased recreation in the non-wilderness areas of the Inyo National Forest. This trend is likely to intensify the effects of other types of recreation described above.

Dams and water diversions:

Many of the drainages in the eastern front of the Sierra Nevada where the pack stations are located are highly regulated streams used for power production and water supplies to the City of Los Angeles. Because the stream flows are regulated in these drainages, the capacity of the riparian systems to recover from grazing impacts could be affected. However, the only pasture directly located on a regulated stream in the Cardinal Mine Pasture where the stream was already found to be at desired conditions. Therefore there are not any cumulative effects expected due to dams and water diversions.

Fire suppression and fuels treatments:

Fire suppression over the last century has affected many of the vegetation types across the analysis area. Meadows in particular are being invaded by trees and shrubs in the absence of fire. With the removal of grazing in the pastures, there may still be some loss of meadow and riparian habitat due to tree and shrub encroachment related to fire suppression. It is expected that there will be fuels treatments within the HDRAs due to the level of development. If these fuels treatments include maintaining meadow habitats they could add cumulatively to the local beneficial effects of Alternative 1 in the pastures.

Region-wide trends in riparian vegetation condition and acreage:

A discussion of the contributions of alternative 1 to the condition and amount of riparian vegetation across the region are found in the analysis area-wide cumulative effects section.

Summary of cumulative effects on riparian indicators

Meadow condition: Cumulatively, alternative 1 will have a localized minor to moderate beneficial effect on meadow conditions primarily within the pastures somewhat limited by residual effect from higher historic grazing pressure, lasting effects of the current pack stock grazing use, development in the HDRAs, other recreational activities, and the tree and shrub encroachment as a result of historic and on-going fire suppression.

Stream condition: Cumulative effects on streams within the pastures are similar to the meadow conditions above except that fire suppression is unlikely to have a noticeable effect on stream condition at the pasture scale.

Fen condition: No past, present, or reasonably foreseeable actions were identified that specifically affect the fens within the pastures. Cumulative effects would be the same factors that influence general meadow condition discussed above.

Alternative 2

Direct and Indirect Effects: Non-wilderness

Pastures

Under Alternative 2, the pack station pastures would be managed using grazing utilization standards dependant on vegetation and soil conditions. Maximum allowable use would be 40% with reductions to 30% or rest depending on departures from desired conditions. Pasture specific management plans and standards could be set, and several pastures have a specific standard in the alternative including the Upper Rock Creek Pasture and the North Lake Pastures. A streambank trampling standard of 20% and range readiness criteria would be implemented. For this analysis, the allowable use factor under the non-wilderness use standards for Alternative 2 was estimated (40%,30% or rest) for each pasture. The approximate Animal Months available in each pasture under Alternative 2 is included in Table 3.42.

The expected trends in riparian indicators (meadow, stream, and fen condition) for each pasture unit are listed in Table 3.43. The summary of effects to pasture vegetation relative to the desired

conditions (DC) is given in Table 3.44. For alternatives 2 and 3 the reference condition for effects is no grazing (Alternative 1). Therefore, where the alternative may result in no change and current conditions are not at desired, the effect is considered adverse. The degree of effect depends on the individual pasture situation. Pastures with complex local factors are discussed individually below.

Meadow condition: Under Alternative 2, there is not likely to be a noticeable change in meadow condition and trend with continued grazing limited by utilization rates of 30% or 40%. At a local level the direct trampling and removal of vegetation would occur in all the pastures, but likely at a reduced level from the current situation. With enforcement of range readiness and allowable utilization and trampling standards there would be increased retention of each year's vegetative growth of meadow vegetation. The enforcement of range readiness standards would reduce the amount of hummocking, compaction, and stream bank collapse occurring in the pastures due to use when the soils are too wet. The enforcement of utilization, streambank alteration, and range readiness standards would likely prevent a downward trend in meadow conditions. However, with continued grazing at the 30-40% level, an upward trend is unlikely.

We estimate that Alternative 2 would have a negligible effect relative to a no grazing condition in 10 of the 17 non-wilderness pasture units with meadow vegetation types. These meadows are at desired conditions under current grazing with mid to late seral vegetation conditions. Under the grazing standards in Alternative 2, meadow condition would likely remain static relative to the desired conditions. The fact that these pastures are currently at desired conditions with over a century of grazing history supports this conclusion.

In 6 pasture units a minor local adverse long term effect relative to conditions without grazing is predicted. The existing conditions in these pastures are not at desired conditions due to early to mid seral plant communities. The standards in Alternative 2 are unlikely to move these plant communities towards desired conditions although some minor improvements may be realized.

In one pasture (the Forested Unit of Lower Rock Creek Pasture) a moderate adverse effect localized to the stringers of spring vegetation is expected. The riparian vegetation along the springs is currently at desired conditions, but under Alternative 2 a downward trend may be expected because the pasture has not been grazed in many years and the riparian spring vegetation is the only forage present in the unit.

Stream condition: Alternative 2 will likely result in a neutral or beneficial effect relative to existing and desired conditions in the majority of non-wilderness pasture units (10 out of 14 streams). The enforcement of streambank trampling standards should reduce the amount of bank collapse and headcutting due to trailing across stream channels. The grazing utilization standards of 30-40% should maintain enough streamside vegetation to capture overbank sediment. Stream channels are not expected to continue to widen, but where they are already destabilized by headcuts and incision, they may continue to be unstable.

A neutral effect is expected for seven stream reaches within pastures because the streams are at desired conditions and are not expected to change.

A local moderate beneficial effect is expected on stream reaches within three pastures due to fencing proposed to prevent pack stock access to the streams or springs as mitigation. These streams are not currently at desired conditions but are expected to improve without active bank disturbance and grazing.

A minor to moderate adverse local long term effect is expected in on spring channels in four pasture units. Two pastures have streams or springs rated FAR and they are not expected to improve with continued grazing (Rock Creek Upper and Lower Pastures). Two pastures may experience a downward trend under alternative 2 either due to grazing or existing instability. In the Forested Unit of Lower Rock Creek there has not been any recent grazing and the steep spring channels are at risk for pack stock impacts. In the Lower Unit of the Donkey Pasture the current instability due to headcuts and gullies may not stabilize and could result in a downward trend.

Fen condition: A minor to moderate local long term beneficial effect is expected for fens in three pastures. Under Alternative 2 the fens would be protected as directed in the 2004 SNFPA ROD with fencing or other management changes such as reductions in utilization standards where trampling impacts have been documented.

Fens in five pasture units are at desired conditions and are not expected to change with continued grazing; therefore a neutral effect is predicted. These fens would be monitored and protected if a downward trend is detected.

Individual Pastures

Where individual pastures have complex local factors influencing the predicted trends, they are discussed individually below.

Rodeo

The stream would be fenced in the middle section. The riparian habitat and morphology would be expected to recover in this area. The area of recovery would be more limited than under Alternatives 1 and 3 where there would be no grazing in the entire pasture.

Evans

General meadow and riparian conditions are expected to remain the same with continued grazing. Fencing would be installed around the fens to protect them from trampling impacts. This would improve fen condition. Vegetative cover and sod fragmentation would be expected to recover in these fens.

Agnew West

Under Alternative 2, the stream corridors would be fenced to prevent stream bank trampling. This should allow a similar improvement in stream condition as Alternative 1. Even with the streams fenced out, however, existing headcuts could continue their advance without active restoration.

Upper Rock Creek

In Upper Rock Creek Pasture, continued grazing at 20% utilization levels would likely continue wetland and fen soil fragmentation, and streambank disturbance. This meadow is steep and very wet over most of its area. Continued grazing may allow the meadow to remain in proper functioning

condition, but the meadow is vulnerable to erosion due to its easily fragmented sod and relatively high gradient. It is more vulnerable to hydrologic and soil effects under Alternative 2 than under Alternatives 1 and 3.

Lower Rock Creek – Meadow Unit

The springy hillside of Lower Rock Creek Pasture would be fenced off so that only the flat portion of the pasture would be used. This would protect the most vulnerable part of the meadow from trampling impacts and improve the riparian habitat for the sensitive plants. There would be locally moderate continued loss of riparian vegetation and vegetative cover and continued soil compaction at Lower Rock Creek Meadow unless a watershed restoration program is implemented due to headcuts, incision, and lowering water table.

Rock Creek Lower Pasture - Forested Unit

This pasture has not been grazed since before the 1960s. With authorization to graze, there would be an expected downward trend in the springs and riparian habitat within the pasture. There is very little forage in the pasture unit, so use would be focused on these riparian stringers.

Donkey Meadow – Lower Unit

Donkey Meadow would be grazed under Alternative 2 but is currently rested. Reinitiating grazing could prevent movement of the meadow species composition from early/mid seral towards late seral conditions. It could also prevent existing headcuts from stabilizing if restoration does not occur.

Other (base facilities, travel, and camps, use levels)

Continued use of base facilities, trails, and camps would be expected to maintain conditions similar to the current state. The continuation of reduced vegetative cover in the base facilities and at camp sites would be a minor long term local effect. Commercial pack stock use of trails is generally not exclusive. Commercial pack stock use of the trails does not measurably change the existing impacts of the trail system on vegetation. Any cross country travel is required to be reported and not to lead to visible trail development. Therefore it is not expected that cross country travel would result in any changes in vegetation condition.

The differences in use levels between Alternative 2 and 3 through the amount of growth allowed and herd sizes is not expected to have a measurable effect on vegetation. Since the above analysis found that there would be a negligible effect of use on trails, roads and cross country travel, changes in use levels will not have an effect. The impacts to camp sites and base facilities are not expected to change with up to a 20% change in the amount of use.

Cumulative Effects: Non-wilderness – Alt. 2

All of the direct and indirect effects predicted in this analysis were at a local scale within the pack stock pastures, base facilities and camp sites. In these local areas the following factors affect or are expected to affect the vegetation conditions.

The past history of heavy grazing potentially limits the resiliency and ability of the meadow vegetation within the pastures to withstand grazing impacts and to respond to changes in grazing

management. In some pastures residual effects from the historic high grazing pressure may continue. Many of the pastures may be in a very slow upward trend due to recovery from historic grazing or potentially even have ongoing instability related to historic grazing in the stream systems that could result in a downward trend. In pastures like west Agnew and Lower Rock Creek where there is a lowered water table, active stream incision and severe compaction, recovery may not be possible except over long time scales (greater than 20 years). Due to the compaction and lowered water table from a long history of grazing, these pastures in particular are less productive and the vegetation is less able to withstand current grazing impact. Some (Rock Creek Lower Meadow and McMurry Meadows for example) have been hydrologically altered with drainage ditches or irrigation to create better grazing. This altered hydrology will limit the ability of the late seral vegetation to withstand grazing and mid to early seral vegetation communities are more likely. Together where the effects of ongoing pack stock grazing under Alternative 2 were predicted to have an adverse effect, the residual effects of historic heavy grazing is likely to result in a greater local adverse impact to meadow conditions.

Current grazing by pack stock

Impacts from the current pack stock grazing in the pastures expected to have residual effects and affect the vegetation response to changes in management are discussed in the effects section for each pasture. Some vegetation communities altered by grazing may be stable and not return to desired conditions without intervention. Communities dominated by competitive rhizomatous mid seral species such as iris or wire grass (*Juncus balticus*) may be stable for many years (decades) even after grazing is removed or management is changed. Pastures with these vegetation types include the North Lake Pastures and the lower unit of the Donkey Pasture. The cumulative effects of current and recent pack stock grazing in North Lake and Donkey Pastures is likely to result in a local moderate adverse effect to vegetation.

Current grazing on active grazing allotments

The commercial pack stock use analyzed in this document overlaps in some areas with active grazing allotments. The only effects of pack stock use in the non-wilderness areas of this analysis that overlap with production livestock grazing are the minor effects of the camp sites. The camp sites in the Glass Mountains, on the Coyote Plateau, and in the Buttermilks are within active grazing allotments. The effects of commercial packstock use are expected to be so minor in comparison to the production livestock use that the cumulative effect will not be measurably different than production livestock use alone.

Trail, road, and cross country travel by commercial pack stock was determined to have a negligible effect, so there will be no cumulative effects with production livestock allotments.

The McMurry Meadows Pasture is within an active cattle grazing allotment. The two uses do not overlap so there is no local cumulative effect. However, the pasture occurs within a grazed setting so the entire landscape is affected by grazing.

Grazing allotment decisions (past and currently scheduled)

Analysis of the grazing on the cattle allotments in the Glass Mountains is currently scheduled and would be expected to improve vegetation conditions in order to meet desired conditions. This should result in an overall upward trend mostly off-setting any local adverse effect of the commercial pack stock camps on a landscape scale. Locally within the boundaries of the camps there may still be an additive adverse effect of both production livestock disturbance and the use of the commercial pack stock camps.

Existing development in HDRAs

The commercial pack station facilities including the pastures are all located in HDRAs with dense recreational development including campgrounds, trailheads, roads, dams, ski areas, trails. Several pastures (Rodeo, Evans, Agnew, North Lake) are bordered uphill by roads that interrupt the hydrology, cause increased surface run-off, and could reduce the resiliency of the meadow and stream systems. This effect could cumulatively result in a greater degree of adverse effects to vegetation within these pastures.

The pastures in the Aspendell area in Bishop Creek (Bishop Park Units and Arts Pasture) include aspen forests. Because of the high level of development and housing in the area impacting the ability of these aspen clones to regenerate, there may be a long term adverse cumulative effect to the aspen clones if they are not able to regenerate due to the combined effects of grazing and development.

Because the HDRAs are managed for a high level of development, the use of the pastures by commercial pack stock can be seen as a beneficial cumulative effect to meadow vegetation within the HDRAs. Pack stock grazing is a recreational use consistent with the management prescriptions for the area which maintains open meadow habitats. Most of the meadow habitat has otherwise been highly altered and developed within the mid elevations of the major eastern Sierra Front Canyons. In many areas, such as the June Lake Loop, the pack stock pastures are some of the only remaining meadow vegetation. Meadows and wetlands on either side have been converted into a parking lot for the June Mountain Ski Area and condos. This is also true for the pastures in Aspendell (Art's and the Bishop Park Pastures). There are more open meadows in the Rock Creek and South Fork of Bishop Creek drainage, but many of these are heavily impacted by adjacent campgrounds and recreational use. The road system is altering the hydrology in many of these meadows and contributing to woody shrub and tree invasion which could greatly reduce the extent of meadows within the canyon. The pack stock pastures maintain meadow habitats in this context. The meadow vegetation in one pasture, McMurry Meadows, is actually created by irrigation for the purpose of pack stock grazing. Cumulatively the maintenance of open meadow habitats in at least moderate ecological condition is a beneficial effect offsetting the adverse effects of recreational development.

The cumulative effects of the pack station base facilities with all the other development in the HDRAs may result in a moderate adverse effect to vegetation. The base facilities occur in HDRAs where there are multiple use impacts due to the high levels of use by many user groups. The proportion of the vegetation affected in the mid-elevations of the major eastern Sierra drainages

where most of the trailhead and campground facilities are located is larger due to use by commercial pack stations added to use associated with day use facilities, campgrounds, trailheads, dams, water diversions, power generation facilities and ski resorts. The amount of vegetation affected by all these facilities combined together is locally important. While it does not threaten the persistence of any particular vegetation type, it may result in altered ecological functions such as hydrologic infiltration and runoff and wildlife habitat. See the hydrology and wildlife sections for further discussion.

Other private and commercial recreational use

High recreational use in the HDRA setting of the pack station facilities and pastures by fishermen, hikers, private stock users, and others may cumulatively increase the total adverse effect to meadow ecological condition. The trampling and hydrologic alteration that results from these uses could be expected to cause effects very similar to the ones discussed in this analysis from pack stock. Pastures with noticeable impacts from recreational use include Agnew West (two trailhead facilities borders the pastures and a trail runs along the upstream fence line of the West Pasture), the North Lake Pastures where angler use is high, and Big Meadow in the South Fork of Bishop Creek (no grazing is authorized, but the meadow has impacts from recreational anglers).

Population growth and increasing recreation

Continually increasing population in southern California can be expected to result in increased recreation in the non-wilderness areas of the Inyo National Forest. This trend is likely to intensify the effects of other types of recreation described above.

Dams and water diversions

Despite the many dams and water diversions found in the canyons where the pack station pastures are located, no cumulative effects were found in the analysis as described under Alternative 1 above.

Fire suppression and fuels treatments

Fire suppression over the last century has affected many of the vegetation types across the analysis area. Meadows in particular are being invaded by trees and shrubs in the absence of fire. There may be some loss of meadow and riparian habitat due to tree and shrub encroachment related to fire suppression. It is expected that there will be fuels treatments within the HDRAs due to the level of development. If these fuels treatments include maintaining meadow habitats they could have a beneficial effect on meadow vegetation condition larger than the adverse impacts of pack stock grazing.

Region-wide trends in riparian vegetation condition and acreage

A discussion of the contributions of Alternative 2 to the condition and amount of riparian vegetation across the region are found in the analysis area-wide cumulative effects section.

Summary of cumulative effects on riparian indicators

Meadow condition: Cumulatively, for Alternative 2 the localized minor to moderate adverse effect on meadow conditions predicted in this analysis within the five pastures may be somewhat increased by residual effect from higher historic grazing pressure, lasting effects of the current pack stock grazing use, development in the HDRAs, other recreational activities, and the tree and shrub encroachment as a result of historic and on-going fire suppression.

As a recreational use consistent with the management objectives for the HDRAs the on going use of the pack stock pastures can be seen as a way to maintain limited remaining meadow vegetation and is a net beneficial effect at the landscape scale.

Fuels treatments or prescribed fire within the meadows together with grazing could have a net beneficial effect on meadow vegetation condition.

Stream condition: Cumulative effects on streams within the pastures are similar to the meadow conditions above resulting in a moderate adverse cumulative effect to the four streams predicted to have negative impacts from pack stock grazing. Fire suppression is unlikely to have a noticeable effect on stream condition at the pasture scale.

For the three streams with mitigations proposed to improve stream condition, the other cumulative effects factors identified here may slow or limit the amount of recovery, but the stream conditions should still show net improvement.

At the landscape scale there is a minor to negligible beneficial effect of the pastures on streams within the HDRAs due to the maintenance of intact riparian vegetation. This effect is less than for meadow vegetation the stream systems because a greater proportion of the riparian habitats immediately adjacent to the streams is maintained throughout the HDRAs.

Fen condition: No past, present, or reasonably foreseeable actions were identified that specifically affect the fens within the pastures. Cumulative effects would be the same factors that influence general meadow condition discussed above.

Alternative 3

Direct and Indirect Effects: Non-wilderness

Pastures

Under this Alternative, the INF LRMP Amendment #6 would be implemented to set utilization levels and management of pack stock grazing in the pastures based on an analysis of both the vegetation and watershed conditions. A preliminary Amendment #6 rating of the condition of six characteristics was done on most pastures (for detailed data, see project record). The allowable use in each pasture was estimated based on this assessment. The assessments for each pasture used to make this estimate of allowable use are listed in Table 3.42.

The application of LRMP Amendment #6 provides for an intensive analysis of meadow resource conditions. Meadow specific grazing prescriptions would be implemented to move toward or maintain desired vegetative conditions and provide for hydrologic recovery where needed. LRMP

Amendment #6 also provides incentive to the permittee to take specific actions to protect or restore watershed function.

The usable area in each pasture is the same as that in Alternative 2, but the utilization levels will be set adaptively under the LRMP Amendment #6 depending on the vegetation and watershed condition and the management changes agreed to by the permittees. In general these levels are the same or lower than the Alternative 2 grazing standards, however, where there is a potential for specific management actions to restore watershed condition, there is a greater flexibility and a higher allowable use factor may be possible. The estimated initial animal months of grazing available in each pasture under Alternative 3 are included in Table 3.42. The initial grazing standards are the same as Alternative 2 in Evans, Agnew East, McGee, Lower Rock Creek – Forest Unit, and McMurry Pastures. No grazing would be authorized under any alternative in Intake 2 and Big Meadow.

In general, ecological conditions in the pastures under Alternative 3 are expected to improve or remain static relative to current conditions. Those pastures currently at desired conditions would be expected to remain the same under continued grazing. For pastures where utilization levels would likely be much lower or active restoration projects could be undertaken, conditions would likely to eventually improve. The adaptive management protocol under INF LRMP Amendment #6 would require that grazing management be changed until this movement towards desired conditions was documented. The expected trends in the riparian indicators (meadow, stream, and fen condition) for each pasture unit are summarized in Table 3.43.

Meadow condition: A minor to moderate local long term beneficial effect on meadow condition is predicted in 11 of the 17 non-wilderness pasture units. Three pastures would be rested and the remaining pastures would have reduced allowable utilization factors with incentive to implement active stream restoration projects.

A negligible effect is predicted in 5 pastures where meadow vegetation is already at desired conditions and no change is expected with continued grazing.

A minor local long term adverse effect is predicted for 1 unit (the Forested Unit of the Lower Rock Creek Pasture) just as in Alternative 2 due to the reintroduction of grazing after a long rest. Amendment 6 standards should prevent the downward trend from causing a departure from desired conditions.

Stream condition: A negligible effect is predicted for half (7 out of 14) of the streams or springs channels in non-wilderness pasture units. These streams are currently at desired conditions and are not expected to change with continued grazing under Amendment #6 standards.

A local moderate long term beneficial effect is predicted for 5 of the 14 streams. Some of these streams will be excluded from grazing just as in Alternative 2. Others would be expected to improve in condition due to lowered utilization rates allowing for increased streamside vegetation and reduced trampling. The incentive for active restoration would be expected to result in some stream restoration projects contributing to the upward trend.

A local minor to moderate adverse effect is expected in two pasture units. The expected downward trend for stream channels in the Forested Unit of the Lower Rock Creek Pasture is due to

the introduction of grazing after a long rest and the concentration of stock around the only forage at the springs. The mixed effects and risk due to the current instability in active headcuts in the Lower Unit of the Donkey Pasture are the reason for a predicted adverse effect for that unit.

Fen condition: A minor to moderate local long term beneficial effect is predicted for fens in half (4 out of 8) of the non-wilderness pasture units. These beneficial effects are due to the fencing mitigations proposed or to reduced use factors that would result in less trampling and removal of vegetation.

A negligible effect is predicted for the fens in the other half of the pasture units. These fens are at desired conditions and are not expected to change with continued grazing. Monitoring would detect impacts if they occur and prevent conditions from deteriorating away from desired conditions.

Individual Pastures

Individual pastures are discussed below where the management under Alternative 3 is expected to be different than under Alternative 2 (see Table 3.42). For Evans, Agnew East, McGee, Lower Rock Creek – Forest Unit, North Lake Small, North Lake Large, and McMurry Pastures, the effects are expected to be the same as Alternative 2. See the Alternative 2 discussion above. For Intake 2 and Big Meadow Pastures, no grazing is authorized under Alternative 3 and the effects are expected to be the same as the No-Action Alternative (Alternative 1). See the Alternative 1 discussion above.

Rodeo

The analysis of Rodeo Meadow under INF LRMP Amendment #6 supported “rest until recovery is documented” management. Resting this meadow would allow increased retention of each year’s growth of meadow vegetation. A trend towards later seral vegetation would be expected. Increased vegetative growth and reduced trampling could allow for increased stream bank stabilization and decreased soil compaction.

Agnew West

Agnew West would be rested until recovery of the headcuts, stream incision, and compaction was documented. Active watershed restoration could shorten the period required for recovery. Improved meadow ecological condition and riparian conditions would be expected. Increased vegetative cover could help stabilize streambanks and headcuts and partially prevent further creation and advancement of headcuts. The active erosion currently occurring would not be expected to be stabilized unless watershed restoration projects were implemented. The major hydrologic alterations of a lowered water table and incised and widened streams would likely remain, and only slowly recover over the long-term, on the order of decades to centuries.

The adaptive management protocol would provide incentive for the permittee to undertake restoration of active headcuts and repair of existing headcut restoration structures to shorten the time required for an upward trend that would allow grazing to resume. Active restoration could accelerate the rate of watershed recovery and halt the ongoing stream incision and lowering of the water table.

Upper Rock Creek

Because of impacts to the fens and wet meadows in the Upper Rock Creek Pasture, the pasture would be rested until recovery of the active erosion and trampling impacts was documented. The riparian, meadow, and fen conditions would all be expected to improve.

