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Environmental Assessment for Crowley Lake Watershed Grazing Allotment Analysis Inyo National Forest



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Chapter 1: Purpose of and Need for Action

1.1 Background

The Crowley Lake Basin is located in the Long Valley Caldera in southern Mono County, California. The Basin stretches from the town of Mammoth Lakes east to the Glass Mountains and from Sherwin Summit north to Deadman Summit along Highway 395. Elevation in the area ranges from approximately 6,500 to 10,200 feet above sea level.

There has been grazing use in the entire project area since the late 1800s. Most of the rangelands in this proposal have been grazed under permit with the Forest Service since the creation of the Inyo National Forest in 1907. The McGee Allotment was created in 1979. There are records of previous transient use of the range by bands of sheep and it was at one time part of the historic Convict Allotment.

Today, there are 15 grazing allotments in the Crowley Lake Basin ranging in size from 500 to 50,500 acres. Twelve of the allotments are subject to this environmental analysis. Grazing in the allotments is authorized by Term Grazing Permits that specify the terms and conditions for grazing on the allotment, including the type and timing of livestock as well as any management actions necessary to meet desired rangeland conditions.

Conditions in the allotments have changed in the years since the Allotment Management Plans were developed. Recent assessments of the allotments have identified certain soil, water, and other resource conditions that are not meeting or moving toward desired condition objectives. As described in the “Purpose and Need” section below, these gaps between existing resource conditions and desired conditions indicate there is a need to change management direction for the allotments.

1.2 Description of the Allotments

The twelve grazing allotments analyzed in this Environmental Assessment include: Alpers Canyon, Antelope, Casa Diablo, Clark Canyon, Clover Patch, Hot Creek, Long Valley, McGee Creek, Rock Creek, Tobacco Flat, Turner, and Watterson Allotments. These twelve grazing allotments are collectively referred to as the Crowley Lake Watershed Grazing Allotments. The allotments are located east of Mammoth Lakes, California within the Crowley Lake Basin (Mono County, CA). The legal location is as follows: T.2S., R.28E.; T.2S., R.29E.; T.2S., R.30E.; T.3S., R.28E.; T.3S., R.30E.; T.3S., R.31E.; T.4S., R.28E., T.4S., R.30E.; T.4S., R.31E., T.5S., R.30E. MDB&M. A location map of the twelve allotments is displayed below, and more detailed maps by allotment can be found in Appendix A. A brief description of the history and current status of the allotments follows, and can be found in the Rangeland Management Report (Robson 2008).