Lower Rock Creek – Meadow Unit

There would be continued grazing under alternative 3 in this pasture, but the allowable use levels would be less than under alternative 2. This may result in an improved trend or at least maintenance of the current condition. With implementation of watershed restoration of the headcuts in the lower meadow, there would be flexibility for the permittee to graze more than if the headcuts remained untreated and continued to affect the condition of the meadow.

The sloping springs and fens would be fenced and the conditions would be expected to improve similar to Alternative 2.

Bishop Park – Cardinal Mine Unit

The Cardinal Mine Unit would not be authorized for grazing under Alternative 3. The condition of the meadow and aspen stands near the catch pens which are currently impacted by grazing would be expected to improve. In wet areas there is potential for rapid recovery because there is currently no evidence of changes in hydrology.

Bishop Park – Office Unit

The allowable use standard under Alternative 3 would be more flexible in response to changing resource conditions and there would be incentive for active restoration projects to be undertaken by the permittee. There is potential for some improvement in meadow ecological conditions but a static trend is possible.

Art's Pasture

There would be no grazing authorized in this pasture. An improvement in vegetative cover, seral status and fen condition would be expected with rest from grazing.

Donkey – Lower Unit

There would be more flexibility in the allowable use factor under Alternative 3 than Alternative 2. If the headcuts and gullies are not stabilized, a lower allowable use factor would be set. If the headcuts and gullies are stabilized, a higher allowable use factor could be set. With watershed restoration, the improvement in meadow conditions may be greater under Alternative 3 than Alternative 2 or even rest (Alternative 1).

Other (Base facilities, travel, and camps)

The base facilities would be the same as under alternative 2. The difference in use levels and restrictions on cross country travel are not expected to have a measurable effect on general vegetation conditions. The analysis of effects for Alternative 2 found that there would not be measurable effects; therefore the reductions under Alternative 3 are not likely to be any different.

Cumulative Effects: Non-wilderness – Alt. 3

Pastures

Cumulative effects of Alternative 3 in pastures where grazing is proposed are very similar to Alternative 2 discussed above except in degree and the number of pastures affected. Where pastures would be rested the cumulative effects are similar to Alternative 1 discussed above. A summary of the degree and number of locations with predicted cumulative effects is given below in terms of the three riparian indicators.

Summary of cumulative effects on riparian indicators

Meadow condition: For Alternative 3 an adverse effect on meadow conditions was only predicted in one pasture unit, the Forested Unit of the Lower Rock Creek Pasture. Cumulatively this effect may be somewhat increased by residual effect from higher historic grazing pressure, development in the HDRA, and other recreational activities. These effects are expected to be minor to negligible due to the long rest from grazing and the forested nature of the pasture unit.

We predicted that the application of Amendment #6 grazing standards to the pastures would result in a beneficial effect for 11 pasture units. The other factors discussed in the Alternative 1 and 2 cumulative effects sections may limit or slow this expected improvement including residual effects of high historic grazing pressure, the current pack stock grazing, development in the HDRAs, other recreational uses, and fire suppression.

As a recreational use consistent with the management objectives for the HDRAs, the on going use of the pack stock pastures can be seen as a way to maintain limited remaining meadow vegetation and is a net beneficial effect at the landscape scale.

Stream condition: Cumulative effects on streams within the pastures may result in a moderate adverse cumulative effect to the two streams predicted to have negative impacts from pack stock grazing. In particular, the potential adverse effects in the Lower Unit of the Donkey Pasture are due to cumulative effects of historic grazing by production livestock and pack stock causing watershed instability. This instability is a risk factor for the pasture.

For the five streams with predicted beneficial effects in stream condition, the other cumulative effects factors identified here may slow or limit the amount of recovery, but the stream conditions should still show net improvement.

At the landscape scale there is a beneficial effect of the pastures on streams within the HDRAs due to the maintenance of intact riparian vegetation. This effect is less than for meadow vegetation the stream systems because a greater proportion of the riparian habitats immediately adjacent to the streams is maintained throughout the HDRAs.

Fen condition: No past, present, or reasonably foreseeable actions were identified that specifically affect the fens within the pastures. Cumulative effects would be the same factors that influence general meadow condition discussed above.

Comparison of Alternatives: Non-wilderness

The following tables compare predicted allowable grazing under the standards in each alternative and show the predicted trends in vegetation condition in the pastures, the area of the most impact in terms of the significant issues and the indicators chosen to track those issues (*riparian condition, meadow ecological condition and fen condition*).

Table 3.42. Comparison of forage available for grazing in non-wilderness pack stock pastures under each of the three alternatives. Grazing will be regulated using utilization, stream bank trampling, and range readiness standards. The Animal Months (AM) shown are only an estimate for the purpose of comparison.

Pasture Name	Estimated Usable Production (lbs)	Alt. 1: No Action	Alt. 2		Alt. 3	
		Use Factor	Initial Use Factor	Estimated AM Available	Initial Use Factor	Estimated AM Available*
Rodeo	34572	None	30%	9.6	Rest	0
Evans	28990	None	40%	10.7	40%	10.7
Agnew West	17767	None	30%	4.9	Rest	0
Agnew East	15456	None	40%	5.7	40%	5.7
McGee	14033	None	40%	5.2	40%	5.2
Upper Rock Creek	18294	None	20%	3.4	None	0
Lower Rock Creek: Meadow Unit	24099	None	30%	6.7	5-20%	1.1-4.5
Lower Rock Creek: Forest Unit	4509	None	40%	1.7	40%	1.7
North Lake Small	6190	None	30/20/0%	1.7/1.1/0*	25-40%	1.4-2.3
North Lake Large	11302	None	30/20/0%	3.1/2.1/0*	15-40%	1.6-4.2
Art's Pasture	7259	None	40%	2.6	None	0
Bishop Park: Office Field Unit	5587	None	30%	1.6	20-40%	1.0-2.1
Bishop Park: Cardinal Mine Unit	3550	None	40%	1.3	None	0
Intake 2	0	None	None	0	None	0
Donkey – Lower Unit	12535	None	30%	3.5	20-40%	2.3-4.6
Big Meadow	0	None	None	0	None	0
McMurry	57315	None	40%	21.2	40%	21.2

Notes: The adaptive management strategy in the INF LRMP Amendment #6 allows for variable use levels depending on the pasture management plan developed with the permittee including watershed restoration projects and other actions that may increase the capacity for grazing while improving the ecological condition of the meadow.

*Existing pasture management plan establishes a rest-rotational grazing system between the two North Lake Pastures with standards changing on a three year cycle.

Table 3.43. Comparison of alternatives for condition of non-wilderness pack stock pastures in terms of trends in the indicators identified for significant issue #3. A summary of the total number of pastures with an expected upward, static, or downward trend for each alternative is given at the bottom of the table.

Key for Predicted Trends: ↑ = upward trend; – = static trend; ↓ = downward trend; ↑/- = upward to static; -/↓ = static to downward; ↑/↓ = mixed effects, trend difficult to predict.

Pasture Name	Meadow Ecological Condition			Stream/ Spring Condition (PFC)				Fen Condition		
	Alt1	Alt2	Alt3	Type*	Alt1	Alt2	Alt3	Alt1	Alt2	Alt3
Rodeo	↑	–	↑	Lotic	↑	↑	↑	NA	NA	NA
Evans	↑	–	-/↑	Lotic	↑	–	–	↑	↑	↑
Agnew West	-/↑	–	↑	Lotic	-/↑	-/↑	↑	NA	NA	NA
Agnew East	↑	–	–	Lotic	↑	–	–	–	–	–
McGee	↑	–	–	Lotic	–	–	–	↑	–	–
Upper Rock Creek	↑	–	↑	Lotic	↑	–	↑	↑	↑	↑
Lower Rock Creek – Meadow Unit	↑/-	–	↑/-	Lotic	↑/-	–	↑/-	↑	↑	↑
Lower Rock Creek – Forest Unit	–	↓	↓	Lotic	–	↓	↓/-	NA	NA	NA
North Lake Small	↑	–	–	Lentic	↑	↑	↑	NA	NA	NA
North Lake Large	↑	–	↑	Lotic	↑	–	–	NA	NA	NA
Bishop Park – Cardinal Mine Unit	↑	–	↑	Lotic	–	–	–	NA	NA	NA
Bishop Park – Office Unit	↑	–	↑		NA	NA	NA	NA	NA	NA
Art's Pasture (Aspendell)	↑	–	↑		NA	NA	NA	↑	–	↑
Intake 2	NA	NA	NA		NA	NA	NA	NA	NA	NA
Donkey – Lower Unit	-/↑	–	-/↑	Lotic	↑/↓	-/↓	↑/↓	NA	NA	NA
Donkey – Upper Unit	–	–	–	Lentic	–	–	–	–	–	–
Big Meadow	–	–	–	Lentic	–	–	–	–	–	–
McMurry	-/↓	–	↑		NA	NA	NA	NA	NA	NA
Totals	Meadow Ecological Condition				Stream/ Spring Condition			Fen Condition		
	Alt1	Alt2	Alt3		Alt1	Alt2	Alt3	Alt1	Alt2	Alt3
Upward	13	0	11		9	3	5	5	3	4
Static	3	16	5		5	9	8	3	5	4
Downward	1	1	1		0	2	1	0	0	0

* - Lotic = streams, Lentic = springs, fens and other wetlands.

Table 3.44 Summary of non-wilderness pasture effects. The number of pastures in each combination of condition and predicted trend are shown. Alternatives that maintain existing condition (EC) at desired condition (DC) or move towards DC are considered to have beneficial effect. Alternatives that maintain EC at DC have a neutral effect, and alternatives that maintain EC not meeting DC, or move EC downward are considered to have adverse effects. The three tables show effects on the riparian indicators: Table A. Meadow Condition, Table B. Stream Condition, Table C. Fen Condition.

A.

Meadow Effects					
Trend	Current Condition	Effect	Alt1	Alt2	Alt3
Upward	EC=DC	Minor beneficial	7	0	5
Upward	EC≠DC	Beneficial	6	0	6
Static	EC=DC	Neutral	3	10	5
Static	EC≠DC	Minor adverse	0	6	0
Downward	EC=DC	Adverse	1	1	1
Downward	EC≠DC	Adverse	0	0	0
Effects summary					
		Beneficial	13	0	11
		Neutral	3	10	5
		Adverse	1	7	1

B.

Stream Effects					
Trend	Current Condition	Effect	Alt1	Alt2	Alt3
Upward	EC=DC	Minor beneficial	3	0	0
Upward	EC≠DC	Beneficial	5	3	5
Static	EC=DC	Neutral	6	7	7
Static	EC≠DC	Minor adverse	0	2	1
Downward	EC=DC	Adverse	0	1	1
Downward	EC≠DC	Adverse	0	1	0
Effects summary					
		Beneficial	8	3	5
		Neutral	6	7	7
		Adverse	0	4	2

C.

Fen Effects					
Trend	Current Condition	Effect	Alt1	Alt2	Alt3
Upward	EC=DC	Minor beneficial	3	1	2
Upward	EC≠DC	Beneficial	2	2	2
Static	EC=DC	Neutral	3	5	4
Static	EC≠DC	Minor adverse	0	1	0
Downward	EC=DC	Adverse	0	0	0
Downward	EC≠DC	Adverse	0	0	0
Effects summary					
		Beneficial	5	3	4
		Neutral	3	5	4
		Adverse	0	0	0

Montgomery Pass Wild Horse Territory

Affected Environment: MPWHT

Vegetation Types

The Montgomery Pass Wild Horse Territory (MPWHT) is within the Crowley Flowlands and the Benton – Upper Owens Valley Ecological subsection where the predominant natural plant communities are similar to the Crowley Flowlands vegetation series described above. The vegetation series are dominated by Big sagebrush and Singleleaf pinyon. There are important but uncommon Willow thicket alliances in wet areas. The rare riparian habitats and water sources associated with them are important for providing water for wildlife and habitat for riparian-dependent species.

Current Condition

There is no grazing by commercial pack stock proposed in the MPWHT, but the area is grazed by the Montgomery Pass Wild Horse Herd. The area was part of the several grazing allotments in the past used for cattle and sheep. Those allotments were closed in the late 1980s to avoid conflicts with the wild horse herd. The wild horse population is managed according to the Montgomery Pass Wild Horse Territory (MPWHT) Management Plan (1988). The population levels have been relatively constant. Herd numbers have been kept in check by mountain lion predation and the herd has not exceeded the overall carrying capacity of the area. A cooperative resource management group is active and working on an update to this management plan.

The riparian areas in the MPWHT are impacted by the horse herds. There is apparent trailing in the riparian areas as well as the uplands from the wild horses.

The pack station base camps for wild horse viewing trips are located within riparian areas at Truman Meadows and Pizona Springs. The camps are creating disturbed areas with bare ground and early seral plant communities in the local area. For more detailed discussion of the riparian conditions in this analysis areas, see the wildlife section.

There is a fen system in Truman Meadows that extends from springs at the upper end to about the middle of the meadow. The dirt road used to access the campsite from the corral separates the upper fens from the lower and the corrals are less than 100 feet from the fen. There were some horse impacts, most likely from wild horses, and some boards and other debris in the fen noted in a field visit in 2005.

Environmental Consequences: MPWHT

Alternative 1

Direct and Indirect Effects: MPWHT

Removal of pack stations and the associated activities would not be likely to result in a measurable change in current conditions at the operational area scale. Locally at the camp sites at Pizona and Truman Meadows, there would likely be increased riparian vegetation, with increased abundance and cover of late-seral vegetation.

With wild horse viewing by commercial pack outfits eliminated, a stress on the horse herds would be reduced, especially during foaling season during the spring. However, there is a great deal of uncertainty about the impacts to the horse herds. The population dynamics and health of the horses are likely controlled to a much greater extent by environmental factors such as climate, forage availability, and predation by mountain lions.

Meadow Conditions: There would be very local moderate long term beneficial effects due to vegetation recovery in the two camp sites. Because there were no impacts detected to the meadows in general there would be negligible effects to the end of commercial pack stock on the meadows at the landscape scale.

Stream Conditions: There would be a very local minor beneficial effect due to small areas of willow and riparian vegetation recovery. Effects would be negligible at a landscape scale because of the small proportion of riparian area affected.

Fen Conditions: The current use has not altered the fen hydrology therefore the removal of commercial pack station use is not likely to change fen conditions.

Cumulative Effects: MPWHT – Alt. 1

All the direct and indirect beneficial effects to vegetation within the MPWHT found for Alternative 1 in this analysis were local within the two camp sites. Potential, uncertain beneficial effects to the wild horse herds were found at the analysis area scale. The following factors potentially contribute cumulatively to these effects.

Private pack stock use and other recreation (OHVs etc.)

There may be increased use by private pack stock and other recreational use at these meadows replacing some of the use by commercial pack stock. Cumulatively this would reduce the amount of recovery in the camp sites.

Private pack stock use and other recreation, especially OHV use may have an effect on the wild horse herds through stress especially during the foaling season. Cumulatively this may replace the effect of removing the commercial pack stock use and result in the same potential minor adverse effect on the wild horse herds.

Natural Factors Controlling the Wild Horse Herd Population Levels

Predation by mountain lions and climatic factors appear to largely control the wild horse populations. The minor effects predicted in this analysis are likely to be overwhelmed by these natural controlling factors.

Wild horse use

The grazing and trampling impacts from the wild horse herds is likely to partially replace the impacts from the commercial pack stock camp sites, reducing the total beneficial effect to vegetation from removing the camps.

Past livestock grazing

The MPWHT was grazed by livestock until the 1980's when the allotments were vacated or closed. The residual effects on vegetation from past grazing may limit or slow the recovery of vegetation within the camp sites, but they will show some beneficial effects. At a landscape scale there are no pack stock effects expected and therefore no cumulative effects.

Summary of cumulative effects on riparian indicators

Meadow condition: The cumulative effect of wild horse use and other private recreational use in the camp sites together with ending commercial pack stock use is likely to result in a negligible beneficial effect.

Stream condition: Impacts to riparian areas by commercial pack stations would likely be replaced by use by the wild horse herds and other recreational use. There would likely be little change in riparian conditions.

Fen condition: No effect from pack stock use was found for the fens therefore there are no cumulative effects predicted.

Alternative 2

Direct and Indirect Effects: MPWHT – Alt. 2

Alternative 2 authorizes commercial pack stock trips for wild horse viewing and the use of two existing camp sites in Pizona and Truman Meadows.

This analysis found localized impacts within the camp sites resulting in bare ground, compaction and loss of meadow and riparian cover. These conditions would be expected to continue resulting in a local moderate long term adverse effect. Since no pack stock grazing is authorized, no effects are expected at the landscape scale.

This analysis also found that there is potential for some stress or redistribution of the wild horse herds due to the commercial pack stock wild horse viewing. This effect is not considered adverse due to the fact that the herd population levels have remained relatively constant with the existing use.

Meadow condition: A local moderate long term adverse effect is predicted within the boundaries of the two camp sites.

Stream condition: A local moderate long term adverse effect is predicted at the two camp sites due to the reduction in riparian vegetation cover.

Fen condition: Some impacts to the fen system would continue, but monitoring would ensure that impacts do not impair function resulting in a negligible adverse impact to the fen (Appendix I).

Cumulative Effects: MPWHT – Alt. 2

All the direct and indirect adverse effects to vegetation for Alternative 2 within the MPWHT found in this analysis were local within the two camp sites. The following factors potentially contribute cumulatively to these effects.

Private pack stock use and other recreation (OHVs etc.)

Private pack stock use and other recreation is likely to have very similar and may contribute to impacts within the camp sites if other recreationalists are using them. This could contribute cumulatively to result in a moderate adverse effect.

Natural Factors Controlling the Wild Horse Herd Population Levels

Predation by mountain lions and climatic factors appear to largely control the wild horse populations. These effects on the wild horse herds are thought to have a much larger effect than disturbance by recreation and wild horse viewing activities. The natural factors which control the herds have maintained population levels at a relatively stable level, so this effect can no be considered to be adverse.

Wild horse use

The grazing and trampling impacts from the wild horse herds is likely to add to the impacts from the commercial pack stock camp sites, slightly increasing the total adverse effect to vegetation at the camps.

Past livestock grazing

The residual effects on vegetation from past grazing may contribute to the adverse impacts at the camp sites, but the residual grazing effects are negligible in comparison to the current impacts from camp site use. At a landscape scale there are no pack stock effects expected and therefore no cumulative effects.

Summary of cumulative effects on riparian indicators

Meadow condition: The cumulative effect of wild horse use and other private recreational use in the camp sites together with commercial pack stock use is likely to result in a local moderate adverse effect.

Stream condition: Impacts to riparian areas by commercial pack stations plus impacts to the same areas from other recreational use and wild horse use would likely result in a local moderate adverse effect by maintaining the current condition of the camp sites.

Fen condition: No effect from pack stock use was found for the fens therefore there are no cumulative effects predicted.

Alternative 3

Direct and Indirect Effects: MPWHT – Alt. 3

The main difference between Alternative 2 and Alternative 3 effecting vegetation is moving the base camps at Truman Meadows and Pizona Springs out of the RCA. Moving the camps would be expected to allow recovery of riparian and meadow conditions towards the desired condition of late seral status. The effects of this action would be similar to the effects of Alternative 1 within the existing camp sites.

Moving the commercial pack station base camps out of the riparian areas would allow more use of those areas by the wild horse herds. However, this access is not likely to affect the overall health of the herd which is controlled by other factors such as predation. Effects to the horse herds are expected to be the same as the effects of Alternative 2.

Meadow and stream condition: There would be local moderate long term beneficial effects due to vegetation recovery in the two camp sites (same as Alternative 1).

Fen condition: Some impacts to the fen system would continue, but monitoring would ensure that impacts do not impair function resulting in a negligible adverse impact to the fen (See Appendix I).

Cumulative Effects: MPWHT – Alt. 3

The cumulative effects of Alternative 3 are very similar to Alternative 1 (above) since the only direct and indirect effects found for Alternative 3 were the recovery of the camp sites resulting from moving them out of the riparian area. See the discussion of cumulative effects factors for Alternative 1 above.

Summary of cumulative effects on riparian indicators

Meadow condition: The cumulative effect of wild horse use and other private recreational use replacing the commercial use in the camp sites is likely to result in a negligible beneficial effect.

Stream condition: Impacts to riparian areas by commercial pack stations would likely be replaced by use by the wild horse herds and other recreational use. There would likely be little change in riparian conditions.

Fen condition: No effect from pack stock use was found for the fens therefore there are no cumulative effects predicted.

Ansel Adams/John Muir Wildernesses

Affected Environment: AA/JM Wildernesses

The Trail and Commercial Pack Stock Management Final EIS (2005 AA/JM FEIS) described the Vegetation Affected Environment for the portions of the AA/JM Wildernesses that are within the project area considered by this EIS and are incorporated into this document by reference. The Vegetation Affected Environment Section of that EIS can be found in Volume 1, Chapter 3, pages III-161 through III-198. The Hydrology Affected Environment Section on pages III-101 to III-112 also describes the stream condition used in this FEIS as an indicator for riparian vegetation condition.

Vegetation Types

In summary, from the 2005 AA/JM FEIS: On the east side, lodgepole and Jeffery 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. Meadows are distributed throughout, typically in valley bottoms, especially above constrictive rock outcrops or moraines (III-161).

Current Condition

Meadow condition: In summary from the 2005 AA/JM FEIS: While most meadows are in satisfactory condition as defined and described in the 2001 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 (III-163).

The IDT analyzing the AA/JM Wildernesses for the 2005 FEIS identified 45 of the 108 meadows visited in the INF managed portions of the wilderness with localized areas of early seral vegetation composition. This corresponds to approximately 170 acres of meadow affected out of a total of 3807 total acres of meadow managed by the INF within the wildernesses.

Stream condition: In the summary from the 2005 AA/JM FEIS:

Environmental Consequences: AA/JM Wildernesses

The Trail and Commercial Pack Stock Management Final EIS (2005) described the environmental consequences for the Inyo National Forest portions of the Ansel Adams and John Muir Wildernesses that are within the project area considered in this EIS. That analysis is incorporated into this document by reference. An environmental consequences discussion of commercial pack stock use in the AA/JM Wildernesses for vegetation and grazing resources can be found on pages IV-510-IV-676. A description of environmental consequences for soils and hydrology with discussion of stream and meadow condition can be found on pages IV-259 to IV-420.

Alternative 1 - Direct and Indirect Effects

Under Alternative 1 there would be no pack station permits and the use authorized by the 2005 JM/AA ROD would not occur. This would result in the effects of the no-action alternative as analyzed in the 2005 JM/AA FEIS. Meadow, stream and fen conditions would be expected to have local beneficial long term effects due to the absence of grazing and trampling impacts.

Alternatives 2 and 3 - Direct and Indirect Effects

The 2005 AA/JM ROD selected Alternative 2 – Modified. In the AA/JM Wildernesses, 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.

Cumulative Effects: AA/JM Wildernesses

The Trail and Commercial Pack Stock Management Final EIS (2005) described the cumulative effects for the portions of the Ansel Adams and John Muir Wildernesses that are within the project area considered in this EIS. That analysis is incorporated into this document by reference. The cumulative

effects discussion of commercial pack stock use in the AA/JM Wildernesses for vegetation and grazing resources can be found on pages IV510-IV676 of the FEIS.

Cumulative Effects: AA/JM Wildernesses – Alt. 1

Under Alternative 1 no commercial pack station permits would be issued. This would increase the amount of recovery of vegetation and grazing resources expected in the AA/JM Wildernesses under the 2005 AA/JM ROD.

Cumulative Effects: AA/JM Wildernesses – Alt. 2

The grazing standards in Alternative 2 together with the implementation of grazing standards from the 2005 AA/JM ROD would maintain or locally improve vegetation and riparian conditions across the project area.

Cumulative Effects: AA/JM Wildernesses – Alt. 3

Implementation of INF LRMP Amendment #6 grazing standards in Alternative 3 together with the implementation of grazing standards from the 2005 AA/JM ROD in the AA/JM Wildernesses would be expected to contribute to an upward trend in vegetation and riparian conditions across the project area.

Golden Trout/South Sierra Wildernesses

Affected Environment: GT/SS Wildernesses

Vegetation Types

The GT/SS Wildernesses are primarily on the Kern Plateau where the predominant plant communities are Foxtail pine, Lodgepole pine, Jeffrey pine, and Mixed conifer series with Singleleaf pinyon and Birchleaf mountain-mahogany series on south facing aspects. Meadows are a common component on the valley bottoms. Canyon live oak and Desert scrub series occur on the eastern escarpment.

The large interconnected meadow systems typical of the Kern Plateau are a mosaic of vegetation from wet sedge to dry rothrock's sagebrush communities (*Artemisia rothrockii*), some of which are relic degraded wet meadows. Meadows cover approximately 8 to 10 percent of the area of the Golden Trout Wilderness (USDA FS, 2000). The Upper Kern Plateau Meadow System Ecological Unit Inventory for the Golden Trout and South Sierra Wilderness (USDA FS, 2000) includes more detailed descriptions and maps of the categories of meadows found in this area.

Using the Meadow System Ecological Unit Inventory and field visits to the primary meadows requested for grazing, it was determined that sixteen of the Golden Trout Wilderness meadows include or are entirely fens.

Grazing History

The Kern Plateau has been grazed by livestock since before the creation of the Forest Reserves. Pack stock use and grazing likely pre-dates production livestock grazing. The area was used by cavalry troops in the 1800s and by recreational pack stock traveling to base camps to climb Mt. Whitney in

the late-1800s. Production livestock grazing began in the mid-1800s. Exact numbers are unknown; however, there were likely many large bands of sheep on the Kern Plateau in the mid to late 1800s. Sheep were replaced by cattle in the early 1900s. The number of grazing cattle and the length of the allowed grazing season have been gradually reduced. Current levels of cattle grazing, 1,178 cow calf pair for 3 months on the Inyo National Forest portion of the Kern Plateau, are on the order of one-tenth of the historical levels. The historical cow camp facilities associated with cattle grazing are recognized in the Golden Trout Wilderness Plan as a component of the character of the area. These facilities existed and were used for cattle allotment management purposes prior to wilderness designation and are kept and maintained solely for allotment management purposes. Allowable utilization and other standards related to cattle grazing have been established through application of INF LRMP Amendment #6.

Methods:

The IDT visited the primary use areas for commercial pack stock in the GT/SS Wildernesses. They did assessments of the meadow conditions. Data collection on meadow conditions has been ongoing in the GT/SS Wilderness for management and assessment of the production livestock grazing and Gold

Current Condition

As is documented in the Golden Trout Wilderness Management Plan and subsequent assessments such as the Templeton and Whitney Allotment Environmental Assessment (Inyo NF, 2001) and the Analysis of Existing Stream Habitat Data (Inyo National Forest, 1998), meadows within this area have degraded conditions. Within the meadows many stream segments are incised, with lowered water tables. Riparian vegetative species composition is often shifted toward early or mid-seral such as asters rather than late-seral riparian vegetation such as sedges (*Carex* spp.).

In response to the degraded watershed conditions, there has long been an active watershed restoration program, with an emphasis on restoration of aquatic habitat to provide for the habitat needs of the Golden Trout as is described in the Environmental Assessment, Decision Notice and Finding of No Significant Impact, for Golden Trout habitat and Watershed Restoration on the Kern Plateau (USDA FS, 1983). Previous restoration efforts relied heavily on structural methods such as erosion check dams. Today the emphasis is on structural restoration together with management of the vegetative resource, such as rest from grazing to allow for watershed stability through vegetative recovery.

Commercial pack stock use in the GT/SS Wildernesses is at low levels, well dispersed, and occurs with a background of cattle grazing in many areas so that impacts to vegetation are difficult to identify. There is some moderate and locally concentrated trampling associated with campsites used by commercial pack station operations. Commercial pack stock operations commonly use pasture facilities such as the one at Little Whitney Meadows for grazing. Within these pastures it is likely that pack stock use is contributing to a component of early seral species, reduced vegetative cover and some compaction. Grazing at large is at a low level and dispersed so that trampling or measurable grazing utilization are rare. The areas used in the recent past for grazing by commercial packstock

include Big Whitney Meadow, Rocky Basin Lakes, Mulkey Meadow especially north of Bullfrog Stringer, along Golden Trout Creek downstream of Tunnel Guard Station, Little Whitney Meadow, Ramshaw Meadow, the upper portion of Strawberry Meadow, the Fat Cow Meadow portion of Templeton Meadow, Hessian Meadow, Monache Meadow, Gomez Meadow, Long Stringer near Gomez Meadow, and Summit Meadow.

The meadows commercial pack stations have identified for pack stock grazing are listed in Table 3.45 with their current ecological condition and suitability for grazing. The recent (5 year) trend in meadow conditions has been variable. In general an upward trend has been observed on the stream banks, with increased vegetative cover, especially sedge and willow vegetation that has the capacity to stabilize stream banks. This trend has been documented in Greenline transects repeated after five years of rest improvements in PFC ratings between the 2000 Whitney and Templeton Grazing Allotments EA and assessments done for this analysis, photo points established to monitor golden trout habitat (Sims, 2005), and qualitative specialist observations. The trend has occurred in both grazed and ungrazed cattle allotments although recovery may be more rapid in the ungrazed allotments.

Meadow conditions away from the stream banks do not necessarily demonstrate an upward trend in the last five years. Many meadow sites have shown a static or continued downward trend in both the rested and active grazing allotments. This site specific downward trend has been statistically tested comparing species composition data from rooted frequency transects (Weixelman and Bakker, 2004). Analysis of aerial photography from the 1970s to 2001 has also shown that meadow vegetation has been lost to encroachment of Rothrock's sagebrush in meadows across the Kern Plateau. These changes have been highly variable in timing from meadow to meadow, but all meadows have experienced some net loss of meadow vegetation. In Monache Meadows, 20% of the total meadow vegetation was lost in the last decade (Swartz, 2004).

In the meadows identified for grazing by pack station operators, there are a few meadows with identified low ecological status or a downward trend. These include parts of Big Whitney Meadow and Stokes Stringer, Gomez Meadow, parts of Little Whitney Meadow, South Fork Meadows at the headwaters of the South Fork of the Kern River. There are sensitive species habitat concerns in several other meadows including Ramshaw Meadow, Volcano Meadow, and Bullfrog Meadow.

Table 3.45. Condition and suitability of meadows in the GT/SS Wildernesses. Includes those meadows identified by pack stations for grazing

Meadow Name	Current Cattle Grazing	Riparian Condition: 1. PFC (year) 2. INF LRMP Amendment #6 Watershed assessment (year)	Meadow Ecological Condition Rooted Frequency Data: Veg/Soil+Veg (year)	Suitability Determination
Ash Meadow	Yes	No data	Mod/Mod (2001)	Suitable outside of critical areas (spring heads)
Bakeoven Meadows	Yes	No data	High/High (2001)	Suitable

Meadow Name	Current Cattle Grazing	Riparian Condition: 1. PFC (year) 2. INF LRMP Amendment #6 Watershed assessment (year)	Meadow Ecological Condition Rooted Frequency Data: Veg/Soil+Veg (year)	Suitability Determination
Barigan Stringer	No	No data	No data	Undetermined
Bear Trap NW (adjacent to corral)	No	No data	No data	Undetermined
Big Dry (near Gomez)	No	No data	No data	Mostly unsuitable due to recovering gullies, hummocks, and low vegetative cover.
Big Whitney	No	1. 30% PFC/ 70% FAR↑ (1999)	Low/Low↓ (2004)	Suitable in moist to dry meadow areas. Avoid wet meadows and alkali flats with low veg cover. Not suitable in lower Big Whitney below the confluence of tributaries where veg downward trend is documented.
Brush Meadow	Yes (no use)	No data	No data	Undetermined
Bullfrog	Yes	1. FAR↓ (2004)	No data	Unsuitable due to mountain yellow legged frogs, wetness, and active headcuts.
Casa Vieja	Yes	No data	2 Mod/Mod (2001)	Suitable within the public pasture. Not suitable in administrative pasture or outside pastures due to active headcuts, sensitive wet meadows and mountain yellowlegged frog habitat.
Fat Cow	No	1. FAR↑ (2004) FAR↓ (1999)	No data	Unsuitable due to active headcuts and sensitive wet areas.
Golden Trout Creek between Tunnel and Groundhog Mdws	No	No data	No data	Undetermined
Gomez Meadow	No	60% PFC/ 40% FAR↓/↔	No data	Suitable outside of wet areas, springs and seeps
Groundhog	No	1. FAR↑ (2004) 2.	No data	Suitable over about 75 of its area, in the south and west of meadow. Avoid incised portion of the meadow
Hessian (arm of Monache)	Yes	1. FAR↔ (2004)	No data	Suitable over 20% of area, avoid very wet areas.
Johnson Crk above Little Whitney	No	No data	No data	Undetermined
Little Whitney	No	1. FAR↓ (2004)	No data	Suitable within horse pasture
McConnel (near Tunnel)	No	1. FAR↑ (2004) FAR ↔/↓ (1998)	No data	Suitable over about 70% of its area. Limited use only due to existing degradation.

Meadow Name	Current Cattle Grazing	Riparian Condition: 1. PFC (year) 2. INF LRMP Amendment #6 Watershed assessment (year)	Meadow Ecological Condition Rooted Frequency Data: Veg/Soil+Veg (year)	Suitability Determination
Monache Meadow	Yes	No data	1 High/High, 1 High/Mod (2001)	Suitable outside of critical areas (wet meadows that don't reach range readiness and areas of active erosion)
Mulkey	Yes	No data	3 Mod/Mod (2001) 2 Early, 1 Late Seral (Greenline 2000) 1 Late Seral↑ (Greenline 2004)	Suitable (does not include Bullfrog Meadow)
Natural Bridge (downstream)	No	No data	No data	Undetermined
Ramshaw – Kern Peak Stringer	No	1. FAR↑ (2004)	No data	Unsuitable due to lack of forage.
Ramshaw – NE arm (requested area also includes a section of lower Ramshaw and the trail corridor)	No	1. PFC (2004) PFC (1999)	No data	Suitable over about 10% of its area, if wet areas and spring heads can be avoided.
Ramshaw – Main	No	1. FAR↑ (2004) 40% PFC/ 60% FAR↑ (1999)	Mod/Mod (2000) PNC (Greenline 2000)	Suitable only near to and downstream of Kern Peak Stringer, on the west side of the creek because of wet meadow conditions and rare plant populations
Salt Lick	No	1. PFC (1998)	No data	Suitable outside of critical areas (headcuts and wet meadows that do not reach range readiness)
South Fork Cottonwood Creek	No	1. FAR↔ (2004)	No data	Unsuitable due to historical impacts and continued vulnerability
South Fork Meadow (headwaters of SFKern)	No	1. 68% FAR↑/ 23% FAR↓/ 9% PFC (1999) 2. Extreme departure	Low/Low↓ (2004)	Not suitable due to downward trend in meadow condition.
South Fork to Tunnel (meadows upstream of trail btwn Bullfrog and Tunnel)	No	No data	No data	Not suitable (high gradient wet meadow stringers)
Stokes Stringer	No	1. 50% PFC/ 41% FAR↑/ 9% FAR↓ (1999) 2. Extreme departure:(1999)	No data	Suitable outside of critical areas (wet meadow and areas with active headcuts)
Strawberry Meadow (Fat Cow listed separately)	No	1. PFC (1999)	2 Mod/Mod (2000) 1 Mid, 1 Late Seral (2000 Greenline)	Suitable except for area near Fat Cow (see Fat Cow Meadow line)
Summit	Yes	No data	No data	Downstream end suitable

Meadow Name	Current Cattle Grazing	Riparian Condition: 1. PFC (year) 2. INF LRMP Amendment #6 Watershed assessment (year)	Meadow Ecological Condition Rooted Frequency Data: Veg/Soil+Veg (year)	Suitability Determination
				for grazing once it reaches range readiness. No water later in the year.
Templeton – Main	No	1. FAR↑ (2004) 20% PFC/ 80% FAR↑ (1999)	2 Mod/Mod, 1 Mod/Low (2000) 2 Late Seral (Greenline 2000)	Suitable outside of critical areas, which include raw stream banks.
Templeton – Lewis Stringer	No	1. PFC/ FAR↔ (1999)	Mid Seral (Greenline 2000)	Suitable
Templeton – Movie Stringer	No	1. PFC (1999)	No data	Suitable outside of critical areas
Tunnel	No	1. FAR↑ (2004)	PNC↑ (Greenline 2004)	Suitable
Volcano	No	1. FAR↔ (2004) 50% PFC/ 50% FAR↓ (1999) 2. Extreme departure (1999)	Mod/Mod 1↔, 1↑ (2004)	Unsuitable due to sensitive trout species, recovering stream morphology, and low productivity.

Note: PFC – Proper Functioning Condition (PFC), Functional at Risk (FAR), or Non-Functional (NF) with associated trend (↑, ↓, or ↔); INF LRMP Amendment #6 Watershed Assessment – No, slight, moderate, or extreme departure from desired conditions based on 6 individual factors rated from IV (good) to I (poor).

PFC data is from IDT field visits for this analysis in 2004 and from the Templeton and Whitney Grazing Allotments EA from 1997-1999. Meadow Ecological Condition is based on the USFS R5 range monitoring protocols (Weixelman and Bakker, 2204). These include quantitative rooted frequency transects in meadows and more subjective Greenline transects along the stream bank. All available data are shown. Due to the large area and dispersed nature of proposed pack stock use, data was not collected in every meadow for every indicator.

Fens

Many of the Kern Plateau meadows have areas that are most likely fens. The following meadows have EUI map unit 3 (USDA FS, 2000), which is an indicator of fen conditions: Bullfrog, Groundhog, Templeton, Big Whitney, Horseshoe, Mulkey, Poison, Bear, Salt Lick, Brown, Red Rock, Jordan Hot Springs, Dry Creek, Beer Keg, Casa Vieja, and Long Canyon. Many of these meadows are not traditionally used by commercial pack stock. Those meadows that were specifically requested for grazing are listed in Table 3.45.

Pastures

Two pastures in the GT Wilderness were permitted for use by Cottonwood Pack Station in the past. They have not been permitted for grazing recently. These are the South Fork and Overholster Pastures. The current condition of these pastures is given in table 3.46 below.

Table 3.46. Condition of Golden Trout Wilderness permitted pastures based on IDT field assessments and available monitoring data.

Pasture Name	Meadow Ecological Condition: 1. IDT estimate of seral status 2. R5 Rooted Frequency Transect: Veg/Veg+Soil	Riparian Condition: 1. PFC 2. INF LRMP Amendment #6 Watershed Assessment	Fens: Presence/Condition
South Fork Meadow (GTW)	1. Early to mid seral 2. no data	1. Stream: FAR↓ 2. no data	Small fen inclusions in meadow: High
Overholster (Little Cottonwood Crk) (GTW)	1. Late seral 2. no data	1. no data 2. no data	Large sloping fen makes up most of pasture: High

Ratings: Seral Status – Late, Mid or Early Seral; Rooted Frequency – High, Moderate, or Low Condition with associated statistically significant trend where 5 year repeat measurements are available (↑, ↓, or ↔); PFC – Proper Functioning Condition (PFC), Functional at Risk (FAR), or Non-Functional (NF) with associated trend (↑, ↓, or ↔); INF LRMP Amendment #6 Watershed Assessment – No, slight, moderate or extreme departure from desired condition based on 6 individual factors rated from IV (good) to I (poor) ; R5 Draft Fen Condition Checklist – High, Moderate, or Low Condition.

South Fork Meadow

The meadows along the South Fork of Cottonwood Creek in the Golden Trout Wilderness were once permitted as a pasture for the Cottonwood Pack Station, but grazing has not been authorized in recent permits since the pack station was moved to Horseshoe Meadows.

The meadows are in early to mid seral status due in part to headcuts and incised streams causing dropped water tables. This condition is typical of many of the meadows on the Kern Plateau. The IDT rated the stream as FAR with a downward trend.

Overholster (Cottonwood Creek)

Overholster Pasture on Cottonwood Creek in the Golden Trout Wilderness was once permitted for pack stock grazing to the Cottonwood Pack Station, but it has not been authorized since the 1980s when the pack station moved to Horseshoe Meadows. The meadow is a very wet sloping fen. The vegetation condition is late seral but the saturated conditions and slope make it unsuitable for grazing due to the risks of erosion on the slope.

Public Pastures

The commercial pack stations use public pasture facilities in the GT/SS Wilderness including the pastures at Little Whitney and Casa Vieja. The condition data available for these public pastures is given in table 3.45 with the condition of other backcountry meadows within the wilderness.

Little Whitney Public Pasture

Most of the commercial pack stock as well as private pack stock use occurs in the Little Whitney Pasture. The IDT found the vegetation condition within the pasture to be mid to late seral. The stream condition in the entire meadow was found to be FAR with an apparent downward trend, however, the IDT found the reach within the horse pasture to be suitable for grazing.

Casa Vieja Public Pasture

The vegetation in Casa Vieja Meadow was rated as moderate condition in 2004. The transects are not within the public pasture, but are located in similar vegetation types. There have been extensive watershed restoration projects on the stream since the 1930's when large log check dams were constructed to fill in large gullies. Today the gullies have filled in and the meadow surface is again at the floodplain elevation. Within the public pasture the stream is in good condition however there is some evidence of instability and risk factors in other parts of the meadow. Upstream where the gradient is steeper there are several active headcuts and some of the old check dam structures are showing some instability.

Environmental Consequences: GT/SS Wildernesses

Alternative 1

Direct and Indirect Effects: GT/SS Wildernesses – Alt. 1

The No-Action alternative would end all commercial pack stock activities in the GT/SS Wildernesses. Use in the past has been at very low levels so little change in vegetation and grazing resources would be expected. The amount of grazing by commercial pack stock has not been at a high enough level to cause shifts in vegetation communities and seral status. Locally there would not be any potential for grazing or trailing impacts to wet meadows or stream banks. The impacts due to commercial pack stock use found by the IDT were all at a local scale limited to a short reach of a cross country route, trail, creek crossing, or water access point. The impacts were restricted to wet meadows before range readiness or meadows that never reach range readiness. The soft soils are vulnerable to compaction and trampling disturbance. A few head of pack stock crossing a stream bank or sloping wet meadow can remove the vegetation and expose bare soil. These trampling impacts can locally degrade stream channels or cause erosion and instability in sloping meadows. Most of these impacts recover within a few years without repeated use in the same location.

Pastures

Two pastures have previously been used under permit to the commercial pack station within the wilderness boundaries, South Fork of Cottonwood and Overholster Pastures. There would be no use in these pastures under Alternative 1. The current upward trend in South Fork Pasture would be expected to continue and Overholster would be expected to remain at desired conditions. No grazing is currently authorized in these pastures so there is no effect predicted due to Alternative 1.

The public pastures within the wilderness are used by the commercial pack stations. Most of the use occurs in the Little Whitney Pasture. It was found to be at desired conditions by the IDT. Removal of pack stock grazing could have a minor local beneficial effect due to a reduction in the amount of vegetation removed annually and streambank disturbance.

The use of the Casa Vieja pasture by commercial pack stock is likely too low to show any effects of Alternative 1.

Meadow, stream and fen condition: Meadow, stream and fen condition at a landscape scale are not predicted to have measurable effects of the removal of commercial pack stock use due to the low levels of current use and absence of detectable impacts.

Some local areas of impact due to off trail travel through wet meadows or grazing in wet meadows and the Little Whitney Public Pasture in particular are expected to recover and there will be no ongoing risk of these impacts occurring in the future due to commercial pack stock use. We predict a localized minor beneficial short term effect of Alternative 1 on all three riparian indicators.

Cumulative Effects: GT/SS Wildernesses – Alt. 1

All the effects of removing commercial pack stock were found to occur in wet meadows and be at a local scale on the order of a single trail, creek crossing, or water access point or within the public pasture facilities at Little Whitney Meadow. Other past, present or reasonably foreseeable activities in the GT/SS Wildernesses that may be cumulative with these effects are discussed below. Several factors were found to not interact with the effects of commercial pack stock grazing due to their scale. This includes the fish barrier dams constructed for the protection of the California Golden Trout.

Past grazing history

The past history of heavy grazing may have resulted in or contributed to the widespread stream instability across the Kern Plateau. Many of the streams are deeply incised and there are active headcuts and erosion. These residual effects may make recovery of local commercial pack stock impacts less likely or allow those impacts to spread to a larger area due to active erosion and meadow systems vulnerable to incision.

Past and current grazing by pack stock

The past and current impacts from pack stock (commercial and private) were found to be local and recover over a few years therefore there is no potential for cumulative impacts with the local medium term impacts predicted for the removal of commercial pack stock grazing.

Current grazing on active grazing allotments

Two of the four allotments on the Kern Plateau are currently grazed. The other two allotments are rested. On the active allotments grazing and trampling disturbance is at a higher level than the same impacts from commercial pack stock. Cumulatively there is an impact to stream banks and meadow conditions, but overall there appears to be an upward trend under Amendment #6 standards.

Grazing allotment decisions (past and currently scheduled)

The 2001 Templeton-Whitney Grazing Allotment decision (USFS 2001) rested the two allotments in the interior of the Kern Plateau. Preliminary data indicates that there is an upward trend in streamside vegetation conditions with rest since 2001 and several above average snow years. The removal of commercial pack stock grazing under Alternative 1 would add incrementally but very slightly to this upward trend on the scale of local trailing impacts.

The Conservation Strategy for the California Golden Trout (2004)

The Golden Trout Conservation Strategy calls for monitoring and recovery of riparian habitats across the Kern Plateau. It is expected that this will lead to improved ecological conditions. The effects of Alternative 1 would add a minor localized effect to this larger scale long term beneficial effect.

Other private and commercial recreational use

Other private pack stock and backpacking use in the GT/SS Wilderness has similar localized impacts to commercial pack stock use. These impacts would be likely to off-set most of the beneficial effect of ending commercial pack stock use.

Population growth and increasing recreation

Continually increasing population in southern California can be expected to result in increased recreation in the GT/SS Wilderness. This trend is likely to intensify the effects of other types of recreation described above.

Fire suppression

While fire suppression has affected other ecosystems across the Inyo National Forest, the Kern Plateau is relatively unaffected due to the generally sparse understory and widely spaced trees in this unique high elevation forest. There is not enough fuel load for a frequent natural fire interval. Therefore, no cumulative effects are predicted.

Region wide trends in riparian vegetation condition and acreage

A discussion of the contributions to the condition and amount of riparian vegetation across the region are found in the analysis area-wide cumulative effects section.

Summary of cumulative effects on riparian indicators

Meadow, stream and fen condition: The local medium term minor beneficial effect of removing commercial pack stock use in wet meadows of the Kern Plateau would contribute a minor addition to the larger beneficial effects causing an generally upward trend in meadow and stream condition across the Plateau due to recovery from historic grazing, rest of the Templeton and Whitney grazing allotments, and the Conservation Strategy for the California Golden Trout.

The instability and residual effects of historic grazing along with current grazing on the two active grazing allotments add some uncertainty to the upward trend and may slow it down or prevent it in local areas.

The cumulative effects to fens are expected to follow the same trends as meadow and stream condition.

Alternative 2

Direct and Indirect Effects: GT/SS Wildernesses – Alt. 2

In general pack stock grazing has been at a very low, un-measurable level in meadows of the Kern Plateau outside of pasture facilities such as the one at Little Whitney Meadow. However, even the low levels of use can have effects in specific sites. The effects of a single trip by a commercial pack trip across a stream and a steeply sloping wet meadow before range readiness in the spring of 2005 has been documented (Hubbs, 2005 available in project file). The trampling of the banks resulted in a headcut that was enlarged by storm run-off later in the season. Because of its position at the base of the sloping meadow stringer, the headcut threatens the stability and hydrology of the entire meadow. The proposed action requires that commercial pack stock do not travel cross country through meadows before range readiness to prevent this kind of impact.

The implementation of the 10% stream bank trampling standard for wild trout waters, which applies to most of the Kern Plateau, would limit impact to streams and the sensitive meadows systems associated with them on the Kern Plateau. The total grazing allowed by commercial pack stock and cattle in active allotments would be determined using Amendment #6 adaptive management depending on existing vegetation and watershed conditions. Grazing standards have already been set for cattle grazing under Amendment # 6 and would apply also the commercial pack stock grazing.

Pastures

There is no use authorized in either of the pastures previously permitted to Cottonwood Pack Station. Overholster would not be authorized and South Fork of Cottonwood Creek Pasture would be rested for 8 to 10 years and re-evaluated. The effects in these pastures would be the same as under Alternative 1 (local minor beneficial effects).

The use of the Little Whitney Public Pasture would be expected to continue and use of the Casa Vieja Public Pasture would also be allowed. A negligible effect is predicted because the pastures are at desired conditions and would be expected to remain the same under ongoing grazing use at the levels proposed.