Figure 1: Crowley Lake Basin Grazing Allotments

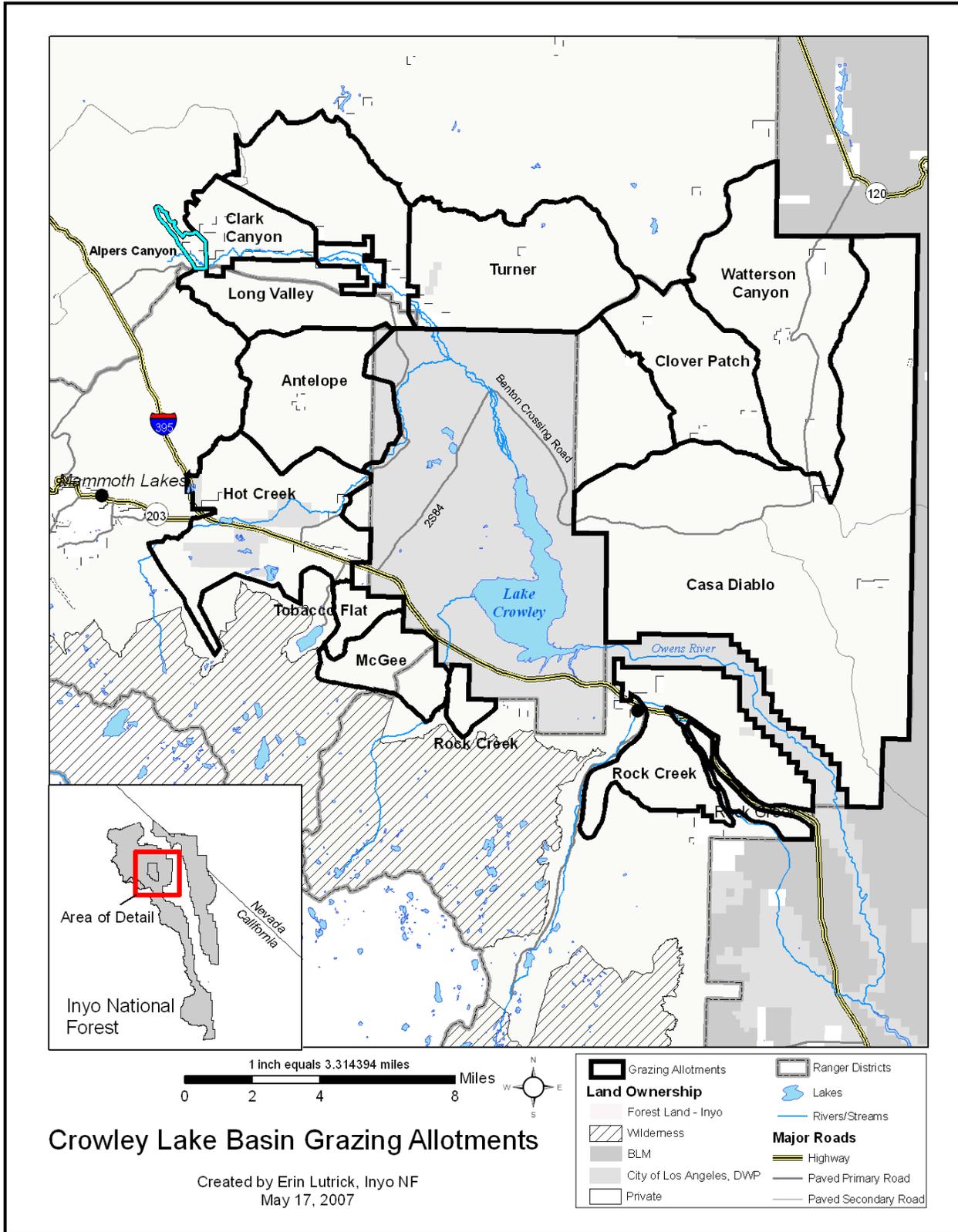


Table 1: Description of the Crowley Lake Watershed Grazing Allotments – Existing Condition

Allotment	Acreage ¹	Type	Permitted Use	Grazing System ²
Alpers Canyon	700	Cattle	10	2 Unit Deferred Rotation with Private Pastures
Antelope	10,300	Cattle	250	3 Unit Deferred Rotation
Casa Diablo	50,500	Sheep	3,500	6 Unit Deferred Rotation
Clark Canyon	4,200	Cattle and Horse	12 cattle/20 horse	2 unit Deferred Rotation with Private Pastures
Clover Patch	9,400	Cattle	120	3 Unit Deferred Rotation
Hot Creek	13,300	Cattle	399	8 Unit Deferred Rotation
Long Valley	16,200	Cattle	180	5 Unit Deferred Rotation
McGee	4,200	Sheep	1,600	Once over Continuous Rotation
Rock Creek	13,400	Sheep	1,250	5 Unit Deferred Rotation
Tobacco Flat	1,600	Cattle	150	Continuous Season Long
Turner	14,000	Cattle	350	3 Unit Deferred Rotation
Watterson	16,400	All classes	225 cattle	4 Unit Deferred Rotation

¹ Acreage is rounded to nearest one hundredth.

² A deferred rotation grazing system provides deferred grazing in two or more units or pastures on a systematic basis.

1.2.1 Alpers Canyon Allotment

The Alpers Canyon Cattle and Horse Allotment is approximately 500 acres of National Forest System lands and 200 acres of private lands (440 capable acres) located adjacent to the headwaters of the Owens River. Alpers Creek drains to the east into the Owens River. Elevation ranges from 7,000 to 7,400 feet, including the river bottoms and adjacent hillside. Vegetation primarily consists of bitterbrush and bunchgrass in the uplands and riparian areas of rushes and sedges.

At one time, Deadman, Glass Creek, and Alpers Canyon were all one allotment. In 1967 Alpers Canyon became a separate entity. The 1978 Range Management Plan for the Alpers Canyon Allotment indicates four pastures that support 48 AUMs (Animal Unit Months) on National Forest System lands.

1.2.2 Antelope Allotment

The Antelope Cattle and Horse Allotment is approximately 10,300 acres of National Forest System lands, including approximately 900 acres of BLM lands that are managed together as one grazing allotment. Little Hot Creek, the main drainage within the allotment, flows east into Hot Creek, which flows into the Owens River above Crowley Lake. Elevations range from 6,900 feet at Little Hot Creek to 8,600 feet at Antelope Peak. Approximately two-thirds of the allotment is relatively level and allows easy travel for both livestock and vehicles. The remaining one-third is mostly unsuitable due to topography and lack of water. The west half of the allotment is dominated by a conifer type of pinyon-juniper and Jeffrey pine and therefore offers sparse forage. The east portion is primarily sagebrush/bunchgrass with stringer meadows.

The allotment has been stocked with cattle since 1919 with little change in stocking rates since 1930. There are no accurate records of boundary changes for this allotment. There appear, however, to have been some boundary changes around 1930, and again between 1960 and 1970. The allotment has always been permitted for cattle and horses.

1.2.3 Casa Diablo Allotment

The Casa Diablo Sheep and Goat Allotment is approximately 55,500 acres located east of Crowley Lake at elevations ranging from 6,000 to 8,000 feet. It is bordered on the east and west by Bureau of Land Management lands, on the north by Forest Service cattle allotments, and on the south by the Owens River.

The topography varies from level to rolling hills with some plateaus covered with pinyon or Jeffrey pine. The majority of the allotment is suitable range. Soils are predominately coarse granitic sand, relatively deep, poorly developed and contain little organic matter. The soils are rapidly drained and erode only under heavy rainfall. Average annual precipitation is approximately nine inches and occurs mainly as snow.

The allotment has been grazed by sheep since 1923. The numbers have varied from a low of 400 head in 1923 to 4,175 head in 1933. In 1989, the Chidago Allotment was added to the existing Casa Diablo Allotment. The entire area has always been designated a sheep and goat allotment.

1.2.4 Clark Canyon Allotment

The Clark Canyon Cattle and Horse Allotment is approximately 4,200 acres, of which 3,600 acres are National Forest System lands (*on* portion) and 600 are private lands (*off* portion). Elevations range from 7,000 feet along the Owens River to 9,100 feet on Bald Mountain. The allotment has generally a south aspect and primarily consists of vegetation such as bitterbrush and bunchgrass.

At one time, Long Valley, Clark Canyon, and Alpers Canyon Allotments were all one allotment. In 1982 Clark Canyon became a separate entity. In 1998, when the current permittee bought the base property from the previous permittee, the former requested that a portion of the grazing permit be allocated for horses.

1.2.5 Clover Patch Allotment

The Clover Patch Cattle and Horse Allotment is approximately 9,400 acres and includes topography of moderately sloping mountainsides and hillsides surrounding smaller valley drainages and meadows. Slope angles range from less than five percent on the valley floors and rolling saddles to over 60 percent on the sideslopes, but generally average between 15 and 45 percent. The northwestern portion of the allotment contains steep rocky mountainsides of a fault escarpment. The predominant geology is of volcanic origin, primarily rhyolitic tuffs with a few basaltic rock outcrops, and a mantle of pumice. There are also areas of granitic rock outcrops.