Meadow, stream and fen condition: Meadow, stream and fen condition at a landscape scale are not predicted to have measurable effects of commercial pack stock use due to the low levels of current use and absence of detectable impacts.

Minor local long term beneficial effects are expected in the South Fork of Cottonwood Creek and Overholster Pastures with rest.

In the Little Whiney Pasture a negligible effect is predicted with conditions expected to remain the same.

Some local areas of impact due to off trail travel through wet meadows or grazing in wet meadows are expected to occur at a reduced level from the current situation due to the range readiness standards and the prohibition on cross country travel through meadows before range readiness. We predict localized minor short term adverse effects of Alternative 2 on all three riparian indicators which could recover within one or two years.

Cumulative Effects:

All the effects of commercial pack stock were found to occur in wet meadows and be at a local scale on the order of a single trail, creek crossing, or water access point or within the public pasture facilities at Little Whitney Meadow. Other past, present or reasonably foreseeable activities in the GT/SS Wildernesses that may be cumulative with these effects are discussed below.

Past grazing history

The past history of heavy grazing may have resulted in or contributed to the widespread stream instability across the Kern Plateau. These residual effects may make meadow and stream systems less resilient to the local commercial pack stock impacts or allow those impacts to spread to a larger area due to active erosion and meadow systems vulnerable to incision.

Past and current grazing by pack stock

The past and current impacts from pack stock (commercial and private) were found to be local and recover over a few years therefore there is no potential cumulative effects with on-going commercial pack stock grazing.

Current grazing on active grazing allotments

Two of the four allotments on the Kern Plateau are currently grazed. The other two allotments are rested. On the active allotments grazing and trampling disturbance is at a higher level than the similar impacts from commercial pack stock. Cumulatively there is an impact to stream banks and meadow conditions, but overall there appears to be an upward trend under Amendment #6 standards which are used under both Alternative 2 and 3 for the combined grazing of production livestock and commercial pack stock.

Grazing allotment decisions (past and currently scheduled)

The 2001 Templeton-Whitney Grazing Allotment decision (USFS 2001) rested the two allotments in the interior of the Kern Plateau. Preliminary data indicates that there is an upward trend in streamside vegetation conditions with rest since 2001 and several above average snow years. Commercial pack stock grazing under Alternative 2 would continue in the rested allotments, but a much lower level than the previous cattle grazing. The upward trend due to rest from cattle grazing is predicted to overwhelm the minor localized impacts of commercial pack stock use.

The Conservation Strategy for the California Golden Trout (2004)

The Golden Trout Conservation Strategy calls for monitoring and recovery of riparian habitats across the Kern Plateau. It is expected that this will lead to improved ecological conditions. Cumulatively the beneficial effects of the Golden Trout Conservation Strategy are expected to overwhelm the minor localized short term impacts of commercial pack stock.

Other private and commercial recreational use

Other private pack stock and backpacking use in the GT/SS Wilderness has similar localized impacts to commercial pack stock use. Together the impacts of commercial and private recreation use are still expected to be minor given the current conditions with existing commercial and private use.

Population growth and increasing recreation

Continually increasing population in southern California can be expected to result in increased recreation in the GT/SS Wilderness. This trend is likely to intensify the effects of other types of recreation described above.

2005 AA/JM FEIS

The implementation of the 2005 AA/JM FEIS decision which is incorporated into this document for the management of the commercial pack stations within the AA/JM Wildernesses may have an effect on the levels of use in the GT/SS Wilderness. If restrictions on use in the AA/JM Wildernesses result in the commercial pack stations maximizing their use in the GT/SS Wildernesses it could cause higher levels of use. The caps on use within the GT/SS Wilderness in Alternative 2 will prevent this use from growing without regulation and the Amendment #6 standards will prevent grazing use from exceeding a level expected to maintain or move towards desired conditions.

Fire suppression

No cumulative effects are predicted. See Alternative 1 discussion.

Region wide trends in riparian vegetation condition and acreage

A discussion of the contributions to the condition and amount of riparian vegetation across the region are found in the analysis area-wide cumulative effects section.

Summary of cumulative effects on riparian indicators

Meadow, stream and fen condition: The local short term minor adverse effects of commercial pack stock use in wet meadows of the Kern Plateau is expected to be overwhelmed by the general upward trend in meadow and stream conditions due to recovery from historic grazing, rest of the Templeton and Whitney grazing allotments, and the Conservation Strategy for the California Golden Trout.

The instability and residual effects of historic grazing along with current grazing on the two active grazing allotments add some uncertainty to the upward trend and may slow it down or prevent it in local areas.

The cumulative effects to fens are expected to follow the same trends as meadow and stream condition.

Alternative 3

Direct and Indirect Effects: GT/SS Wildernesses – Alt. 3

The effects on vegetation and grazing resources in the GT/SS Wildernesses are not likely to be different than under Alternative 2. There are fewer trips authorized under Alternative 3 but the effects

of the similar levels of use are not expected to be different on the meadows due to the minor degree of effects predicted at the highest levels in Alternative 2. See Alternative 2 discussion above.

Cumulative Effects:

The cumulative effects of Alternative 3 are expected to be similar to Alternative 2 discussed above. The lower level of commercial pack stock use authorized under Alternative 3 is not likely to be a noticeable difference with the background of past and present cattle grazing. See Alternative 2 discussion above.

3.4.2.2 Rare Plants

Intro/Background Discussion

For this analysis, the areas of consideration are the packstations, pastures, meadows, campsites, and corridors of travel (trails, stock drive routes) outside of the AA/JM Wildernesses regularly used by commercial packstations on the INF including the GT/SS Wildernesses. The area to be permitted also includes the AA/JM, but the effects of use there on rare plants were analyzed in the 2005 AA/JM FEIS. That analysis for the selected alternative (2-modified) showed that there were 104 populations of rare plants known from the wilderness, 42 with no risk of commercial pack stock impacts, 51 on or near trails used by commercial pack stock, and 11 in meadows open to grazing by commercial pack stock. Destination management, restricting grazing to suitable meadows, and the monitoring plan were designed to minimize impacts to rare plants and other resources. No trend toward listing was found for any of the rare plants in that analysis. For a more detailed discussion of sensitive species occurring in the AA/JM and effects to them, please see the Biological Evaluation (BE).

Sensitive, Proposed Sensitive, and Watch List Plants

Affected Environment

There are 25 species of sensitive plants, 11 proposed sensitive and 12 species of watch list plants known in the analysis area (see Table 3.32). Sixteen other species, listed at the bottom of the table, occur only in the AA/JM Wildernesses and were analyzed in the 2005 AA/JM DEIS. There are no threatened or endangered plant species, however two of the species, slender moonwort and Ramshaw abronia, are candidate species (US Fish and Wildlife, 2005) in a “warranted but precluded from listing” status.

Sensitive species are those species that have been specifically designated by the Regional Forester as sensitive, needing special management in order to prevent them from becoming endangered or threatened. Region 5’s updated sensitive plant list is scheduled to be effective October 1, 2006; 11 of the species proposed to be added to the sensitive list occur in the analysis area and will be included in this analysis. Watch list species include those plant species where more information is needed and those species that may be somewhat restricted in distribution and represent an important component of biodiversity; however, there is not a concern for range-wide viability at this time, as

there is with sensitive species. More individuals, more occurrences, and/or a wider overall distribution than most sensitive species typically characterize watch list species.

General or intuitive controlled surveys (see Glossary) were conducted at the packstations, along some day ride trails and stock drive routes, at Truman Meadow and Pizona campsites, most pastures, and some meadows, campsites and trails in the Golden Trout Wilderness. Areas with the most concern about rare plants or weeds or heavily used areas were given priority for surveys. In areas where time did not permit new surveys, historical records and field reports from various agency and private botanists were used to evaluate effects.

Because effects differ depending on habitat type, the rare plants will be analyzed by general habitat type (rock outcrop, upland, or riparian) within the geographic analysis units. The species and their habitat types are listed in Table 3.47. Each of these habitat types can generally be described by physical characteristics and vegetation types, but they are patchy on the ground, blending into one another, and five of the species considered occur in more than one habitat type.

Table 3.47. Rare plants occurring in the project area or with potential habitat. (Species that occur only in the AA/JM, but not in the rest of the project area, are listed at the bottom of the table, see BE for 2005 AA/JM FEIS. Habitat: R=Rock Outcrop, U=Upland, Rip=Riparian. Status: S=Sensitive, PS=Proposed Sensitive, W=Watch. PH=Potential Habitat)

Common Name	Scientific Name	Habitat	Status	Analysis Zone Number of known occurrences			
				Non-Wild	GTW/SSW	MP WHT	JM/AA*
Ramshaw abronia	<i>Abronia alpina</i>	U	S		1		
Bodie Hills rock cress	<i>Arabis bodiensis</i>	R	S	2	PH		PH
Stylose rock cress	<i>Arabis fernaldiana</i> var. <i>stylosa</i>	R	W	1			
Pinzl's rock cress	<i>Arabis pinzlae</i>	R	S	1			PH
Pygmy rock cress	<i>Arabis pygmaea</i>	U	W		15		
Long Valley milk-vetch	<i>Astragalus johannis-howellii</i>	U	PS	2			
Lemmon's milk-vetch	<i>Astragalus lemmonii</i>	Rip	PS	4			
Kern Plateau milk-vetch	<i>Astragalus lentiginosus</i> var. <i>kernensis</i>	U/Rip	S	9	16		
Mono milk-vetch	<i>Astragalus monoensis</i>	U	S	1			
Raven's milk-vetch	<i>Astragalus ravenii</i>	R	S	1			
Kern County milk-vetch	<i>Astragalus subvestitus</i>	U	W	5	9		
Uplifted moonwort	<i>Botrychium ascendens</i>	Rip	S		2		2
Scalloped moonwort	<i>Botrychium crenulatum</i>	Rip	S	1	1		
Slender moonwort	<i>Botrychium lineare</i>	Rip	S		1		1
Common moonwort	<i>Botrychium lunaria</i>	Rip	PS		1		1
Mingan moonwort	<i>Botrychium minganense</i>	Rip	PS		1		1
Bolander's candle moss	<i>Bruchia bolanderi</i>	Rip	S		1		
Inyo County star-tulip	<i>Calochortus excavatus</i>	Rip	PS	1			
Kern Plateau bird's-	<i>Cordylanthus eremicus</i>	U/R	PS	2	5		

Common Name	Scientific Name	Habitat	Status	Analysis Zone Number of known occurrences			
				Non-Wild	GTW/SSW	MP WHT	JM/AA*
beak	<i>ssp. kernensis</i>						
Tulare cryptantha	<i>Cryptantha incana</i>	U	PS		1		
Subalpine fireweed	<i>Epilobium howellii</i>	Rip	S	2			3
Hall's daisy	<i>Erigeron aequifolius</i>	R	S		1		
Kern River daisy	<i>Erigeron multiceps</i>	Rip	S		1		
Olancho Peak buckwheat	<i>Eriogonum wrightii</i> var. <i>olanchense</i>	R	S		1		
Mt. Whitney stickseed	<i>Hackelia sharsmithii</i>	R	W	1	2		
Blandlow's bog moss	<i>Helodium blandlowii</i>	Rip	PS	1			2
Short-leaved hulsea	<i>Hulsea brevifolia</i>	U	S	1			2
Inyo hulsea	<i>Hulsea vestita</i> ssp. <i>inyoense</i>	R	W	1			
Field ivesia	<i>Ivesia campestris</i>	Rip	W	1	14		
Mono Lake lupine	<i>Lupinus duranii</i>	U	PS	4			
McGee Meadows lupine	<i>Lupinus magnificus</i> var. <i>hesperius</i>	U	W	1			
Father Crowley's lupine	<i>Lupinus padre-crowleyi</i>	U/Rip	S	8			3
Meesia	<i>Meesia triquetra</i>	Rip	S	PH	PH		PH
Meesia	<i>Meesia uliginosa</i>	Rip	S	PH	PH		1
Sweet-smelling monardella	<i>Monardella beneolens</i>	R	S		3		1
Veiny water lichen	<i>Peltigera hydrotheria</i>	Rip	S	PH	PH		PH
Inyo beardtongue	<i>Penstemon papillatus</i>	U	S	6			
Inyo phacelia	<i>Phacelia inyoensis</i>	Rip	PS	1			
Mono phacelia	<i>Phacelia monoensis</i>	U	S			2	
Charlotte's phacelia	<i>Phacelia nashiana</i>	R/U	W	2			
Nine Mile Canyon phacelia	<i>Phacelia novemmillensis</i>	U	S	PH	PH		
Williams combleaf	<i>Polyctenium williamsiae</i>	Rip	S			2	
Narrow-leaved cottonwood	<i>Populus angustifolius</i>	Rip	W	1			
Short-fruited willow	<i>Salix brachycarpa</i> ssp. <i>brachycarpa</i>	Rip	W	1			1
Snow willow	<i>Salix nivalis</i>	Rip	W	1			
Pine City sedum	<i>Sedum pinetorum</i>	U/R?*	W	1?			
Masonic Mountain jewel-flower	<i>Streptanthus oliganthus</i>	R	S			PH	
Dedecker's clover	<i>Trifolium dedeckerae</i>	R	PS	3	1		
Grey-leaved violet	<i>Viola pinetorum</i> ssp. <i>grisea</i>	U	S	11	11		1
TOTALS	48 species	R - 10 R/U - 3 U - 13 U/Rip - 2 Rip - 20	S - 25 PS - 11 W - 12	77 4 PH	87 5 PH	4 1 PH	19 4 PH

*Rare plants of AA/JM analyzed in the 2005 AA/JM FEIS, and not present in the rest of the project area are: Raven's milk-vetch, Mt. Whitney draba, Mono Hot Springs evening primrose, Tulare County bleeding heart, Tahoe draba, Kettle Dome buckwheat, Yosemite lewisia, unexpected larkspur, Monarch goldenaster, Congdon's lewisia, marble rockmat, Muir's raillardella, Tehipite Valley jewel-flower, and Bolander's clover.

**This species is only known from one questionable specimen and has never been relocated. See discussion below.

General Habitat Descriptions

Rock outcrop

Rock outcrop habitats are un-weathered or barely weathered bedrock, with plant habitat limited to rock crevices and pockets of soil between rocks. In some cases the outcrops are in openings in forest or shrub vegetation that do not appear rocky, but are characterized by very shallow, barely weathered rock (USFS, 2001). Outcrops are common at the higher elevations of the analysis area and along ridges, with alpine or subalpine plant communities (non-riparian), or in openings in the forested or sagebrush habitats. There are 13 species of rare plants of rock outcrop habitats (3 also occur in upland) considered in this analysis.

Upland

Upland habitats are defined partly by what they are not; they are non-riparian, non-rocky habitats. They include sagebrush scrub, pinyon-juniper woodlands, montane coniferous forest, and desert scrub. All of these vegetation types also have inclusions of rocky or riparian habitat, so there is not a one-to-one correspondence between vegetation type and plant habitat type. The upland habitats are usually flatter than the rock outcrops. The pumice sand flats in Mono County are specialized habitats on the INF that occur north of the Town of Mammoth and mostly east of Highway 395. There are 18 species of rare plants of upland habitats (3 also occur in rock outcrops and 2 also in riparian) considered in this analysis.

Riparian

Riparian habitats are associated with streams, lakes, or other “special aquatic features”, including meadows, fens, wetlands, and seasonally wet ponds or lakes. Vegetation types present include in wet and dry meadows, willow, aspen, water birch, and some conifer forest. There are 22 species of rare plants of riparian habitat (2 also occur in upland) considered in this analysis.

The species are discussed in detail in the BE in the project files and the information is summarized in the analysis unit discussions.

Environmental Consequences

Indicators for effects to rare plants will be number of populations affected, percentage of any population affected, use levels, and area of use.

Alternative 1 – Direct and Indirect Effects

If no permits were issued for commercial pack stations or the outfitter guides, there would be no risk of trampling by commercial pack stock, no commercial pack stock acting as weed vectors (anyone or anything that moves weeds from one area to another), no removal of rare plant biomass by commercial pack stock grazing, and no negative commercial pack stock effects to rare plant habitats. None of the known populations of the 48 rare plant species would have any risk of negative commercial pack stock impacts.

Any damaged habitat, particularly riparian, would move more rapidly toward recovery from historic and recent negative impacts of pack stock and other uses compared with Alternatives 2 and 3, with the rate of recovery depending on local conditions.

The soil disturbance caused by removal of the facilities would affect rare plant habitat in at least one case (Father Crowley's lupine at Glacier pack station), probably positively, although the site would be more vulnerable to weed invasion. Revegetation of pack station sites would be required and would improve plant habitat in most cases and act as a deterrent for weeds.

In general, Alternative 1 would have a beneficial effect that would allow for some recovery from other effects to rare plant habitat. However, private pack stock use could increase if commercial services were not available, although there would probably not be as many animals used. Many private riders may not have as much experience as pack station employees in controlling the animals and low impact use of horses and mules on public lands. Customers may turn to commercial services in nearby areas, mostly on National Park or Forest Service land, that are also habitat for these rare species.

Alternative 1 – Cumulative Effects

There are many other activities occurring in the analysis area that affect the populations of rare plants and their habitats. In the non-wilderness areas especially, commercial pack stock use is a minor component of the cumulative effects on rare plant habitat. For the cumulative effects analysis, the area considered is the entire range of the sensitive plants. For the watch list plants, only the range on the Inyo National Forest is considered because these plants are less vulnerable, having more populations and wider ranges. For both categories, the analysis considers past activities from grazing in the late 1800's, because there are still effects of historic grazing today, particularly in meadow habitats. Since the longest permit that may be issued is for 20 years, future actions in the next twenty years are considered. The same temporal and spatial bounds will be used for the analysis under all alternatives.

The viability of rare plant species depends on not just the numbers of individual plants, but on the numbers of populations of the species, as well as the integrity of processes, such as pollination, seed dispersal, etc. Reports to the California Natural Diversity Database (2003 and updates) contain information about possible threats to the species considered and this information is summarized in the discussion below.

Grazing (cattle, sheep, elk, horse, mule) is by far the most common listed threat overall, affecting at least 112 occurrences (occ.) of 20 species. Grazing by any of these animals has effects similar to those of pack stock grazing (see Alt. 2 discussion), that is, removal of plant biomass and trampling effects. Generally the trampling effects have more impact than the actual removal of vegetation by grazing and the effects are most extensive in riparian areas. Cattle and sheep grazing has caused many severe and lasting impacts to stream conditions and hydrologic function of meadows in the analysis area and in the habitat of the rare riparian plants over their ranges, and the impacts are great compared to that of commercial pack stock. See Grazing Resources section for more detailed

description of effects to meadows. Grazing affects rare plant populations in non-wilderness areas outside of the HDRAs, particularly the Long Valley area, where the stock drives occur, and the GTW/SSW. Because McMurtry Meadow is within the boundaries of a cattle allotment, if pack stock did not use that area, it is likely that it would be used for cattle, which, together with the possible removal of the irrigation system, would have unknown effects on the Inyo star-tulip occurrence there.

Timber production activities and mining accounted for threats to 23 occ. Although timber activities are not extensive on the INF and are only a slight risk for the two pumice flat species, they affect several populations of the rare plant species whose habitat is primarily on the western slope of the Sierra. These activities cause soil disturbance and compaction, open up the forested environment to early seral vegetation and weeds, and remove biomass from the environment.

Mining operations occurred in many locations on the eastern Sierra escarpment and in the pumice sand flats, developing some of the roads and trails and impacting some of the riparian areas. These mining operations usually have only a local soil disturbance effect but it is long term and the actual level of impact depends on the individual operation.

Urban sprawl/development infrastructure and activities, including roads, water diversions, power lines, grading, and dumping, were listed as threats to 59 occ., with roads the most common threat (39 occ. of 10 species). Urban development, especially in Mammoth, June Lake, and the Hilton Creek areas, has reduced the extent of potential habitat for the rare plant species. Plant habitat is cleared of vegetation or fragmented for roads, power lines, and water systems, and accompanying maintenance activities routinely disturb the soil surface, provide weed habitat and spread propagules (seeds or pieces of plant that can produce a new plant). Once invaded by weeds, these disturbed areas provide a seed source for expansion of the weed populations, reducing habitat quality for rare species. The effects from pipelines and groundwater pumping are long term, of moderate extent, and locally severe. The construction of the Owens Valley pipeline system and associated groundwater pumping altered the hydrology of some meadows with populations of riparian sensitive species, most notably Inyo county star-tulip. Weed populations developed on access routes and other disturbed areas around reservoirs (Rush Creek) and pipelines. Weed or other plant invasions that are most likely linked to roads or water pumping were listed as threats to 4 occurrences, 2 species.

Recreational uses that were listed as threat to these species were quite varied. OHV use was considered a threat to 23 occ. of 8 species. Other activities or facilities listed, with number of occurrences affected, were trails (7), camping (5), recreation (4), snowmobiles (2), hiking (2), facilities (1), mountain biking(1), horse traffic (1), cross country skiing (1), and fishing (1). Rock climbing may also affect rare species that grow on cliffs or rock faces, like Hall's daisy. The general effects of all the recreational activities include: trampling, crushing, or uprooting of the rare plants; destruction of rare plant habitat; opening up of rare plant habitat that may provide weed habitat; and vehicles, animals, and people acting as weed vectors. Motorized recreational uses generally have a more severe effect than non-motorized because machines are heavier and have more power than individual people and soil disturbance is more likely.

Similarly, horse traffic and mountain biking are more likely to disturb soil than hikers, anglers, or cross country skiers. Hiker threats are typically minimal, limited to occasional trampling or, rarely, collection. Impacts from rock climbing include removal of vegetation from rock faces to improve holds in addition to trampling during access to climbing sites. Facilities such as developed campgrounds and resorts cause a longer term effect of reducing plant habitat and encouraging vehicle and foot traffic. Private pack stock also impacts the rare species and would have similar effects to commercial pack stock. For all these activities, impacts increase with number of users.

Natural processes that were seen as threats to some populations included drought, climate change, fire, and a hazard tree. The native plants of an ecosystem are usually adapted to natural processes that occur there. However, many of the rare plants are relict populations and possibly less able to adapt to environmental changes. Short-term drought would probably not be of concern, but when accompanied by water diversion, groundwater pumping, or a trend toward long-term climate change, it could seriously threaten some species. 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 Father Crowley's lupine is responding well to initial controlled burning.

Inyo NF actions that could affect the analysis area include the 2005 AA/JM Wilderness ROD, management of cattle grazing allotments, forest-wide OHV route designation process, habitat improvement projects for Father Crowley's lupine and pumice sand flat habitat, rebuilding of Glacier Lodge, and Wild Horse Territory management. These projects will be designed to eliminate or minimize effects to rare plants and improve their habitat.

Any of the soil disturbing activities include a risk of weed spread or introduction and increase the risk of negative effects. Since many if not most of the weed populations on the Inyo National Forest are along roads, road maintenance and use activities are most likely to increase the risk of weed effects. The removal of commercial pack stock operations under Alternative 1 would be a minor reduction to impacts to rare plant habitats, but differences would be noticeable only locally since use is negligible compared with other uses in non-wilderness and GTW/SSW.

Alternatives 2 –Direct and Indirect Effects

There is essentially no species-specific research describing effects of pack stock use on the species of rare plants known to occur or with potential habitat within the project area. In general, effects of commercial pack stock use on plants include direct effects such as trampling (crushing plants, soil compaction, shearing, or dislodging soil particles) and removal of plant biomass by grazing (McClaran and Cole 1993). Perennial plants are able to regrow in most instances of incidental one time trampling, dependent on site conditions, and seed banks of annual species are not affected by minor trampling. Chances of inadvertently damaging known or as yet undiscovered rare plant populations and their habitat increase as the level of ground disturbing activities increases (USDA FS, 2004).

Removal of vegetation by grazing would be considered a short-term, minor, local effect in most cases if use levels are within INF LRMP utilization and range readiness standards. However, small populations of rare plants may be disproportionately affected if some of the plants are eaten. Effects of grazing and associated trampling vary depending on specific location within the allotment, most concentrated in areas of preferred forage, which some rare plants may be. In regularly used fenced pastures the effects are likely to be more severe than in areas of unconfined grazing. The duration and severity of trampling effects are dependent upon site conditions, including soil moisture, soil type, and vegetation type.