1.2.6 Hot Creek Allotment

The Hot Creek Cattle and Horse Allotment is approximately 13,300 acres, of which 11,000 are National Forest System lands with the majority of the remaining acreage belonging to the city of Los Angeles Department of Water and Power (LADWP). Elevations range from 7,060 feet to over 9,000 feet. Approximately 35 percent of the allotment is timbered (Jeffrey pine) with the remaining range being primarily browse, consisting of bitterbrush and sagebrush/bunch grass communities. The

Laurel Meadow Unit of this allotment has an extensive sedge and rush community along with numerous willows. Approximately 8,700 acres of this allotment are considered capable of livestock grazing.

It is unclear whether the allotment boundary has changed over time. In 1948 most of the private lands were fenced separately. While always designated a cattle and horse allotment, the stocking rate slowly dropped from 8,200 Animal Months in 1924 to 795 Animal Months in 1950. In 1965, the allotment was fenced into separate pastures and a rotation grazing system was introduced.

1.2.7 Long Valley Allotment

The Long Valley Cattle and Horse Allotment comprises approximately 16,200 acres. Approximately 9,600 acres are considered capable for grazing. The elevation ranges from 9,100 feet to a low of 7,000 feet along the Owens River. The allotment is on the edge of the timber belt so precipitation is good for forage production. Soils are fairly deep and vary in origin from pumice on the west side of the river to more fertile basalt on the east side. The vegetation types are primarily sagebrush/bitterbrush with understories of scattered perennial grasses.

At one time, the Long Valley Allotment included Bald Mountain, Chidago, Casa Diablo, Ford, Symons, and Round Mountain rangelands. This large area was grazed by all classes of livestock from about 1860 until 1956. At that time it was designated a cattle and horse allotment, the private lands were fenced separately, and the allotment boundary approximated what it is today. The Clark Canyon Allotment was split out in 1982 as the result of a waiver and re-issuance.

1.2.8 McGee Allotment

The McGee Sheep and Goat Allotment consists of approximately 4,200 acres with 2,500 acres capable of livestock grazing. Elevations range from 8,000 feet to 10,870 feet with the primary vegetation type of bitterbrush and associated species. Cheatgrass is prolific, especially on south facing slopes.

Before 1979, the majority of land within this allotment was designated “unsuitable rangeland.” In 1979, it was made into a sheep and goat allotment after the preparation of an Environmental Assessment.

1.2.9 Rock Creek Allotment

The Rock Creek Sheep and Goat Allotment consists of 13,400 acres, of which 11,000 acres are National Forest System lands and 8,600 acres are considered capable of livestock grazing. The topography varies from flat to gently sloping to rolling hills, with elevations ranging from 6,000 to 9,000 feet. The allotment is comprised primarily of bitterbrush/sagebrush vegetation with riparian vegetation along lower Rock Creek, Birch Creek, and in the Witcher Meadow area.

Owens Creek and Hilton units were added to this designated sheep and goat allotment in 1973. Grazing west of Highway 395 was put into non-use for resource protection after the 2002 Birch Fire. Consultation regarding permitted sheep grazing on National Forest System lands began in 2006 after the U.S. Fish and Wildlife Service (USFWS) drafted the Sierra Nevada Bighorn Sheep Recovery Plan in 2005.

1.2.10 Tobacco Flat Allotment

The Tobacco Flat Cattle and Horse Allotment consists of approximately 1,600 acres of National Forest System lands, of which 1,200 acres are estimated as capable for livestock grazing.

Until 1979, this allotment was designated a cattle and horse allotment. In 1979, a portion of this allotment was overlapped by the creation of the McGee Creek Sheep and Goat Allotment.