The stock drives take place mostly on roads. There would be a larger number of animals than for activities that take place on trails, and the animals are loose herded, not strung together. For the most part, the animals stay on the roads, but some animals stray into roadside vegetation. For purposes of this analysis, a corridor of 200 feet from the road is considered likely to have some trampling impacts from stock drives.

No rare plants are known at campsites commonly used by commercial pack stock, where heavy trampling and vegetation removal occur, but there are some campsites within 0.1 mile of rare plant occurrences. Trampling by pack stock, wranglers, and clients would be most likely in or near the camps. Father Crowley's lupine, a sensitive species, occurs at Glacier Pack Station, where most of the understory vegetation has been removed and the ground is compacted by stock and human use (see discussion in Non-Wilderness section).

Pack stock can act as vectors for weed introduction and spread which could affect all of the rare plant species. The effects are discussed in detail below in the Weed Section (3.4.2.3).

The severity, duration, extent, and likelihood of effects depend partly on the habitat type:

Rock Outcrops: Species that grow in rock outcrops are at low risk of impacts from pack stock 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 and effects in this habitat type are limited to the trail tread. Plant populations bisected by or near trails may be affected by pack stock use in the trail tread, 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.

Upland Habitats: The species of upland habitats are at increased risk of trampling compared with rock outcrop species because stock may stray more easily off roads or trails into upland vegetation than in steeper rocky habitats. Campsites and stock holding areas are sometimes in upland vegetation and are places where complete vegetation removal is likely, especially if sites are used repeatedly.

Riparian: Riparian habitats are generally more vulnerable to trampling impacts than rock outcrop or upland habitats. Soil shearing (hoof punching) can sever roots especially 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 changes are usually moderate to

severe impacts that are local in extent, but usually long-term. Water levels appear to be the main factor determining vegetation types and therefore rare plant habitat in a meadow (Allen-Diaz, 1991).

The irrigation system in McMurry Pasture would remain in place and maintained, a positive impact to Inyo star-tulip compared to Alternative 1.

In Alternative 2, cross country travel is not restricted to areas currently used by the packers or even to nearby areas. Although it is unlikely that use will occur in areas remote from current operations, there would be a small risk of pack stock impacts, mainly trampling, on eight more species than under Alternative 3. Because the use is unlikely and no visible trails would be allowed to develop, effects on these species would be very slight, local, and short-term.

Alternative 2 – Cumulative Effects

Implementation of Alternative 2 would have small additive effects to the cumulative effects listed under Alternative 1. There would be some trampling or grazing on individual plants, but the cumulative effects would not lead to listing or loss of viability for any of the species considered. The total number of weed vectors would be higher than in Alternative 1, but the Weed Management Plans for the pack stations and required monitoring (Explained in Appendix I) should minimize the risk of introducing and spreading weeds. McMurry Pasture would not be used for cattle grazing, eliminating an unknown risk to Inyo star-tulip.

Alternatives 3 – Direct and Indirect Effects

The effects of the implementation of Alternative 3 would be slightly less than for Alternative 2. Commercial pack stock travel would be restricted to approved routes and trails, there would be some differences in pasture management, and there would be fewer stock drives allowed. The elimination of unapproved cross country travel would remove the small risk of trampling to the eight species that only occur in remote locations. Since these areas are not used currently and no use would be expected, this difference between Alternatives 2 and 3 is minimal. Removing grazing or resting three pastures would allow a somewhat faster upward trend in riparian habitat for rare plant species. The difference in effects between these alternatives because of the decrease in allowed number of stock drives is also minimal, since more than two stock drives per year is rare currently and demand is not expected to increase.

Alternative 3 – Cumulative Effects

The additive effects of implementation of Alternative 3 would be slightly less than those of Alternative 2. There would be some trampling or grazing on individual plants, but the cumulative effects would not lead to listing or loss of viability for any of the species considered.

Analysis Units

The discussions below summarize rare plant occurrence and habitat information and the effects of the alternatives. More detailed information about each species can be found in the Biological Evaluation in the project record.

Non-Wilderness Analysis Unit

This analysis unit includes the packstations themselves, trails used mostly for day rides or wilderness access, pastures, stock drive routes, some overnight use areas, and campsites. The packstations and most of their day ride trails are all in HDRAs and are situated near trailheads for wilderness areas. The stock drive routes are in Long Valley east of Mammoth Lakes, in the Buttermilk area NW of Bishop, and other locations along the eastern escarpment of the Sierra (see Appendix I, Operations Maps). Also included in this analysis zone is the Monache Meadow area, an area of non-wilderness surrounded by the GT/SS Wildernesses, with many of the same rare plants. Monache Meadow is designated for semi-primitive recreation in the INF LRMP (1988) and features OHV access and developed campsites, as well as cattle grazing.

Plants of Rocky Habitats – Non-Wilderness

Affected Environment

There are nine rare plant species of rocky habitats in the non-wilderness area: Bodie Hills rock cress and Pinzl's rock cress (sensitive), Kern Plateau bird's-beak and Dedecker's clover (proposed sensitive), and stylose rock cress, Mt. Whitney stickseed, Inyo hulsea, Charlotte's phacelia, and Pine City sedum (watch list).

The known occurrences of Bodie Hills rock cress, Pinzl's rock cress, Dedecker's clover, Inyo hulsea, Charlotte's phacelia (one of the occurrences), and the Mt. Whitney stickseed are in areas that do not have current reported commercial pack stock use. Stylose rock cress occurs on a ridge with volcanic talus less than 0.1 mile from a stock drive route. Kern Plateau bird's beak occurs in Monache Meadow on a rocky outcrop near a road and is discussed below in the upland habitat (Monache). One of the Charlotte's phacelia populations is on the Haiwee Pass trail, which is authorized for use by Sequoia Kings Pack Trains.

There is one historical record of Pine City sedum in the area near Mammoth Lakes Pack Outfit, but it has not been relocated in several searches and there is some question about the validity of the record. Since its location and even existence is uncertain, the effects from the commercial pack station and pack stock use or removal of the use are unknown.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

There would be a positive impact to the habitat for rare plants because there would be no risk of trampling, grazing, or weed spread by commercial pack stock.

Alternative 2 – Direct and Indirect Effects

Although commercial pack stock use does not currently occur near the known occurrences of Bodie Hills rock cress, Pinzl's rock cress, Dedecker's clover, Inyo hulsea, Charlotte's phacelia (one population), and the Mt. Whitney stickseed, under Alternative 2, cross country travel is allowed away

from approved routes. The chance of actual use and the risk of trampling to these nine species are very slight because commercial pack stock use levels are low, but higher than under Alternative 3 because of cross country travel and somewhat higher use levels.

Because of the rocky steep habitat, stock would not be able to access the population of stylose rock cress, so although there would be four stock drives near the occurrence in Alternative 2 and two in Alternative 3, there would be very little risk of trampling in either case.

The population of Charlotte's phacelia on the Haiwee Pass trail is on a steep loose slope and it is unlikely that any off trail use would occur. This trail has had no recent reported use and only rare use would be expected.

Alternative 3 – Direct and Indirect Effects

There would be no risk of commercial pack stock impact to the known occurrences of Bodie Hills rock cress, Pinzl's rock cress, Dedecker's clover, Inyo hulsea, Charlotte's phacelia, and the Mt. Whitney stickseed because the occurrences are remote from pack stock operations and commercial pack stock travel is restricted to approved routes.

The effects to stylose rock-cress and Charlotte's phacelia would be the same as Alternative 2.

All Alternatives – Cumulative Effects

Cattle grazing, OHV use, and road maintenance are the main activities that occur near or in the habitat for these species. Because of the rocky habitat, with difficult access and protective features, any effects would be unlikely, but local, slight, and short-term if they occurred. Hiking has lesser effects to the habitat with only a minor impact. The slight additive effects of commercial pack stock activity or removal of pack station facilities do not result in a cumulative significant negative impact to these species.

Upland Habitats – Non-Wilderness

There are 15 rare plant species of upland habitats in the non-wilderness area: Mono milk-vetch, short-leaved hulsea, Father Crowley's lupine, Inyo beardtongue, Kern Plateau milk-vetch, grey-leaved violet, and nine-mile canyon phacelia (sensitive), Mono Lake lupine, Long Valley milk-vetch, and Kern Plateau bird's beak (proposed sensitive), and McGee Meadows lupine, pygmy rock-cress, Kern County milk-vetch, Charlotte's phacelia, and field ivesia (watch list). The plants are grouped by more specific habitats for analysis.

Pumice sand flats – Non-Wilderness Upland Habitat

Affected Environment

Habitat for one sensitive plant, Mono milk-vetch, and one proposed sensitive plant, Mono Lake lupine, is restricted to the open pumice sand flats in Mono County and the adjacent Jeffrey pine understory or sagebrush scrub. The Frontier stock drive route goes through four of these occurrences on existing Forest Service roads and the stock will be required to stay on roads in those areas.

Monitoring of both species for population size and effects of roads is ongoing at several sand flats (USDA FS, Inyo NF files), but these studies have not shown a clear population trend for either species. The plants can tolerate some disturbance, but preliminary results show that the lupine is less dense near roads that cross its habitat. Cheatgrass and Russian thistle are already present in the area of the population in the vicinity of the June Lake Store and other places along the stock drive routes.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

There would be a positive impact to the habitat for rare plants because there would be no risk of trampling, grazing, or weed spread by commercial pack stock.

Alternative 2 – Direct and Indirect Effects

Up to four stock drives would be allowed per year, restricted to the road when crossing the pumice flat habitat, with no organized stops or camping (see Operations Maps in Appendix I). The spring trip(s) are usually in mid-June, at the beginning of flowering for these species, and the fall trip(s) would be after seed set of these species. Staying on the road (approximately 2% of the habitat they pass through) should limit any trampling or weed spreading effects to the road edge and the effects would be slight in severity, and temporary, since the plants are perennial. The risk of pack stock acting as a weed vector is small, but if weeds become established, the effects could be moderate to severe, more wide-spread, and long-term as this is an open environment with several types of disturbance. See Weed section below for further discussion.

Alternative 3 – Direct and Indirect Effects

The number of stock drives would be limited to two per year, so there would be a reduced risk of trampling and weed seed spread relative to Alternative 2.

All Alternatives – Cumulative Effects

Other impacts to the pumice flat habitat include OHV use, snowmobile use, grazing, roads, CalTrans material storage and equipment parking site, and pumice mining. The OHV use, particularly unauthorized off road use, may be the most significant threat, crushing plants on or just adjacent to roads (a small percentage of any population). Weeds may be carried on tires or clothing of riders. Snowmobile use is increasing in popularity and the sand flats, particularly Smokey Bear Flat, are heavily used for this activity. In a Biological Evaluation for the Over-the-Snow recreation program, it was determined that there could be mechanical damage to plants or compaction and removal of snow, but there are no significant direct, indirect, or cumulative effects (Jones & Stokes, 2002). Sheep grazing, timber management activities, and fuel wood gathering also occur in this area and have since the middle 1800s. Although a few Mono milk-vetch or Mono Lake lupine plants grow in the Jeffrey pine understory and are at risk from these activities, it is a very small percentage of any population.

There is a habitat improvement project at Smokey Bear Flat that will remove at least one existing road on the flat. Revegetation will include planting Mono milk-vetch and Mono lupine. All the OHV

roads on the forest are being reviewed in the route designation process, which should result in a transportation system with fewer impacts to vegetation and rare plants in general.

There are no additive effects associated with Alternative 1.

In Alternatives 2 and 3, the restriction to the road corridor for stock drives in the sand flats should minimize the small commercial pack stock addition to negative cumulative effects, which overall do not result in a trend toward listing or a loss of viability.

Montane coniferous forest (except Monache) – Non Wilderness

Affected Environment

Three sensitive species grow in openings in montane coniferous forest: short-leaved hulsea in the Upper San Joaquin drainage near Rainbow Falls; Father Crowley's lupine and Inyo beardtongue on the eastern slopes of the Sierra in sagebrush scrub understory. Monitoring has been done on some populations of Father Crowley's lupine and Inyo beardtongue. No trend has been detected for the Inyo beardtongue. For Father Crowley's lupine, a slight decline in plant numbers in undisturbed areas led to a project using controlled burning for habitat improvement, and the plants have returned after a trial burn in 2004. This species was also persistent in the area of Glacier Lodge, despite trampling impacts and a fire that burned the lodge and the immediately adjacent area. Short-leaved hulsea has responded well to the Rainbow fire, now growing in burned areas where it was unknown before the fire.

Several of the populations are on or near trails used by commercial pack stock both in the non-wilderness area and the AA/JM Wildernesses, including the heavily used Rainbow Falls, John Muir, Fish Creek, and North and South Forks of Big Pine Creek trails. Father Crowley's lupine and Inyo beardtongue occur on Coyote Flat where there are currently day rides and some overnight camping is proposed. The Glacier Pack Station is within a large occurrence of Father Crowley's lupine and there are a few plants growing behind the pack station office. Inyo beardtongue occurs near McGee and Bishop Pack stations, but not in areas where use has been requested.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

For Father Crowley's lupine, removal of the pack station facilities could provide a small increase in the area of habitat, but might crush or remove some individual plants. Plants from the surrounding area would probably spread into the disturbed area where the buildings stood, and remain until other vegetation became dense. For all three species, there would be a positive impact to the habitat for rare plants because there would be no risk of trampling, grazing, or weed spread by commercial pack stock.

Alternative 2 – Direct and Indirect Effects

All species: There could be minor local trampling impacts near the trails that would be short-term, most likely on the heavily used trails.

For the Father Crowley's lupine at the pack station, there would be a clause in the operating plan to protect plants at the pack station (no removal). There would be a higher risk of trampling for these plants, but the effects would be minor, temporary, and local, affecting much less than 5% of the large population.

Alternative 3 – Direct and Indirect Effects

The restriction of cross country travel could reduce likelihood of trampling of plants of any species that grow farther away from trails compared to Alternative 2. Other effects would be the same.

All Alternatives – Cumulative Effects

Fire apparently has a positive effect on both the short-leaved hulsea and Father Crowley's lupine, based on positive responses of both species to fire in their habitat. Father Crowley's lupine appears to be adapted to some disturbance since it continues to grow at the recreation residences, at Glacier Lodge, and is dense on old roads in Big Pine Canyon.

The 2005 AA/JM EIS/ROD prescribed a designated campsite in the vicinity of the population of short-leaved hulsea near Island Crossing, which should reduce risk of trampling by hikers and commercial pack stock to this population. Although transmission line access, cattle grazing, logging, trails and small population numbers were listed as threats to a few occurrences, this species, the potential habitat is extensive and largely unsurveyed, many more occurrences have been discovered recently, and these activities most likely only affect a small portion of the total number of populations.

Inyo beardtongue also has extensive unsurveyed habitat and is persistent in areas with heavy recreational use (Lake Sabrina, for example). The 2005 AA/JM EIS/ROD did not authorize commercial pack stock use on one of the trails where this species grows (Grass Lake Outlet), which should help protect the occurrence. Despite the housing development in the Hilton area, the presence of cattle grazing, and some risk of trampling by hikers and other recreationists, no negative trend for this species has been found during monitoring.

Alternative 1 would have a slight positive effect and the possible negative effects of Alternatives 2 and 3 would be slight, local, and short-term, so the additive effects of commercial pack stock activity do not result in a cumulative significant negative impact to these species under any alternative.

Sagebrush or Desert Scrub (except Monache) – Non-Wilderness

Affected Environment

The sensitive species Father Crowley's lupine and Inyo beardtongue, analyzed above (Montane coniferous forest), also grow in sagebrush scrub habitat. Sensitive species Long Valley milk-vetch and watch list species McGee Meadows lupine, and pygmy rock-cress, occur in this habitat type in Long Valley, the Buttermilks, and Coyote Flat, respectively. Stock drives use the Long Valley and Buttermilk areas and Coyote Flat is used for day rides. Camps for stock drives are on private land,

for the most part. The watch list species Charlotte's phacelia analyzed above (rock outcrop) also grows in pinyon/desert scrub habitat.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

There would be a positive impact to the habitat for rare plants because there would be no risk of trampling, grazing, or weed spread by commercial pack stock.

Alternative 2 – Direct and Indirect Effects

In the areas with stock drives up to four times per year, stock might wander into the sagebrush scrub adjacent to the route, where some plants could be trampled, but the effects would most likely be local, minor, and short-term. The trails and roads comprise less than 5% of the available habitat for any of these species. There are also weed populations along some of the roads that could be spread by the pack stock.

Alternative 3 – Direct and Indirect Effects

Because there would be only two cattle drives per year, there would be less risk of trampling to Long Valley milk-vetch and McGee Meadows lupine than in Alternative 2. The restriction to approved routes would also reduce likelihood of trampling of plants that grow farther away from trails.

All Alternatives – Cumulative Effects:

In Long Valley and Coyote, sites are subject to cattle grazing pressure and OHV use, which are the major impacts in those areas. Other negative impacts in this habitat include mining, geothermal development, and roads (major weed vector). In the Buttermilks, OHV use and camping negatively affect the habitat. Because there is extensive unsurveyed habitat for rare species and there is no negative trend information, the effects of these activities together with the slight, local, temporary effects of commercial pack stock activity or removal of pack stock facilities do not result in a cumulative significant negative impact to these species under any alternative.

Dry slopes and flats – sagebrush or lodgepole pine (Monache) – Non-Wilderness

Affected Environment

Monache Meadow has several species of rare plants that also occur in the adjacent southern part of the Golden Trout Wilderness, including the sensitive species Kern Plateau milk-vetch and grey-leaved violet, proposed sensitive species Kern Plateau bird's beak, and watch list species Kern County milk-vetch and field ivesia. These species occur in drier habitats around the large meadows, within sagebrush scrub or the understory of conifer forests, and often the populations are bisected by or near OHV roads. Monitoring of some populations is ongoing both in Monache Meadow and in the GT Wilderness (USDA FS, Inyo NF files), but preliminary results show no apparent trend. Only a few commercial pack stock trips per year use this area, some riding with a cattle drive over Olancho Pass.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

There would be a positive impact to the habitat for rare plants because there would be no risk of trampling, grazing, or weed spread by commercial pack stock.

Alternative 2 – Direct and Indirect Effects

Because these species grow in habitats that can occur on the edges of meadows, both trailing and grazing pack stock could negatively impact this species. The trails and roads comprise less than 5% of the available habitat for these species. These effects would be minor, short-term, and local because commercial pack stock use is light and is expected to continue at or near present levels.

Alternative 3 – Direct and Indirect Effects

In Alternative 3, the limitation to authorized routes would not apply in Monache because it would be designated a cross country riding area. Effects would be the same as Alternative 2.

All Alternatives – Cumulative Effects

The cattle grazing and OHV use area are the most serious threats to these species in Monache Meadow, but there are no reported negative trends reported for any of these species.

Some populations of all of these species occur in areas that are being rested from cattle grazing in the GT Wilderness where there is no vehicle use. Therefore, commercial pack stock impacts to a relatively small number of plants in the Monache area do not threaten the viability of any of these species. For grey-leaved violet, although more occurrences have been found recently and its habitat extended in the northern part of its range, failure to relocate historic sites from San Bernardino County indicate it may have been extirpated there by development.

Because there is extensive habitat for these species and there is no negative trend information, the effects of these activities together with the slight, local, temporary effects of commercial pack stock activity do not result in a cumulative significant negative impact to these species under any alternative.

Riparian Habitats – Non-Wilderness

Affected Environment

In the riparian habitats of the non-wilderness analysis unit, there are two species of sensitive plants, scalloped moonwort and subalpine fireweed, four species of proposed sensitive plants, Inyo County star-tulip, Lemmon's milk-vetch, Blandlow's bog moss, and Inyo phacelia and three watch list species, narrow-leaved cottonwood, short-fruited willow, and snow willow. There is also potential habitat for the sensitive species veined water lichen, and the two sensitive mosses of the genus *Meesia*. Kern Plateau milk-vetch occurs in sagebrush dominated dry meadows (see analysis above).

The scalloped moonwort occurs in Rock Creek's Lower Corral pasture near the base of the most steeply sloped area and also in Templeton Meadow (see GT Wilderness section below). There is

potential habitat for all of the rare moonworts and the *Meesias* in most of the pastures. Blandlow's bog moss also occurs in the Lower Corral pasture, but in the wet sloping area under aspen that does not appear to be used by the pack stock, although it is not fenced out of the pasture. The water lichen occurs in clear streams and potential habitat exists in the San Joaquin drainage near Red's Meadow.

Subalpine fireweed occurs near Minaret Falls Campground between Red's and Agnew Meadows and there is a collection from the Twin Lakes area in the Mammoth Lakes Basin. There is more potential habitat in both these areas. No trails were noted at the population near Minaret Falls; both areas are heavily used recreation areas.

Inyo star-tulip was recently found in McMurry Pasture, which has some springs but is mostly maintained by irrigation. It is used by Glacier Pack Train under a pasture permit with on-dates of June 16-November 16. The star-tulip begins above ground growth in March and sets seed by the end of May each year (S. Manning, pers. comm., 1/2006). This species is endemic to the Owens Valley, and although the plants are scattered throughout the valley, up to 25% of the populations are in areas where ground water pumping is apparently limiting blooming to years when there is exceptionally high precipitation.

Lemmon's milk-vetch and Inyo phacelia occur in alkali meadows and seeps in Long Valley near stock drive routes and within 0.1 mile of the campsites used on private land. There is no information about the trend of any of these populations.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects:

For all species (except the Inyo County star-tulip as discussed below), there would be a positive impact to the habitat for rare plants because there would be no risk of trampling, grazing, or weed spread by commercial pack stock.

The removal of the irrigation system in McMurry Pasture could decrease the quality of habitat for Inyo County star-tulip. The irrigation of this pasture is probably important to maintaining this population of the star-tulip, although there are springs that could support a smaller riparian area.

The effects of this alternative on star-tulip depend on the status of the irrigation system after pack stock are removed and whether subsequent use will be cattle grazing, which are unknowns.

Alternative 2 – Direct and Indirect Effects:

Rock Creek's Lower Corral Pasture would be open for use, but at least some of the habitat of the scalloped moonwort would be fenced off and not available for use. This would protect the plants and habitat from trampling, although these plants are able to tolerate some disturbance (Farrar, 2004) and the effects of removing grazing are unknown. The other pastures that may have potential habitat would be managed in accordance with the SNFPA and would receive less use than present, so habitat conditions would be expected to improve.

Because commercial pack stock use is limited to approved trails in High Density Recreation Areas, neither of the known populations of subalpine fireweed would be affected by commercial

packstock use. The trails used by Red's/Agnew to get to Rainbow Falls do not have habitat for this species. In the Mammoth Basin, there would be a risk of trampling in potential habitat where trails cross shaded riparian areas. No cross country travel would be allowed in this HDRA, and trampling would therefore be limited to areas within 50 feet to either side of existing trails.

Grazing would occur in McMurry Meadow, but it would occur after the Inyo County star-tulip has bloomed and set seed each year, since the on-dates of the current permit would be continued. The trampling associated with grazing later in the year is not known to cause an effect on the underground bulbs. Monitoring (as explained in Appendix I) of the population will occur under either alternative and the habitat will be excluded from grazing if a downward trend is detected.

In this alternative, there would be up to four stock drives per year through the habitat of Lemmon's milk-vetch and Inyo phacelia. Some plants could be crushed or grazed, but the effects would most likely be local, minor, and short-term. For the Inyo phacelia, it is unlikely that stock would stray into the populations that are either under dense willows or away from the stock drive routes.

The narrow-leaved cottonwood, short-fruited willow, and snow willows are in areas that have had no reported recent commercial packstock use and where none would be expected. Allowing cross country travel would slightly increase the risk of trampling to plants of any species that grow in areas that do not currently get use.

Alternative 3 – Direct and Indirect Effects:

Rock Creek's Lower Corral Pasture would be open for use, although at a lower utilization level and fenced as in Alternative 2. The other pastures that may have potential habitat for scalloped moonwort would be managed in accordance with Amendment #6 and would receive less use than present or no use, so conditions would be expected to improve.

Because there would be no growth allowed in day rides in the Mammoth Lakes Basin, there would be very slightly less risk of trampling in potential habitat for subalpine fireweed relative to Alternative 2.

The effects on Inyo County star-tulip would be the same as Alternative 2.

The risk of trampling for Lemmon's milk-vetch and Inyo phacelia would be slightly less than in Alternative 2 because there would be only two stock drives per year allowed and no cross country travel.

The narrow-leaved cottonwood, short-fruited willow, and snow willows would be at no risk of commercial pack stock impacts because they are in areas with no approved trails or routes and cross country travel is not allowed.

All Alternatives –Cumulative effects

There are no other activities known in Lower Rock Creek Pasture that directly affect the habitat of scalloped moonwort and Blandlow's bog moss, but the Rock Creek drainage is heavily used for recreational activities. Anglers and campgrounds cause streambank compaction and trampling of the

streamside riparian habitat of the moonworts. These effects are more widespread than those of pack stock, but the pasture use is the main source of effects on this population. Cattle grazing and trampling are the most significant impacts on other occurrences of these species.

Much of the alkali meadow habitat for Inyo County star-tulip in the Owens Valley has been altered by water diversion, groundwater pumping, and grazing. Up to 25% of the known occurrences are affected by groundwater pumping, which apparently limits blooming to only the very high precipitation years (S. Manning, pers. comm.). Grazing is not known to cause a decline in number of plants in the long term, but cattle or horses may eat most of the plants in a particular year wherever grazing is allowed March to May, because the plants are palatable and possibly preferred forage. The current cattle grazing on-dates are May 1 to Sept. 15, but recently the cattle have not been in McMurry Meadow until August. Although the McMurry Meadow population is small in comparison to the others in the Owens Valley, it is important to maintain because of threats to the others.

Under Alternative 1, because McMurry Meadow is both a pack stock pasture and within the boundaries of an active cattle allotment, if pack stock use were not allowed, the irrigation systems and fences of the pasture could be removed and use by cattle could be allowed. The cattle grazing would not be confined, so it could have less impact than confined pack stock grazing. An impact analysis would be speculative at this time. Because any pack stock grazing under the other alternatives would occur after blooming and seed set, there would be no additive effect.

Cattle grazing and OHV use are the major threats to most populations of Lemmon's milk-vetch and Inyo phacelia. One occurrence of Lemmon's milk-vetch is within the grounds of a fish hatchery where weeds occur and it is bisected by a hatchery fence. The permit for the fish hatchery is currently in the process of re-issuance. Other threats listed in California Natural Diversity Data Base include land conversion and pipeline construction.

Alternative 1: The possible reduction in habitat quality for Inyo star-tulip if the irrigation were discontinued would add to existing concerns about the habitat for this species. CNPS considers this species seriously endangered in California (CNPS website, 2/2006).

For the other species, the effects of these other activities together with the slight, local, temporary effects of commercial pack stock activity do not result in a cumulative significant negative impact to these species under any alternative.

Alternatives 2 and 3: Because the irrigation system would be maintained and there would be monitoring of the population of Inyo star-tulip, there would be no additive negative effect from commercial pack stock grazing.

There would be minimal negative effects from slight trampling or grazing on the other species, but the general trend of the riparian habitat should be positive under both Alternatives 2 and 3. The effects of the other activities together with the slight, local, temporary effects of commercial pack stock activity do not result in a cumulative significant negative impact to these species under any alternative.

Montgomery Pass Wild Horse Territory (MPWVA)

Rocky Habitats – MPWVA

Affected Environment

There is potential habitat for one sensitive species in the MPWHT, Masonic Mountain jewelflower. This species typically grows on rocky slopes or talus, or in ravines, on sandy or gravelly soils of decayed granite or decomposing volcanic rock, and in some areas preferentially along roadsides and in old mine dumps. Blooming time for this plant is June-July, after most of the commercial pack stock use.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

There would be a positive impact to the habitat for rare plants because there would be no risk of trampling, grazing, or weed spread by commercial pack stock.

Alternatives 2 and 3 – Direct and Indirect Effects

Because some of the roads go through rocky habitat, the wild horses and the people watching them on commercial pack stock could possibly trample individual plants of this species. There is extensive unsurveyed habitat in the MPWHT, so the impacts would be limited to a small percentage of the habitat. Any impacts would be slight, local, and short-term.

All Alternatives – Cumulative Effects

Roads in this area go through rocky habitat and there is a small risk that OHV use could crush individual plants. The wild horses could trample plants in a wider area, not limited by roads, but the rocky habitat would most likely be avoided when possible.

The additive slight effects of commercial pack stock activity do not result in a cumulative significant impact to the potential habitat of this species.

Upland habitats – MPWHT

Affected Environment

There is one sensitive species occupying upland habitat, Mono phacelia. It is an annual plant that occurs in clay soils in areas with some disturbance, such as roadsides, and usually blooms in late May or early June. The number of plants varies considerably from year to year, based on local conditions. The occurrence in MPWHT is along a dirt road near Truman Meadows. This road is not normally used for trucking the animals or supplies in, but could possibly be used during the horse viewing rides.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

There would be a positive impact to the habitat for rare plants because there would be no risk of trampling, grazing, or weed spread by commercial pack stock.

Alternatives 2 and 3 – Direct and Indirect Effects

There could be some trampling of individual plants, but there would not likely be any significant negative effects to the seed bank for this species. The plants are tolerant of some disturbance and the population is not in an area expected to draw wild horses and their viewers on a regular basis.

All Alternatives – Cumulative Effects

OHV traffic and road maintenance may disturb the occurrence of *Mono phacelia* temporarily, but lasting adverse effects to the seed bank are unlikely unless an entire population is graded before seed set. The additive effects of commercial pack stock activity do not result in a cumulative significant impact to the potential habitat of this species.

Riparian habitats – MPWHT

Affected Environment

One sensitive species known from the MPWHT is Williams' combleaf. This species is a small plant in the mustard family that occurs in seasonally wet ponds in the MPWHT and areas to the north in Nevada on BLM and Forest Service land. It blooms in late May to June, about the time of commercial pack stock use.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

There would be a positive impact to the habitat for rare plants because there would be no risk of trampling, grazing, or weed spread by commercial pack stock.

Alternatives 2 and 3 – Direct and Indirect Effects

There would be direction to avoid traveling through the ponds on the wild horse viewing trips under both Alternatives 2 and 3, so there would be a low risk of trampling or other effects on Williams' combleaf from commercial pack stock during its blooming period.

All Alternatives – Cumulative Effects

The wild horses use the ephemeral ponds, as shown by hoof punches and manure piles. Since the wild horses are present all year round, their effects are more extensive than those of the commercial packstock, which can be controlled to avoid the habitat of Williams's combleaf. Cattle were removed from the Wild Horse Territory, but they also grazed this area and probably had some trampling effects on the combleaf. These effects are no longer apparent in this habitat. There are also water manipulation activities including damming or diverting that affect the habitat on non-INF lands.

Dirt roads near the ephemeral ponds are used by OHVs, but they do not cross the habitat, so there would be no added vehicle effects.

A Conservation Agreement is being developed for Williams combleaf that will identify conservation actions for this species and coordinate protection efforts among the various land holders.

The restriction to keep out of the seasonally wet pools should minimize any commercial pack stock addition to negative cumulative effects of other activities.

Ansel Adams/John Muir Wildernesses

The Trail and Commercial Pack Stock Management Final EIS (2005) described the affected environment and environmental consequences for the portions of the Ansel Adams and John Muir Wildernesses that are within the project area considered in this EIS. That analysis is incorporated into this document by reference. A description of the Vegetation (sensitive and watch list plants) affected environment can be found on pages III-67-199 of the Final EIS. An environmental consequences discussion of commercial pack stock use in the AA/JM Wildernesses for Vegetation (sensitive and watch list plants) can be found on pages IV-510-676.

Alternative 2 – Modified was the selected alternative in the 2005 AA/JM ROD. For this alternative, 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.

In Alternative 2 – Modified, 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. Of the 529 meadows within the elevational range of the sensitive riparian species, 116 would be open for commercial pack stock grazing and sixteen meadows of those would most likely remain in somewhat degraded condition (12 would remain degraded even without pack stock grazing). The overall effect would be a long-term beneficial reduction in impacts to potential habitat for sensitive riparian species.

Golden Trout and South Sierra Wildernesses

These wildernesses are located on the Kern Plateau, at the southern end of the Sierra Nevada. The Kern River and its tributaries flow through the area, forming very large open meadows separated by ridges, with some volcanic peaks and lava flows. There are foxtail pine and lodgepole pine forests at high elevations, with mixed conifer forest on the western side. Willows are the main riparian tree present. The area was not glaciated like the rest of the Sierra and has many species of rare plants that are endemic.

Commercial pack stock use of this area has been light, with most of the reported use accessing SEKI. A few full service trips per year use the rest of the area.

Rocky Habitat – GT/SS Wildernesses

Affected Environment

There are three sensitive species of rocky habitats in the GT/SS Wildernesses: Hall's daisy, Olancho Peak buckwheat, and sweet-smelling monardella, two proposed sensitive species in this habitat: Kern Plateau bird's-beak and Dedecker's clover, and one watch list species: Mt. Whitney stickseed. There is potential habitat for Bodie Hills rock cress (see non-wilderness section).

Hall's daisy occurs in an area with no recent reported commercial pack stock use and in steep, rocky habitat.

Olancho Peak buckwheat also occurs in relatively remote habitat, and in an area lightly used by commercial pack stock.

Two populations of sweet-smelling monardella are in remote areas (one also near Olancho Peak), and one is along a trail that accesses Overholster Pasture that has been used by Cottonwood Pack Station in the past.

Five occurrences of Kern Plateau bird's beak are known from the GT Wilderness and two others from the Monache Meadow area nearby in either rocky or upland habitat. The known populations are on or near trails or roads in Monache.

There is also one Dedecker's clover occurrence near Olancho Peak, and three in non-wilderness (discussed above).

Mt. Whitney stickseed occurs near Olancho Peak, along with two other occurrences on rock outcrops near the boundary of the JM Wilderness.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

There would be a positive impact to the habitat for rare plants because there would be no risk of trampling, grazing, or weed spread by commercial pack stock.

Alternatives 2 and 3 – Direct and Indirect Effects:

There would be very little risk of commercial pack stock impacts in the remote locations of Hall's daisy, Olancho Peak buckwheat, Dedecker's clover, Mt. Whitney stickseed, and two of the sweet-smelling monardella populations. There would only be the indirect impact of carrying clients who would hike in the area of the peak and could possibly trample plants, a local, minor, short term impact. Overholster Pasture would not be used under either alternative, and there is no other destination along that trail for commercial pack stock use, so no impacts would be expected to the nearby population of sweet-smelling monardella.

Kern Plateau bird's beak would be at a slight risk of trampling impacts, since most known populations are near major trails, but the effects would be local, minor, and short-term, especially in the rocky habitats.

All Alternatives – Cumulative Effects

There would be little risk of impacts to these species from other activities, mostly due to their inaccessible habitat, although some of the Kern Plateau bird's beak occurrences are in upland habitat and more susceptible to cattle grazing use and other recreational activities. The resting of two of the allotments on the Kern Plateau has removed most of the trampling impacts to these species.

The additive effects of commercial pack stock or removal of pack stations activity do not result in a cumulative significant impact to these species.

Upland habitats – GT/SS Wildernesses

Affected Environment

There are three sensitive species of upland habitat in GT/SS Wildernesses, Ramshaw abronia, Kern Plateau milk-vetch, and grey-leaved violet; one proposed sensitive species, Tulare cryptantha; and three species of watch list plants, pygmy rock-cress, Kern County milk-vetch, and field ivesia. There is potential habitat for nine-mile canyon phacelia. Kern Plateau bird's beak can also occur in upland habitat (see analysis for rocky habitat). The plants are grouped by more specific habitats for analysis.

Sandy Meadow Margin: Ramshaw abronia is known only from Ramshaw and Templeton Meadows, with one population (previously considered two populations) on the sandy margins of those meadows. The number of plants has been monitored closely since 1982, but numbers vary widely from year to year and no obvious trend has been found. The system trail through Ramshaw Meadow was rerouted out of one of the subpopulations in the late 1990s, but there is still some use on the old trail. Campsites currently used by the packers are in or near populations of Ramshaw abronia on the east arm of Ramshaw Meadow and near Lewis Stringer in Templeton Meadow, where the population is fenced. There is a draft Conservation Agreement with US Fish and Wildlife for the abronia that prohibits loose herding in Ramshaw Meadow and camping within any of the subpopulations.

Pygmy rock-cress occurs more widely in the northern part of the Golden Trout wilderness, scattered in sandy areas, with several of the known populations along trails used by commercial pack stock trips.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects:

There would be a positive impact to the habitat for rare plants because there would be no risk of trampling, grazing, or weed spread by commercial pack stock.

Alternatives 2 and 3 – Direct and Indirect Effects:

In Ramshaw Meadow, camping and grazing would be limited to areas outside the populations of Ramshaw abronia, so there would be very little trampling risk, mostly from trail use. Camping in Ramshaw Meadow is limited to areas outside the population of abronia (see FEIS, Map, Tile 11) and

loose herding will continue to be prohibited in Ramshaw Meadow. In Templeton, camping is prohibited immediately adjacent to the population that was previously fenced. Some individuals of either species could be trampled, but the effects would be local, short-term, and minor.

All Alternatives – Cumulative Effects

Cattle grazing and trailing in Ramshaw Meadow were limited to areas outside of the abronia populations from 1991 until the allotment was rested in 2001, to avoid the documented trampling impacts. This management strategy was successful and less than 1% of the plants showed damage after the grazing season while it was in place, compared to up to 53% damaged plants previously (INF files). Currently, the allotment is being rested, so any historic damage from cattle grazing should be recovering. Commercial pack stock activity would not slow recovery because of the camping and grazing restrictions in Ramshaw Meadow.

In other meadows where pygmy rock cress occurs, cattle grazing still occurs, which is the major source of impacts on the species, but is not leading to a downward trend. The additive effects of commercial pack stock activity or removal of pack stations would not result in a cumulative significant impact to these species because there would little commercial pack stock activity in this area and effects would be slight, local, and short-term.

Dry slopes and flats (sagebrush or lodgepole pine) – GT/SS Wildernesses:

Affected Environment

Rothrock sagebrush occurs in the drier portions of meadows and lodgepole pine is at meadow edges, so plants of these habitats can be considered riparian and are included in that discussion below. There are two sensitive plant species of this upland type: Kern Plateau milk-vetch and grey-leaved violet, and one watch list species: Kern County milk-vetch. See non-wilderness section above for analysis of grey-leaved violet and Kern County milk-vetch. Field ivesia, a watch list species, may also occur in more upland sagebrush habitat, but is included in the riparian analysis below. There is potential habitat for the sensitive species nine-mile canyon phacelia in the southern part of the GT/SS Wilderness.

Two of the sixteen occurrences of Kern Plateau milk-vetch are near campsites used for pack stock trips, one near Fat Cow meadow, and one near Monache Meadow just inside the wilderness boundary. Monitoring is ongoing for two occurrences in Monache Meadows and in Ramshaw Meadows (USDA FS, INF sensitive plant files, 2000-2003). The initial results do not indicate any clear trends in plant numbers.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

There would be a positive impact to the habitat for rare plants because there would be no risk of trampling, grazing, or weed spread by commercial pack stock.

Alternatives 2 and 3 – Direct and Indirect Effects

Some pack stock damage could occur to individual plants, particularly in the vicinity of the two camps near populations. However, camping does not occur in any of the known populations and would not be expected under either alternative, so any effects would be local, short-term, and minor.

All Alternatives – Cumulative Effects

The cattle grazing in the Monache allotment is continuing and there is OHV use there as well. The monitoring in place should detect any significant downward trend in plant numbers whatever the cause. Commercial pack stock activity does not significantly increase the effects of these activities because use is light and impacts would be slight, local, and short-term.

Riparian Habitats – GT/SS Wildernesses

Affected Environment

There are six sensitive species occupying riparian habitat in the GT/SS Wildernesses: five species of moonwort and the Kern River daisy, and one species of watch list plant: field ivesia. There is potential habitat in the meadows for Bolander's candle moss and *Meesia* spp. (mosses), particularly on the west side of the GT Wilderness.

The moonworts are known from a riparian area along upper Monache Creek and from Movie and Lewis Stringers in Templeton Meadows. There have been a few commercial pack stock trips per year through Templeton, some camping at Lewis Stringer. The upper Monache Creek location is about ¾ mile away from the PCT, which is the route used by the packers, but there is no reported camping in the area. There is potential habitat for all of the rare moonwort species in most of the meadows on the Kern Plateau. There is one occurrence of Kern River daisy on the border of the South Sierra Wilderness along the Kern River. The PCT passes near the occurrence, but there is very little commercial packstock use this far south, with none recently reported.

Environmental Consequences

Alternative 1 – Direct and Indirect Effects

There would be a positive impact to the habitat for rare plants because there would be no risk of trampling, grazing, or weed spread by commercial pack stock.

Alternatives 2 and 3 – Direct and Indirect Effects

There would be a small risk of trampling or grazing to the moonworts, but they are adapted to light disturbance (Farrar, 2004) and a significant part of the plant's life cycle is underground. Any effects would be local, minor, and short-term, particularly since commercial pack stock activities would be restricted to trails in riparian areas before range readiness was reached. For an analysis of the meadows in the Kern Plateau that are potential habitat for moonworts, Bolander's candle moss and *Meesia* spp., see Grazing Resource discussion above.

For the Kern River daisy, there would be very little risk of trampling or grazing by commercial pack stock because there is very little use in this area.

Most areas with habitat for field ivesia would be open for grazing, but the use levels would be expected to stay low and it is unlikely that many individual plants would be affected in any one year.

All Alternatives – Cumulative Effects

The Templeton grazing allotment is currently being rested, but cattle trampling and grazing has had a significant impact on the moonwort habitat due to trampling and deterioration of meadow condition in general. There is monitoring in place to verify improved meadow conditions, but the moonworts' response to removing cattle is unknown. The Monache habitat is within an active cattle allotment, so there is a risk of cattle impacts, but cattle use of that specific area is unlikely, since there are dense willow stands surrounding the occurrences. The PCT is not far from the Monache site, so there is a slight risk of hiker impacts, but they would be minor and local.

The Kern River daisy habitat is not in an Inyo NF cattle allotment. The Kennedy Meadows area with campgrounds is nearby and there could be some hiker or other recreational uses.

The invasion of sagebrush into the meadows of the Kern Plateau has probably expanded the habitat for field ivesia, which grows in drier more open habitats. Bauer et al. (2002) concluded that the interaction of local factors and climate change determine patterns of shrub encroachment.

Commercial pack stock activity or removal of activity under any alternative does not significantly increase the effects of these activities and changes in climate conditions because use is light, off trail use is restricted until range readiness is reached, and any effects would most likely be slight, local, and short-term.

3.4.2.3 Weeds

In the SNFPA (2001 and 2004) standards and guidelines were adopted to manage weeds using an integrated weed management approach with the goals of preventing the introduction of new invaders, conducting early treatment of new infestations, and containing and controlling established infestations. These regional standards and guidelines include encouraging use of certified weed free hay and straw, phasing in a requirement to use certified weed free products as they become available, assuring weed prevention measures are included when amending pack stock operator permits, completing noxious weed inventories, and monitoring known weed infestations (Monitoring Plan in Appendix I). The effort to develop a certification process for weed-free hay and straw is being conducted at the regional/state level. There is an MOU among the agencies involved in this effort that includes the provision to “move together in a coordinated manner to implement such policies or regulations” (BLM et al., 2006). In compliance with this MOU, certified weed free forage will not be required at the pack stations until the program is in place state-wide.

The Inyo NF is a member of the Eastern Sierra Weed Management Area (ESWMA), a local organization that brings together landowners and managers (private, city, county, state, federal) for the purpose of controlling invasive weed species (ESWMA, 1999). In areas used by the packers off

of the Inyo NF, the members of ESWMA have on-going programs of weed control and eradication. The Inyo/Mono County Department of Agriculture, also a member of ESWMA, oversees hay and straw production in the Owens Valley and closes fields that are infested with noxious weeds (Federal and State lists).

Indicators used to analyze weed effects will be number of non-native species present at pack stations and in areas used by commercial pack stock, the level of risk of introduction and spread of weed species based on pack station practices (wintering sites, hay, straw, and firewood sources, type of feed used in the wilderness), and the area and level of use.

Affected Environment

Weed Inventory: There are no weeds on Federal Noxious Weed Lists known in the analysis area. There are two California state-listed noxious weeds in or near the analysis area, spotted knapweed (A List) adjacent to the Bishop Park pasture, and western flag iris (C List) in five of the pastures requested for grazing. Several other species of non-native plants (Hickman, 1993), some highly invasive wildland weeds, occur at the pack stations and pastures, and on or near trails and routes used by the packers (Table 3.48). Some of these species are included on lists maintained by the California Invasive Plant Council (CalIPC), as potential threats to ecosystem integrity of wildland habitats. CalIPC is a non-profit organization formed to address weed problems in California whose membership includes public and private land managers, ecological consultants and researchers, volunteer stewards, and concerned citizens. Ratings combining invasiveness, impact, and distribution of the weeds are assigned by CalIPC and will be used to help evaluate impacts in this analysis.

The following table lists known non-native plants present in the analysis area at the pack stations, corrals, pastures, along stock drive routes, or near the trailheads. It should be noted that the weeds at pack stations are not growing in the areas most highly used by people and stock, but at the edges of buildings and fences, where it is less likely that they will be walked through. In the Owens Valley, where most of the pack stock stay in the winter, salt cedar (*Tamarix ramosissima*) and perennial pepperweed (*Lepidium latifolium*) are the known weeds of most concern. Halogeton (*Halogeton glomeratus*) is present near Benton where there is a stock drive route. Priority for treatment or control of these weeds is based on their invasiveness, possible impacts, and likelihood of containment (see project record for listing of priorities).

Table 3.48. Known non-native (weed) species present in the project area. Analysis Units: N=Non-Wilderness, G=GT/SS Wildernesses, M=MPWHT, A=AA/JM Wildernesses.

Common Name	Scientific Name	Status*	Analysis Unit				Presence at Packstations/ facilities
			N	G	M	A	
Bassia	<i>Bassia hyssopifolia</i>	CalIPC Limited	x				Pine Creek
Field brome	<i>Bromus japonicus</i>	Non-native			x		Truman Meadow
Red brome	<i>Bromus madritensis</i> var. <i>rubens</i>	CalIPC High	x			x	

Common Name	Scientific Name	Status*	Analysis Unit				Presence at Packstations/ facilities
			N	G	M	A	
Cheatgrass	<i>Bromus tectorum</i>	CalIPC High	x	x	x	x	Bishop, Frontier, Glacier, McGee, Pine Creek, Rock Creek, Reds, Evans pasture, McMurry pasture, Pizona
Spotted knapweed	<i>Centaurea maculosa</i>	Calif. State A	x				Adjacent to Bishop Park facility
Bull thistle	<i>Cirsium vulgare</i>	CalIPC Moderate	x				
Tansy mustard	<i>Descurainia sophia</i>	CalIPC Limited	x				Bishop, Frontier, McGee, Pine Creek, Rock Creek, Truman Meadow, Bishop Park pasture, Pizona
Wheatgrass	<i>Elytrigia sp.</i>	Non-native		x			South Fork Meadow
Western flag iris	<i>Iris missouriensis</i>	Calif. State C	x		x		Both North Lake pastures, Big Meadow pasture, Donkey pasture, Bishop Park pasture, Truman Meadow, McMurry pasture, Pizona
Birds foot trefoil	<i>Lotus corniculatus</i>	Non-native	x			x	Bishop, McMurry pasture
Apple	<i>Malus sp.</i>	Non-native	x				McMurry pasture
Mallow	<i>Malva neglecta</i>	Non-native	x				Frontier, Glacier, McGee, Rainbow, Reds, Rock Creek, Bishop Park pasture
Black medic	<i>Medicago lupulina</i>	Non-native	x				McMurry pasture
White sweet clover	<i>Melilotus alba</i>	Non-native	x				
Yellow sweet clover	<i>Melilotus officinalis</i>	Non-native	x				Reds
Cultivated timothy	<i>Phleum pratense</i>	Non-native		x			South Fork Meadow
Knotweed	<i>Polygonum arenastrum</i>	Non-native	x				Bishop, Frontier, Glacier, McGee
Rabbit's foot grass	<i>Polypogon monspeliensis</i>	CalIPC Limited			x		Truman Meadow
Dock	<i>Rumex crispus</i>	CalIPC Limited	x				North Lake small pasture
Russian thistle	<i>Salsola tragus</i>	CalIPC Limited	x				Frontier, Glacier
Tumble mustard	<i>Sisymbrium altissimum</i>	Non-native	x				Glacier, McGee, Truman Meadow, Bishop Park pasture
Dandelion	<i>Taraxacum officinale</i>	Non-native	x	x		x	Rodeo pasture, Pizona, GTW meadows
Penny-cress	<i>Thlaspi arvense</i>	Non-native	x				Reds
Goat's beard	<i>Tragopogon dubius</i>	Non-native			x		Truman Meadow
White clover	<i>Trifolium repens</i>	Non-native	x			x	Bishop
Siberian elm	<i>Ulmus pumila</i>	Non-native	x				McMurry pasture
Woolly mullein	<i>Verbascum thapsus</i>	CalIPC Limited	x				Frontier, McMurry pasture, Bishop Park pasture

*Calif. State List A requires eradication or containment at the state-county level. Calif. State List C suggests holding or eradication only when found in nursery stock; other action at the discretion of Co. Ag. Commissioner. **CalIPC High** – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. **CalIPC Moderate** – These species have substantial and apparent—but generally not severe—ecological impacts, moderate to high rates of dispersal generally dependent upon ecological disturbance. **CalIPC Limited** – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic. **Non-native** – Plant that is listed as alien in the Jepson Manual of California Vegetation (Hickman, 1993) and not included on Calif. State or CalIPC lists at this time.