1.2.11 Turner Allotment

The Turner Cattle and Horse Allotment is located four and a half miles north of Crowley Lake, on the northeast side of the Owens River. The 14,000 acre allotment is comprised primarily of bitterbrush/sagebrush type vegetation with riparian vegetation along O'Harrel Creek, Sanchez Creek and several unnamed springs. The topography is generally sloping to steep, with the northern periphery of the allotment extending into the lower elevations of Glass Mountain. The allotment ranges in elevation from 6,860 to 11,100 feet near Glass Mountain, with the suitable range varying from 6,860 - 8,400 feet in elevation. Approximately 520 acres of LADWP lands are included as part of the on/off portion of the permit.

The allotment boundary does not appear to have changed. The Forest designated it as a cattle and horse allotment in 1924. Most of the private lands were fenced separately between 1947 and 1959.

1.2.12 Watterson Allotment

The Watterson Meadow Cattle and Horse Allotment consists of approximately 16,400 acres located northeast of Crowley Lake at elevations ranging from 7,000 to 9,000 feet. The topography varies from level to rolling hills and includes steep, rocky canyons as well as high mountain meadows. Vegetation at the lower elevations is mostly bitterbrush, sagebrush, and grasses. Pinyon pine is found on all of the steeper slopes and canyons. Aspen, meadow grasses, and bitterbrush remain predominant at the higher elevations.

The allotment boundary does not appear to have changed over time. From 1923 to 1943 the allotment was used by 600 to 2,000 head of sheep. Since 1943, cattle have used the allotment. The Sagehen and Kelty Meadows Units were closed to cattle grazing in 1993. At that time, the permittee reduced his numbers from 225 cow/calf (c/c) and shortened the grazing season. The seasons and numbers varied between 110 c/c to 180 c/c usually from early June to mid-September.

1.3 Purpose and Need

The purpose of the Crowley Lake Watershed Grazing Allotment Analysis is to determine if livestock grazing will continue to be authorized on the 12 allotments in the Crowley Lake Basin. Consistent with that purpose:

- 1. There is a need for continued livestock grazing under updated allotment management plans for the grazing allotments in the Crowley Lake Basin.***

Livestock grazing has been identified as an appropriate use of National Forest System lands, which have been found to be capable and suitable for grazing. In the 1988 Inyo National Forest Land and Resource Management Plan (LRMP), the allotments in the Crowley Lake Basin were identified as being capable and suitable for livestock grazing based on an assessment of forage production,

accessibility, slope, and other factors (Management Areas 5, 7, 8, 9, 11, 12, and 14 [pp. 67; 84-85; 170-216]). Field work in 2005 and 2006 verified that 11 of the 12 allotments are currently capable and suitable for grazing according to the criteria specified in the 1988 LRMP. Portions of some of the allotments are not capable of supporting livestock grazing due to steep slopes, lack of water sources, or other constraints.

The current grazing allotment permittees expressed interest in continuing use of all of these allotments or alternate allotments. Continuation of livestock grazing will require review of existing management strategies and, if necessary, updating them to implement current Forest Plan direction and meet Section 504 of Public Law 104-19 (Rescission Bill, signed July 27, 1995).

The Inyo National Forest began examining the conditions on the 12 allotments in the Crowley Lake Watershed in 2005 and 2006. Allotments included in this proposal were found to need updated allotment management plans either because the existing plans have never been analyzed under NEPA or, as described in Need Statements 2 and 3, because resource values on the allotments (e.g. vegetation, soil, and water quality) are not meeting or moving towards current desired conditions.

2. There is a need for improved range vegetation condition and trend where existing conditions are not meeting or moving toward desired vegetation condition.

The 1988 Inyo National Forest Land and Resource Management Plan (LRMP), the 1995 LRMP Amendment No.6: Forestwide Range Utilization Standards, and the 2004 Sierra Nevada Forest Plan Amendment (SNFPA) provide direction and the desired conditions for range vegetation.