General Weed Information

Cheatgrass and other non-native bromes are common throughout the eastern Sierra, from the base of the escarpment up to at least 9,000 feet, most abundant in recently burned or disturbed areas especially on south facing slopes. Cheatgrass is the most common of the weeds listed in Table 3.48 and is present at the majority (seven) of the pack stations, along stock drive routes, at campsites, trailheads, pastures, and along some of the day ride trails.

Russian thistle (*Salsola tragus*), or tumbleweed, is common on the eastern slope of the Sierra Nevada, but is mostly limited to already disturbed areas. It is present along some of the roads used for stock drives and at campsites near Casa Diablo Mountain as well as at two packstations.

Several weedy members of the mustard family are known from pack stations and trailheads, including tansy mustard (*Descurainia sophia*) and tumble mustard (*Sisymbrium altissimum*).

Mullein (*Verbascum thapsus*) can be locally abundant in riparian habitats and has been reported in several locations near the wilderness boundaries in and north of the Bishop Creek drainage.

Knotweed and mallow are found at several pack stations, but appear to be limited to parking lots or other disturbed, somewhat compacted areas.

Dandelion (*Taraxacum officinale*) is present in some meadows in and near the wilderness, especially where there has been heavy grazing in the past by livestock and pack stock.

Western flag iris (*Iris missouriensis*) is present at most of the pastures in the Bishop Creek area and at McMurry Meadow. It is on the California C list of noxious weeds because it is an increaser in heavily grazed meadows, reported to be toxic to cattle, and causes problems when cutting hay (Whitson et al., 1996). Because it is a native species (Hickman, 1993), no action will be proposed to remove it and it will not be considered as undesirable, although it reduces available space for more palatable forage. It will not be discussed further in this analysis.

June Lake Area

The June Lake loop is a very popular tourist destination and heavily used by campers, anglers, boaters, and hikers. There are hydropower facilities in Rush Creek, including a tramway that crosses the Rush Creek Trail; both the tramway and the trail have patches of cheatgrass. Cheatgrass, mustards, and Russian thistle are common in the Silver Lake area near the pack station.

Six species of non-native plants were found at Frontier Pack Station, cheatgrass (“High” rating), tansy mustard, Russian thistle, and mullein with “Limited” ratings, and mallow and knotweed that are not considered invasive. Cheatgrass was also found along the fence at Evans pasture and dandelions (not considered invasive by CalIPC) are present at Rodeo pasture.

Red’s Meadow/Agnew

This area is very heavily used by hikers, campers, anglers and visitors to Devil’s Postpile National Monument. Visitors to the areas are required to take a shuttle bus unless they are camping, so vehicle traffic as a weed vector is less of a threat than in other heavily used recreation areas. Bull thistle was

present in Devil's Postpile NM near Red's Meadow on the trail to Rainbow Falls, but a removal program has been underway for several years and it appears to be controlled, possibly eradicated, in that area.

Four species of non-native plants are present at the Reds Meadow Pack Station, including cheatgrass ("High" rating). The other three species are not considered invasive by CalIPC.

Mammoth Lakes Basin

The Mammoth Lakes Basin is a very heavily used recreation area in both summer and winter, with resorts, large campgrounds, anglers, hikers, and cross country skiers. The only weed found in other surveys in the Mammoth Lakes Basin was dandelion. No weeds were found at the Mammoth Lakes Pack Outfit pack station.

McGee Canyon

McGee Canyon receives moderate levels of recreational use, with a campground, hikers and anglers, in addition to the pack station activity. McGee Canyon trail has cheatgrass along it at least to the wilderness boundary and there is dandelion growing in Round Meadow in the AA Wilderness. Five species of non-native plants were found at the McGee Pack Station, but only cheatgrass is considered very invasive.

Rock Creek Canyon

Rock Creek Canyon is a high recreational use area with resorts, campgrounds, hikers, anglers, and cross country skiing. Rock Creek Pack Station has two facilities, with three non-native species, cheatgrass, tansy mustard ("limited" rating), and mallow (non-invasive). Dandelions are present along the Little Lakes Valley trail, a very popular day-hike trail.

Pine Creek Canyon

Pine Creek Canyon is a moderately used recreation area where there was a large mining operation. The mine tailings ponds below the pack station have populations of cheatgrass, Russian thistle, and mullein, and some weed removal activities have occurred there since the mine closed. Three species of non-native plants are present at Pine Creek Pack Station, including cheatgrass and two "Limited" rating weeds, bassia and tansy mustard. The Pine Creek Trail passes through the pack station, so hikers also act as vectors for any weeds present there.

Bishop Creek Drainage

The Bishop Creek drainage has several facilities for generating hydropower, resorts, two pack stations, housing developments, and campgrounds.

At the Bishop Pack Outfit facilities, there are nine species of non-natives present or adjacent, including spotted knapweed and cheatgrass (both "High" ratings), three species with "Limited" ratings, and five others that are not considered invasive. The spotted knapweed was found adjacent to the Bishop Park pasture, at least partly on private land. Inyo County Agriculture Dept. has been informed of this recently discovered infestation and it is expected that it will be removed during the 2006 season, but will require follow-up treatment. The population is near the Bishop Park pasture along a road, reportedly on private land, where it appears the pack stock do not walk through it, but it

is at the edge of the pasture. Cheatgrass is common on Highway 168 accessing the area and in disturbed areas.

Dock (CalIPC “Limited”) is a weed of meadows, but was found only at the small North Lake pasture.

There are also several weedy species from the pea family, including white sweet clover (*Melilotus alba*), yellow sweet clover (*M. officinalis*), white clover (*Trifolium repens*) and birds foot trefoil (*Lotus corniculatus*) occurring in riparian habitat. The trefoil occurs along the North Lake Road near the pack station, but most was removed in 2006.

Only one species of non-native plant species, mallow, was found at Rainbow Pack Station and it is not considered invasive by CalIPC.

Big Pine Canyon

Big Pine Canyon has moderate to high levels of recreational activity, with a resort, packstation, campgrounds, hikers, and anglers. Five species of non-native plants were found at Glacier Pack Station, including cheatgrass, Russian thistle (“Limited”), and three species not considered invasive. Most of the weeds present at Glacier pack station are in the parking lot.

Eastern Sierra Escarpment (South of Big Pine)

There are several trailheads for accessing the John Muir Wilderness and passes to the west side along the eastern base of the Sierra Nevada. Most of these trailheads have populations of cheatgrass, red brome, and Russian thistle that extend up the trails to elevations of 9,000 feet in some cases. At Onion Valley west of Independence there are dandelions in the meadow near the Sequoia Kings Pack Station. McMurry Meadow, pasture for Glacier Pack Station, has five non-native species, cheatgrass, and four species not listed by CalIPC, including two domestic tree species, elm and apple. There are small patches of rabbit’s foot grass in moist areas in the Sage Flat area.

Cottonwood/Horseshoe Meadow Area

This area is a moderately used recreational area for hikers, anglers, campers, and pack stock access to the Cottonwood Basin, Kern Plateau, and SEKI. There is cheatgrass along the Horseshoe Meadows paved road, but no non-native plants were found at the Cottonwood Pack Station, and in general there are few weeds in the area. At South Fork Meadow, there are two species of non-native grasses that were seeded to improve forage for cattle.

Golden Trout/South Sierra Wildernesses

The meadows of the Kern Plateau have been used for cattle and sheep grazing historically and currently, although two allotments are currently being rested. Private pack stock use is common here. There is cheatgrass in a few places in Monache and Casa Vieja Meadows and near Jordan Hot Springs, and dandelions in several of the meadows.

Montgomery Pass Wild Horse Territory

Frontier and Rock Creek Pack Stations use Truman Meadows and Pizona, respectively, for wild horse viewing trips in the spring. Cheatgrass is present near both camps, and field brome, goat’s beard (neither listed by CalIPC) and rabbit’s foot grass (“Limited”) are also present at Truman Meadows. At Pizona, tansy mustard (“Limited”) and dandelion are also present.

Stock Drive Routes

The stock drive routes are mostly along roads and the stock are expected to stay in the roadway, although some wandering is unavoidable. On the INF, the routes pass through weed populations in the Swall Meadows area (cheatgrass, mullein, non-native buttercup and non-native penstemon), near Mammoth (cheatgrass), near Onion Valley (cheatgrass, crested wheatgrass), and near the tailings ponds in Pine Creek Canyon (cheatgrass, mullein). On non-forest land, the routes pass through several known populations of weeds, those of most concern being halogeton near Benton and perennial pepperweed near Mill Creek Station.

Ansel Adams/John Muir Wildernesses

The Trail and Commercial Pack Stock Management Final EIS (2005) described the affected environment and environmental consequences for the portions of the Ansel Adams and John Muir Wildernesses that are within the project area considered in this EIS. That analysis is incorporated into this document by reference. A description of the affected environment for Vegetation (weeds) can be found on pages III-67-199 of the Final EIS. Very few weeds were found in these Wildernesses themselves, none of them on the Federal or State Noxious Weed lists. To summarize, cheatgrass is present along lower elevation trails in Rush Creek, Hilton Creek, in the John Muir SW Geographic Area (along with red brome), on trails accessing the wilderness near Edison, Florence, and Convict Lakes, and in several patches near Iva Belle Hot Springs on the Fish Creek Trail. Bird's foot trefoil, dandelion, and clover were found on the Piute Pass Trail above North Lake, but were removed in August, 2006. Dandelions are also present in several meadows, particularly at lower elevations.

The pack stock are restricted to approved trails, campsites, and grazing areas in these wildernesses. Monitoring of trails, campsites, and meadows is required by the decision and will include reporting of weeds (Monitoring Plan, Appendix I).

Pack Station Practices: Current pack station stock wintering sites, sources of hay and straw, type of feed used in wilderness, and sources of firewood are presented in Table 3.49 below. Most of the pack stations winter their animals and get hay and straw in the Owens Valley. None of the wintering locations or firewood sources are in counties quarantined for sudden oak death presence. The Inyo/Mono County Agriculture Dept. reported that there are no weed problems in hay producing fields in the Owens Valley currently (Reade, pers. comm.), although some fields in the Chalfant Valley have been closed due to the presence of perennial pepperweed (tall whitetop). Mr. Reade reported that Smith Valley, NV, had some weed problems in the past, but the weed control there is improving. Nevada has a weed certification program, so weed free hay, straw, pellets, and cubes are available, but there are fees for the certification, which can increase the price. The packers report that their feed is weed free. The firewood sources reported are either commercial or local.

Table 3.49. Pack stock wintering sites and sources for feed, straw, and firewood.

Pack station	Stock Wintering Location	Hay, straw source location	Type of wilderness feed	Firewood source location
Frontier	Round Valley, Pierce College, COS	Yerington, NV	Weed free cubes, Yerington, NV	Bishop
Mammoth Lakes	Owens Valley	Owens Valley, Smith Valley, NV	Pellets	Mammoth
Red's/Agnew	Inyo Co.			
McGee Creek	Owens Valley	Inyo County	Pellets	Compressed "Presto" logs
Rock Creek	Inyo County	Smith Valley, NV	Extruded, cubes	NA
Pine Creek				
Bishop	Amador and Inyo Counties	Inyo Co.	Pellets	NA
Rainbow	Inyo Co	Mono and Inyo Co.	Pellets	NA (Inyo Co. if purchased)
Glacier	Inyo Co, CA: Big Pine, LA Intake Field, George's Creek	Inyo Co, CA.	No wilderness feeding.	None used.
Mt. Whitney	See Rock Creek, Red's Meadow.			
Sequoia Kings	See Pine Creek.			
Cottonwood	Inyo Co., CA: Black Rock, Independence	Independence, grown by packer	Pellets	Inyo Co, CA, Independence (packer's ranch)
Three Corner Round	Inyo Co., CA, east of Aberdeen	Inyo Co., CA	Pellets used in SEKI	Onion Valley campground host

Environmental Consequences

General Effects: Ecosystem health is threatened by the spread of non-native weeds. They can reduce native biodiversity, compete with threatened, endangered and sensitive (TES) species, reduce wildlife habitat quality, modify vegetative structure and species composition, change fire and nutrient cycles, hybridize with native species, and degrade soil structure (Bossard et al., 2000). Trails act as conduits for movement of vegetation, including weeds (Benninger-Truax et al., 1992), and trail and road users, including pack stock, hikers, OHVs, and maintenance personnel or vehicles, can spread weed propagules.

Weedy species are most likely to invade areas of disturbed soil, but some are also able to invade intact ecosystems under the right circumstances (Gurvich et al., 2005). Areas that have been disturbed by humans or domestic animals are more susceptible to invasion by weeds (Bossard et al., 2000). Landsberg et al. (2001) cite several studies that showed horse travel on trails caused more impacts than other recreational users (hikers, motorcycles), but that the amount of impact depended on the environment, with the most impact occurring in moist or steep places. Weeds establish most readily at the edge of trails (Campbell and Gibson, 2001), and weed seeds in manure deposited in disturbed damp sites would be most likely to germinate (Landsberg et al., 2001). The pack stations are areas where the ground is mostly bare and compacted due to human, vehicle, and pack stock traffic and weeds occur at the edge of the bare compacted area, just as on trails. Trampling can

disturb soil of pastures or meadows where grazing occurs, but because pastures confine the pack stock when grazing, the soil disturbance is more concentrated than in meadows with open grazing. Campsites and the associated stock holding areas usually have areas of bare ground, either compacted or with surface soil disturbance.

The number and variety of vectors that can introduce or spread weed propagules (seeds or other plant parts that can start new populations) also determines vulnerability to invasion. Vectors associated with commercial pack stock include the animals themselves (hair, hooves, dung), wranglers and clients, feed and straw, and vehicles and other equipment. Weed seeds have been shown to be present in horse dung and able to germinate from it (Campbell and Gibson, 2001). The species and number of weed seeds found in horse dung depend on the weeds present in pastures or in dried stock feeds. A not-yet-completed study by the National Park Service and Dominican University of California was reported in the LA Times (2005), and although they did not find any of the state or federally-listed noxious weeds in horse manure, they did find many non-native species that are considered wildland weeds. Several examples of noxious weeds found in hay or straw are offered by Clines (2005). Feed pellets are processed in such a way that any weed seeds are killed, but other forms of feed used in the wilderness (cubes, hay) may still have live weed seeds.

The stock over-winters in off-Forest pastures at lower elevations in the Owens Valley or elsewhere, where weeds are usually more common. The stock travel between these over-wintering sites and the pack stations by stock drives or trucks on paved, gravel, or unimproved roads, many with populations of non-natives along the roadside.

Other factors that may influence the likelihood of weed spread include environmental factors such as elevation, precipitation, aspect, land cover, water sources, and soil pH or texture. The pack stations at the lowest elevations tend to have the most weeds (Frontier, lower Bishop facilities).

Individual species impacts/invasiveness: Because non-native species differ in their degree of invasiveness and competitiveness, each weed warrants different levels of concern as identified in the SNFPA (USDA Forest Service 2001). Information on the impacts of individual weeds is presented below.

Spotted knapweed has a “High” rating from the CalIPC, meaning it has severe impacts on physical processes, plant and animal communities, and vegetation structure. It reduces the survivorship of native bunchgrasses and has low palatability for wildlife and livestock (CalIPC, 2006). The knapweed may inhibit native species’ growth and germination by exuding an allelopathic chemical (Bais et al., 2003), but this effect is not entirely understood or proven (Blair et al., 2005).

Cheatgrass and red brome (*Bromus tectorum*, *B. madritensis* var. *rubens*) are the most invasive of the wildland weeds present in the analysis area as well as the most widespread. They can invade intact native vegetation and may shorten fire intervals in shrublands (Allen, 2004). Cheatgrass has invaded the sagebrush scrub habitats of the Great Basin and changed the character of large areas, with changes noted as early as 1952 (Robertson and Kennedy, 1954). Cheatgrass out competes native and desirable species, including perennial herbaceous, shrub, and tree species, for soil moisture (Bossard

et al., 2000). Field brome has not been identified as invasive by CalIPC. The rabbit's foot grass has a "Limited" rating, but is only known from moist to wet areas at low elevations in this area.

Russian thistle (tumbleweed, *Salsola tragus*) has limited invasiveness and is usually found on roadsides and areas of higher level disturbance, including burned areas.

Bull thistle (*Cirsium vulgare*), although not as highly invasive as other noxious thistles, competes with and displaces native species and decreases feeding values in meadows at elevations up to 7,000 feet elevation (Bossard, et al., 2000). Dock, another riparian species, is uncommon on the Forest and has limited invasiveness.

Tansy mustard and tumble mustard are moderately invasive and probably limited to disturbed areas (CalIPC, 2005). Penny-cress is not known to be invasive.

None of the weedy pea family species are considered to be very invasive by CalIPC, but white sweet clover often invades in riparian areas at low elevations on the Inyo National Forest and can form dense monocultures (pers. obs.).

Dandelion's ability to invade undisturbed sites is unknown, but it is difficult to eradicate once established.

Mullein (*Verbascum thapsus*) and bassia (*Bassia hyssopifolia*) are CalIPC "Limited" weeds of lesser invasiveness, but their seeds are very long-lived in the soil. After fires, the high density of mullein rosettes can prevent revegetation with native species and it is noted as a particular problem in the sparse vegetation of the Eastern Sierra (Bossard, 2000).

Other non-native species present in the analysis area that are not known to be very invasive or disruptive to native plant communities include mallow (*Malva neglecta*), knotweed (*Polygonum arenastrum*), goat's beard (*Tragopogon dubius*), and the two cultivated grasses, timothy and wheatgrass. The domestic trees found at McMurry Meadow are most likely maintained by irrigation and, although elm can spread in favorable conditions, they will probably not spread into the dry surroundings.

Ansel Adams/John Muir Wildernesses

An environmental consequences discussion of commercial pack stock use in the AA/JM Wildernesses for Vegetation (weeds) can be found on pages IV-510-676. There would be risks of weed introduction and spread due to commercial pack stock use, packing in feed, hiker use, and trail maintenance activity. The use of charcoal for fires above the elevational fire closure reduced the risk of weed introduction. Any trail sanding will be done with weed free material, minimizing the risk of weed introduction. Although the risk of weed survival if introduced is relatively low, particularly at higher elevations, the negative effects of weeds could be long-term, ranging from low to high in severity, and local to widespread in extent.

Because stock is restricted to approved trails and campsites by this decision, any weed seeds transported into the wilderness are most likely to fall in the trail tread or stock holding areas where traffic and activity make establishment unlikely. Establishment of weed populations at the edges of the most heavily traveled trails and at stock holding camps is the most probable, but it is also likely to

be noted during monitoring (Monitoring Plan, Appendix I). The pack stations use pellets or weed-free cubes (available from Nevada) in the wilderness for feed, which removes risk of weed introduction from that source. Firewood sources that would be used in individually approved cases are local or commercial, so there would be low risk of pathogen introduction.

Alternative 1 – Direct and Indirect Effects

There would be no commercial pack stock use in the project area, so commercial pack stock and associated people and equipment would not be vectors for weed introduction or spread on the Inyo National Forest or in the JM/AA. Rehabilitation or other use of the pack station sites would include measures to remove or control the 15 species of weeds present at pack stations and monitor the sites for several years. Since most of the weeds are in parking lots and around the buildings, these areas would no longer be sources of seed for weed spread. No feed, straw, or firewood would be imported from off-forest for commercial stock that could introduce new weeds. Trails would have fewer disturbances providing habitat for weed introduction or spread. Some weeds, especially cheatgrass, would be difficult to eradicate, and may actually spread into areas of bare ground left when facilities and activities are removed. Monitoring (Appendix I) and treatment should prevent weed spread from the sites and reduce the numbers of weeds present.

If cattle begin to use McMurry pasture or the irrigation system is removed, there could be a somewhat increased risk of weed introduction, since other parts of the grazing allotment have dense patches of weeds that could be spread into the pasture.

Summary:

Number of weeds: Although there would be an effort to remove them, some weeds, cheatgrass in particular, would probably remain at the pack station sites. No new weeds would be introduced by commercial pack stock operations.

Pack station practices: Existing weeds would have no chance of being spread by commercial pack stock and no new weeds would be introduced by feed or carried in from wintering sites.

Area and level of use: Removal of pack stations could provide a disturbed habitat for weeds, but revegetation and monitoring should prevent most negative effects. There would be no commercial pack stock, clients, wranglers, vehicles, etc. acting as weed vectors.

Alternative 1 – Cumulative Effects

For the cumulative effects analysis, the area considered is the area used by the pack stock operations on the Inyo National Forest and off forest winter grazing areas mostly in the Owens Valley, since the presence of weeds in those areas is most likely to interact with packstock use. In time, the analysis considers past activities from grazing in the late 1800's to the end of a 20 year permit, because historic grazing and agricultural operations are likely sources of weeds still present in the area considered and the longest permit that may be issued is for 20 years.

The areas most heavily used by packers for non-wilderness activities are the high density recreation areas of the Inyo NF. In most of these areas, there are high numbers of visitors using the campgrounds, resorts, and urbanized areas, all increasing bare ground and soil disturbance. There are weeds in most of these sites, but oddly the Mammoth Lakes Basin is relatively weed free despite very heavy recreational use. The areas of June Lake, Reds/Agnew, Rock Creek, and the Bishop Creek will most likely continue to be weedy if the pack stations are removed.

Roads, particularly road maintenance and construction, and vehicles act as the primary vectors for weeds in non-wilderness areas, as evidenced by the distribution of the existing weed populations. The use of roads by pack stock is negligible compared to other uses.

Mining sites, water diversion and power systems, and dump sites are areas of major ground disturbance that provide open habitats for weeds where equipment can bring weed propagules into the sites. DWP and SCE hydrologic developments, the Pine Creek tungsten mine, and the Mammoth Town gravel pit, airport, and dump are sites of major disturbance in areas used by the pack operations and all have many weeds present. The two pack stations with the most weeds (Frontier and Bishop) are in areas with large hydroelectric facilities. Reseeding of tailings piles and associated roads with native species occurred after closure of the Pine Creek tungsten mine, but there are patches of weeds in many places in that area. Weed prevention techniques were used during the site reclamation and weed removal has occurred at that site, reducing the likelihood of weed spread from the site.

Grazing allotments are an ongoing use and these permits are issued periodically after NEPA review. Belsky and Gelbard (2000) argue that livestock grazing is one of the main contributors to the spread of weeds in the arid and semi-arid west. They cite studies that found cattle and sheep could redistribute over 900,000 seeds in a season in hair, digestive tracts, or mud on their feet. Outside of the high density recreation areas, cattle and sheep grazing occurs or has occurred in the past in most of the areas used for stock drives, winter grazing areas, and in the GT/SS Wildernesses. These animals can spread weed propagules (seeds or other plant parts that can sprout) as they graze and move across the landscape. The numbers of production livestock and length of time they are on the grazing allotments each year is much greater than those of pack stock passing through the areas on stock drives or pack trips. Most of the known weeds in the GT/SS Wildernesses are near cow camps or administrative sites and commercial packers would not be allowed to use these sites without special permission. Livestock increase the invasibility of plant communities by selective grazing, trampling, and creating nitrogen “hot spots” (Belsky and Gelbard, 2000). The trampling can affect vascular plants, soil crusts and mycorrhizae, reducing plant community nutrient levels.

Weeds also exploit the open space and nutrient availability caused by both wildfires and prescription burns. Recent fires in the Buttermilks, Division Creek, Swall Meadows, and Rainbow Falls resulted in a flush of growth, including many weeds, particularly cheatgrass and Russian thistle.

The Inyo NF is presently conducting an OHV route inventory that will include a weed risk assessment prioritizing routes for treatment of weed population in high risk areas.

Trailheads are sites of heavy recreational traffic and more disturbance than the rest of the trail. Several of the trailheads, particularly those at lower elevations in the southern part of the non-wilderness, have existing populations of weeds.

Weeds introduced and spread by any of these other activities are available for pack stock to spread or as a seed source to spread into pack stations, and conversely, weeds introduced by commercial pack stock activities may be spread by the other vectors. Because there would be no commercial pack stock, or disturbed areas at pack stations or campsites under Alternative 1, there would be a small reduction in weed spread risk by these other activities and uses. The difference would be very small, since commercial pack stock use is only about 1% of the recreational use and negligible in relation to roads, cattle grazing, and the other uses.

Alternative 2 – Direct and Indirect Effects

There would be a risk of weed introduction or spread via pack stock and the other associated vectors in this alternative. Weed Management Plans would be developed for each pack station, renewed each year with the Annual Operating Plans, including weed removal, annual weed inspection and review of wintering locations and feed sources. Removal of the weeds at the packstations will be prioritized with the most invasive removed first. Hand pulling would be recommended for minimal soil disturbance. No use of herbicides would be authorized without additional NEPA analysis. It is expected that it will take several years of weed control actions to remove existing populations. Annual monitoring in mid-to-late summer will be required to detect any new weeds and assess the effectiveness of the removal efforts (Monitoring Plan included in Appendix I). The removal of the weeds will limit the risk of the pack stock transporting weed seeds into other parts of the operating areas, as well any other recreational users. Cross-country travel would be allowed under this alternative, so the stock could travel through more existing weed populations and/or carry seeds to a wider area. However, the risk of spread, despite high traffic in most areas, is probably very low, as evidenced by the fact that, in the wilderness particularly, and in non-wilderness areas used by pack stock, there are relatively few weeds even after many years of pack stock use. This may be due to elevations in activity areas being higher than the range of most weeds, or some other environmental factor preventing establishment. Close monitoring is required to maintain this relatively weedless condition, however, since there is a lag time to establish weeds in new habitats, and removal of new, small infestations is key to preventing a widespread invasion.

In some cases trails used by hikers or other recreational users are adjacent to or through pack stations. Control of the weeds at the pack stations, as required in their permits, will help reduce the indirect effect of other users spreading weeds from the pack stations.

The level of use is expected to increase no more than 20% above current levels, except in Mammoth Lakes Basin, where no major change in use levels is expected and current conditions are likely to improve because of the management changes in Alternative 2.

The Bishop Creek (Bishop Pack Outfit) and June Lake areas are the areas of highest risk because of the number of non-natives species present, moderate to high levels of use, high levels of

other recreational activities, hydropower facilities, and wintering stock on the west side of the Sierra. Areas of moderate risk are Reds/Agnew and Rock Creek because of moderate to high use, several non-native species, and high levels of other recreational activity. The McGee, Pine Creek, and Big Pine Creek areas have somewhat less recreational intensity and they are farther from municipal areas, so the risk is somewhat reduced. Although the Mammoth Lakes Basin has intense concentrated recreational use, there are very few weeds, so the risk of weed spread is minimal and annual inspections should detect new introductions. The Cottonwood area also has very few weeds and less use, so weed risk is very low. The Eastern Escarpment and GTW/SSW have only light use by packers and so the risk of weed spread by commercial stock is low. In the MPWHT, the risk is low because there are only a few small patches of weeds and the use is early in the season. The stock drives are along roads where some weeds are present, but the relatively small number of animals and the routes makes the risk of weed spread away from roads minor.

Alternative 2 Summary

Number of weeds: The number of weeds present at pack stations should decrease as weed control measures are implemented (annual inspections, weed removal).

Pack station practices: The use of feed from the Owens Valley and certified weed free feed from Nevada has a low risk of introducing noxious weeds. Pellets and certified weed free cubes have essentially no risk of introducing weeds into the wilderness. Of most concern for stock wintering in the Owens Valley is the risk of introducing perennial pepperweed, and those wintering on the west side of the Sierra may introduce weeds not currently known from the INF, including yellow star thistle. The stock drives from the pastures provide time and distance between those locations and the INF that reduce the risk, and annual monitoring should detect new occurrences that can be removed before they spread (Monitoring Plan included in Appendix I).

Area of use: In Alternative 2, cross country travel increases the area where weeds could be carried by commercial pack stock, and the area where weed populations could act as seed sources to be spread by pack stock. This alternative has the largest area affected.

Level of use: Non-wilderness use could increase under this alternative, but would be controlled by number of stock at the barn. Although the risk of weed introduction is low, this alternative has the highest number of stock available for use and therefore the highest number of trips possible where animals, people, and equipment could act as weed vectors.

Alternative 2 – Cumulative Effects

The risk of weed spread by commercial pack stock would be additive with the risks from other activities and this alternative would have the most risk, slightly more than Alternative 3 because more stock drives would be allowed and cross country travel would be permitted. The combined effects of the other activities and management actions described in Alternative 1 results in a level of risk of weed spread and introduction ranging from low to high, depending on the site, but the monitoring and

weed management required in this Alternative should make the additive effects of the pack station operations minimal, possibly reducing the number of weeds present.

Alternative 3 – Direct and Indirect Effects

There would be slightly less risk of weed introduction and spread compared to Alternative 2 because there would be a lower limit on stock drives, day ride use in the Mammoth Lakes Basin, and use in the GT/SS Wildernesses. There would also be the restriction on cross country travel that would limit the area of impact.

Alternative 2 Summary

Number of weeds: As in Alternative 2, the number of weeds present at pack stations should decrease as weed control measures are implemented (annual inspections, weed removal).

Pack station practices: The pack station practices would have the same level of risk as Alternative 2.

Area of use: In Alternative 3, there would be no cross country travel allowed, so the area of use would be less than Alternative 2 and the risk of weed spread reduced.

Level of use: Use in Alternative 3 would probably be slightly less than Alternative 2, so there would be fewer trips that could spread weeds.

Alternative 3 – Cumulative Effects

The cumulative effects of implementation of Alternative 3 would be similar to those of Alternative 2, but with a slightly lower additive risk of weed spread and introduction from pack stock operations.

3.5 Short-term Uses and Long-term Productivity _____

NEPA requires consideration of “the relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 CFR 1502.16). As declared by the Congress, this includes using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (NEPA Section 101).

Alternatives 2 and 3 propose to permit commercial pack station facilities and activities in the non-wilderness and wilderness areas of the Inyo National Forest. These facilities and activities would produce short-term effects on soil, water quality, wildlife and sensitive plant habitat as described in this chapter under “Environmental Consequences” sections for each resource analyzed. There is no expected impact from Alternatives 2 or 3 on long term productivity.

3.6 Unavoidable Adverse Effects _____

Alternative design and prescribed resource protection measures are intended to minimize potential adverse impacts on resources in the project area. The effects associated with commercial pack stock use in the project area are generally minimal and short-term.

3.7 Irreversible and Irretrievable Commitments of Resources _____

Irreversible commitments of resources are those that cannot be regained, such as the extinction of a species or the removal of mined ore. Irretrievable commitments are those that are lost for a period of time such as the temporary loss of timber productivity in forested areas that are kept clear for use as a power line rights-of-way or road

There are no known irreversible or irretrievable commitments of resources associated with this project.

3.8 Legal and Regulatory Compliance _____

NEPA at 40 CFR 1502.25(a) directs “to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with ...other environmental review laws and executive orders.” The proposed action and alternatives must comply with following:

3.8.1 Principle Environmental Laws

The following laws contain requirements for protection of the environment that apply to the proposed action and alternatives:

3.8.1.1 Endangered Species Act

This project complies with the requirements of the Endangered Species Act. See the Section 3.4.1, Wildlife for detailed information on federally listed threatened, endangered, and proposed species in the project area.

3.8.1.2 Clean Water Act

The Forest Service is complying with the provisions of this act, see Section 3.3.2.

3.8.1.3 Clean Air Act

The Forest Service is complying with the provisions of this act, see Section 3.3.1.

3.8.1.4 National Historic Preservation Act

The Forest Service is complying with the provisions of this act, see Section 3.2.4. A Programmatic Agreement has been developed to ensure compliance with this act.

3.8.1.5 National Forest Management Act

The Forest Service is complying with the provisions of this act.

3.8.2 Executive Orders

The following executive orders provide direction to federal agencies that apply to the proposed action and alternatives:

Indian Sacred Sites, Executive Order 13007 of May 24, 1996: All of the alternatives comply with this Executive Order.

Invasive Species, Executive Order 13112 of February 3, 1999: This Pack Station Permit Issuance EIS covers botanical resources and noxious weeds. Mitigation measures, project design, and standard management practices address the introduction and spread of invasive species.

Migratory Birds, Executive Order 13186 of January 10, 2001: Executive Order 13186 was issued in 2001 to outline responsibilities of federal agencies to protect migratory birds under the Migratory Bird Treaty Act (66 FR 3853-3856), including evaluating the effects of federal actions and agency plans on migratory birds through the NEPA process. Migratory birds have been addressed in this EIS

Floodplain Management, Executive Order 11988 of May 24, 1977: These executive orders provide for protection and management of floodplains and wetlands. Compliance with these orders will be assured by incorporating the project riparian management objectives and implementing Best Management Practices, Standard Management Requirements, and project design criteria.

Environmental Justice, Executive Order 12898 of February 11, 1994: In February 1994, President Clinton signed an executive order that requires federal agencies to conduct activities related to human health and the environment in a manner that does not discriminate or have the

effect of discriminating against low-income or minority populations. Although low-income and minority populations live in the vicinity, activities proposed for the Pack Station Permit Issuance project would not discriminate against these groups. Based on the composition of the affected communities and cultural and economic factors, proposed activities would have no disproportionately adverse effects on human health and safety or environmental effects on minorities, low income, or any other segments of the population. Scoping was conducted to elicit comments on the proposed action from all potentially interested and affected individuals and groups without regard to income or minority status.

3.8.3 Special Area Designations

The selected alternative will need to comply with laws, regulations and policies that pertain to the following special areas:

Research Natural Areas: There are Research Natural Areas within the project area boundaries. Activities in the alternatives are consistent with direction for these special areas.

Inventoried Roadless Areas: There are Inventoried Roadless Areas in the project area. Activities in the alternatives are consistent with direction for these special areas.

Wilderness Areas: There are four wilderness areas in the project area; Ansel Adams, John Muir, Golden Trout, and South Sierra Wildernesses. Activities proposed in these wilderness areas are consistent with the Wilderness Act (see Section 3.2.1).

Wild and Scenic Rivers: There are two sections of the Kern River in the project area that have been designated Wild and Scenic. The upper 78 miles of the North Fork of the Kern River was designated a Wild and Scenic River in 1987 (Public Law 100-174). A segment of the North Fork of the Kern runs through the central portion of the GT Wilderness, forming the administrative boundary between the INF and Sequoia National Forest. The upper 72.5 miles of the South Fork of the Kern River was also designated a Wild and Scenic River by Public Law 100-174. The Wild and Scenic segment of the South Fork begins at the river's headwaters in the northern end of the GT Wilderness, and runs southward through both wilderness areas. Activities proposed in proximity to these Wild and Scenic Rivers are consistent with the relevant act (see Section 3.2.1).

Municipal Watersheds (FSM 2540): Activities associated with commercial pack stock are proposed to occur in a municipal watershed. All three of the alternatives comply with the relevant Forest Service Manual direction. Section 3.3.2 discloses the water quality effects of the three alternatives.

Chapter 4 - Consultation and Coordination

Preparers and Contributors

The Forest Service consulted the following individuals, Federal, state, and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

Interdisciplinary Team Members

Jeffrey Bailey, Inyo Forest Supervisor
Bill Bramlette, Deputy Forest Supervisor
MaryBeth Hennessy, Recreation Staff Officer (Acting)
Roger W Porter, Planner, Co-Team Leader
Carmen John, Special Uses/Operations Specialist
Eric Schachtell, Geographic Information Systems Specialist
Erin Lutrick, Hydrologist, Co-Team Leader
Gary A Milano, Wildlife Biologist
Heather E Swartz, Range Management Specialist
Jeff Novak, Wilderness Specialist
Linda A Reynolds, Heritage Resources Specialist
Marty Hornick, Trails Specialist
Michael Morse, Special Uses/Operations Specialist
Rich Hatfield, Socioeconomic Specialist, Writer/Editor
Sue Weis, Botanist
Wally Woolfenden, Recreation Specialist/Heritage Resource Specialist
Dan Yarborough, Geographic Information Systems Specialist

Audit and Permitting Team Members

Bruce Dalley, Sierra National Forest, Auditor
Debbie McDougald, Sierra National Forest, Packer/Operations Specialist
Gayne Sears, Sierra National Forest, Special Uses/Operations Specialist
Mary Glen, Sierra National Forest, Auditor
Robbin Ekman, Sierra National Forest, Special Uses/Operations Specialist
Susan Burkindine, Sierra National Forest, Assistant Forest Recreation Officer
Terri Drivas, Sierra National Forest, Forest Recreation Officer
Terry Schumacher, Sierra National Forest, Special Uses Permit Specialist

Federal, State, and Local Agencies

National Park Service: Yosemite and Sequoia/Kings Canyon National Parks
USDA Forest Service: Sierra and Sequoia National Forests
State of California Department of Fish and Game
California Regional Water Quality Control Board, Lahontan Region

Inyo County Board of Supervisors
Mono County Board of Supervisors
Tulare County Board of Supervisors
City of Bishop
Congressman Howard P. “Buck” McKeon

Tribes

Big Pine Paiute Tribe of Owens Valley
Bishop Paiute Indian Tribal Council
Bridgeport Paiute Indian Community
Ft. Independence Community of Paiute Indians
Kern Valley Indian Community
Lone Pine Community
Mono Lake Indian Community
Mono Lake Kuzedika Indian
Paiute-Shoshone Indians of the
Timbisha Shoshone Tribe
Utu Utu Gwaitu Paiute Tribe
Walker River Paiute Tribe

Others

Bishop Pack Outfitters
Cottonwood Pack Station
Eastern High Sierra Packers Association
Frontier Pack Train
Glacier Pack Train
Long Valley Llamahaul
Mammoth Lakes Pack Outfit
McGee Creek Pack Station
Pine Creek Pack Station
Rainbow Pack Outfitters
Red’s and Agnew Meadows Pack Station
Rock Creek Pack Station
Thatcher School
Three Corner Round Pack Outfit

Distribution of the Final Environmental Impact Statement

This environmental impact statement has been distributed to individuals who specifically requested a copy of the document and those who submitted comments on the draft EIS that was

released in March 2006. In addition, copies have been sent to the above mentioned Federal agencies, federally recognized tribes, state and local governments, and organizations.

As part of the CEQ Regulations on the National Environmental Policy Act, the Forest is circulating the Final EIS to the following agencies, organizations, and individuals:

Table 4.1 List of Agencies, Organizations, and Individuals Receiving the FEIS

(a) Governments, Agencies and Organizations					
Last Name	First Name	Organization	Last Name	First Name	Organization
		Inyo County Library, Lone Pine	Coda	James A.	U. S. Attorney's Office, 10th Floor
		Inyo County Library, Bishop	Cunningham	John	Director, High Sierra Packers Association, Western Unit
		Mono County Library	Cushman	Douglas	Lahontan Regional Water Quality Control Board
		Tulare County Board of Supervisors	Dohnel	Dave	Frontier Pack Station
		USDA Agricultural Library	Dohnel	David	President, Eastern High Sierra Packers Association
Allen	Greg & Ruby	Rainbow Pack Outfitters	Dulen	Deanna	DEPO National Monument
Allen	Julie	Sequoia National Forest	Dunkleberger	Bill	Bureau of Land Management
Andrews	Mr. Raymond	Mono Lake Kuzedika Indian Tribe	Eichorn	Peter	Eichorn, Inc.
Arcularius	Linda	Inyo County Board of Supervisors	Elman	Ian	Southern Yosemite Mountain Guides
Axtell	Craig	Superintendent, SEKI National Parks	Farnetti	Tom	Mono County
Bacoch	Jessica	Big Pine Paiute Tribe	Fauth	Gregg	Sequoia and Kings Canyon National Parks
Baker	Charlotte	Bridgeport Paiute Indian Community	Finley	Marlene	USDA Forest Service
Berner	Brian & Danica	Pine Creek PS, Sequoia Kings Pack Trains	Fleischman	Forrest	FSEEE
Bilyeu	Jim	Inyo County Board of Supervisors	Frost	Peter	Western Env. Law Center
Boyers	Laurel	Yosemite National Park	Glickstein	Robert	Glickstein Law Office
Browning	Peter	High Sierra Hikers	Guenther	Gary	Wilderness Watch of the Eastern Sierra, High Sierra Hikers, FSEEE
Cash	Susan	Inyo County Board of Supervisors	Guzman	Ms. Victoria	Walker River Paiute Tribe
Cecil	John	Mono County	Hazard	Hap	Mono County
Cervantes	Richard	Inyo County Board of Supervisors	Hefner	David	Vice President, Bishop Chamber of Commerce and Visitors Bureau

(a) Governments, Agencies and Organizations (continued)					
Last Name	First Name	Organization	Last Name	First Name	Organization
Henderson	Kathryn	City of Bishop	Olson	Gary	President - Bishop Creek Lodge
Howard	Gerald	Bishop Paiute Indian Tribal Council	Racine	Denyse	State of California, Department of Fish and Game
Hunt	Byng	Mono County	Reed	James	Liebersbach, Mohun, Carney and Reed
James	Duane	EPA, Region 9	Reese	Marily	National Forest Recreation Association
Johnston	Larry	Mono County Planning Dept.	Roeser	Lee & Jennifer	McGee Creek Pack Station
Klusmire	Leslie	Inyo County Planning Dept.	Rosen	Jamie	USDA Office of the General Counsel
Lange	Ann	Back Country Horsemen, Kern Sierra Unit	Saulque	Mr. Joseph	Utu Utu Gwaitu Paiute Tribe
Lange	Ms. Charlotte	Mono Lake Indian Community	Smith	Judy	Colorado State Univ Library
London	Craig	Rock Creek Pack Station	Smith	Stephen W. & Jared	President - Smith Sierra Properties - Parcher's Resort
London	Herb	Rock Creek Pack Station	Sorini	Kim	Sierra National Forest
Magee-Bauer	Vicki	Mono County	Stewart	M.A.	Glacier Pack Train
McFarland	Paul	Friends of the Inyo	Summers	John & Loree	Mammoth Lakes Pack Outfit
McKeon	Congressman Howard P. Buck	US Congress, 25th district, California	Tanner	Robert	Red's Meadow Resort and Pack Station
McKeon	Howard Buck	US Congress, 25th District, California	Taton	Vickie	Mammoth Mountain Ski Area
Miller	Sally	The Wilderness Society	Tollefson	Michael	Yosemite National Park
Morgan	Mike & Tess Anne	Bishop Pack Outfitters	Tormey	Tom	Three Corner Round
Moss	Barbara	Administrator, Laws Museum	Wheeler	Wilma	Range of Light Group, Sierra Club
Mulligan	Michael	The Thatcher School	Williams	Ted	Inyo County Board of Supervisors
New	Kathleen	Lone Pine Chamber of Commerce	Winchester	Dennis	Cottonwood Pack Station
Noland	Tom	Spainhower Anchor Ranch	Yound	Ms. Marjianne	Paiute-Shoshone Indians of the Lone Pine Community

(b) Individuals							
Last Name	First Name	Last Name	First Name	Last Name	First Name	Last Name	First Name
Allen	Kathy	Dougherty	Penny	Junga	F.A.	Sanger	Rick
Allen	Murdock G.	Douglas	Graham	Kalish	Stephen	Schaefer	Michael
Allen	Thelma	Dunn	David	Kane	Greg M.	Schaefer	William P
Alosi	Jeanette	Dwinga	Antoinette	Karban	Rick	Schmitt	Jeff
Anderson	Steven A.	Eaton	Johnny, Annie, Wallace, Perry	Klotz	Richard	Schneider	Richard, Pauline
Arnebold	Henry	Eaton	Terry	Kozarsky	Daniel	Schneider	Richard C.
Arnot	Ph.	Eckart	Pat	Langdon	Loni	Schnurr	Jack
Bajacan	Jennifer	Edlund	David M.	Lee	M.	Schumann	Lorilee
Baker	R.	Edlund	M.D.	Leone	Jamie	Selcer	Don
Bates	Scott	Epanchin	Pete	Libkind	Marcus	Seliks	Lloyd
Bauer	Gerald	Ericsson	Lars	Liker	Daus,KA	Sevenso	Signe
Baxter	Jane	Evans	Morgan	Lindsay	Irvin	Sheehan	Sarah
Bellieu	Stephen	Evans	William	Lundquist	Tamerle	Shipley	Jack
Ben David	Yehuda	Ewart	Dick	Mather	Vivien	Sholle	Barbara
Benedetti	Joan,Robert	Felciano	Adelina	McCormick	Janis	Short	Mickey
Benham	Deborah	Felciano	Celeste	McDonald	Cindy		
Bergantz	George W.	Frickel	Robert	McGlaughlin	Bob	Silas	Dr.A Lea
Bernstein	Autumn	Gardiner	Chrissy	McNeil	David	Silke	Alia
Bert	Paula	Gardiner	Christopher	Meral	Barbara	Skaggs	Phyllis
Bogner	Jane	Gardiner	William	Miles	Jim	Smith	Tina
Bogner	J.	Gardiner	William	Milligan	Tina	Spence	Brian
Booner	J.	Georgi	Maggi	Morgan	Debbie	Splain	Mike
Bouse	R.J.	Gibson	David	Norton	Lynn	Stevens	Harold
Braun	Ernest	Glasser	Sam	Olin	Scott	Stevens	Mark
Braun	Jonathan	Hake	Clifford	Olin	Scott	Stevens	Mark
Burke	Jan	Hake	Clifford	Osborn	Gourley	Stevenson	Scott
Burroughs	Allan	Hammock	Lassie	Otter	John	Stubblefield	Michael
Bytwerk	Randall	Hanou	Guy F.	Palermo	Joe	Suk	Tom
Campbell	Heather	Hanson	Kathryn	Pasturel	Marc,Ragni	Sullivan	Scott
Carlton	Alan	Hare	Jon, Sandy	Pendley	Alan	Svensden	Claus
Carlton	Alan	Haskins	Paul	Pennington	Gena	Sweet	Edward
Carter	Lloyd G.	Hazelett	Josephine	Pennington	Paula	Taylor	Lyle
Chapman	Dolly	Helms	John F.	Peoples	Donna	Thaw	Steven
Clark	Melinda	Herbst	David	Perrelli	Richard	Thiele	Susan
Clohessy	Thomas	Herzog	Donald	Perry	not given	Thurne	James
Colby	Wendy	Hessen	Steve	Peterson	Tom & Donna	Toney	Dr. Michael F.
Cole	Jerry	Himmelhoch	Edward	Phillips	Richard	Urquhart	Andrew W.
Cole	Lee	Hinkle	Steve	Pietrasanta	Allan	Vaughn	Marianne
Cole	Prentiss	Hoffman	Christiana	Pietz	Lahna	Vejtasa	Stanley
Conn	Larry	Hofso	Kristin	Plummer	Greg	Ward	Jane, Glenn
Contreras	Anne,John	Holden	Ellen	Potter	Bob	Welch	Mark
Cowan	John F.	Homeyer	Nancy & William	Potter	David	West	Bill
Cowan	Michael	Hopkins	Thomas	Ralston	Jim	Wiesner	Richard
Cox	Bill	Hoyt	Shannon	Rankin	Daniel A,	Williams	Boz
Dawn	Kelly	Jackson	Louise	Redmon	Floyd	Wilson	L.C.
Dawson	Bob	Jali	Rick	Renfro	Barry	Witkowski	Mark
Demmers	Anthony	Jamart	Chad	Rock	Judy	Yam	Kathy
Dong	Fred	Johnson	Evan	Roeser	Lou, Marye	Young	Jocelyn
Dougherty	Amanda	Judd	Richard	Rogers	Jeanette	Zagotta	William
Dougherty	Bill	Julian	Laura	Rosmarin	Peter	Zentner	Gregory

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