Evaluations in 2005 and 2006 identified portions of several allotments in which desired vegetative conditions were not being met. In the Alpers Canyon, Casa Diablo, Long Valley, McGee, and Watterson Meadow Allotments, grazing has resulted in a low density of desirable species (bunchgrasses and herbaceous vegetation) that does not meet standards for desired vegetative composition of this community (LRMP, p.76).

In several of the allotments, desert sage and bitterbrush communities do not meet standards for vegetative condition, being moderately to severely hedged or browsed without sufficient annual recovery (LRMP, pp.76, 105). A need also exists to ensure sufficient forage for mule deer after livestock grazing season with total annual browse utilization that maintains bitterbrush condition (LRMP, pp.85, 98-99, 117).

Browsing by livestock has affected the health of several aspen groves in the Turner Allotment. These groves need recruitment of additional age class in aspen stands at springs. Reduced recruitment has resulted in even-aged stands without adequate age-class distribution. Without changes in current management, the groves may become subject to disease and stress.

3. There is a need for improvement in watershed and soil conditions throughout the project area.

A watershed that is fully functional has the ability to capture, store, and slowly release water over time. When a watershed is non-functional or degraded the ability to store and release water for plant use over the grazing season is reduced or lost (LRMP Amendment 6; Appendix B, p.B-1). Watershed condition evaluations conducted in 2005 and 2006 indicate that several streams, springs, meadows, and other riparian areas in the allotments are not meeting desired conditions or proper functioning condition. These evaluations identified watershed condition problems such as compacted soils; the

presence of rills, gullies, and headcuts; unstable streambanks; and bare ground caused by disturbance. For example:

- Troughs placed near Laurel Pond in the Hot Creek Allotment have caused cattle to congregate near the pond, resulting in channelization of the springs and disturbance to waterfowl habitat. Similarly, troughs in the Clover Patch Allotment are located within sensitive spring-associated riparian and meadow vegetation, resulting in trampling and degradation of the geomorphic and biologic characteristics of the aquatic feature (SNFPA, p.33)
- Conditions at several springs along the Glass Mountain Front in the Turner Allotment appear to be deteriorating due to trampling and trailing by cattle. The hydrologic condition of one spring (Spring 1440) is in non-functional condition, not meeting the goals and strategy for riparian conservation objectives (SNFPA, p.33).
- All 12 allotments have areas that show evidence of departures from desired conditions, including: disturbance of soil surface from trailing (resulting in bare ground), soil compaction that reduces plant rooting depths, and head-cutting of stream channels (resulting in incised streams).

There is a need to modify grazing management to improve watershed condition and function in the allotments where current grazing practices have contributed to problems with these resources. (LRMP, pp.85; 89-90; 95; LRMP Amendment 6; SNFPA Standards and Guidelines No.119, p.65; SNFPA Record of Decision, p.43).

4. There is a need to ensure that ingress into designated wilderness does not occur as a result of livestock grazing.

The McGee Allotment was not in existence at the time of the 1964 Wilderness Act (P.L. 88-577). Until 1979, the majority of land within the McGee Allotment was designated “unsuitable rangeland.” In 1979, it was made into a sheep and goat allotment by overlapping boundaries with the existing Tobacco Flat Cattle & Horse Allotment. The only water within the allotment is Laguna Chiquita, which is approximately one-half mile inside the wilderness boundary. Due to topography and the need to access the only available water source, grazing of this allotment results in unauthorized ingress into designated wilderness. As the allotment does not pre-date the designation of wilderness, livestock grazing cannot be authorized.

1.4 Forest Plan Direction

The desired future conditions for the Crowley Lake Watershed Grazing Allotments are described in the Inyo National Forest LRMP (USDA Forest Service, 1988), as amended by LRMP Amendment 6, Forestwide Range Utilization Standards (USDA Forest Service, 1995), and the Sierra Nevada Forest Plan Amendment (USDA Forest Service, 2004).

1.4.1 Inyo National Forest Land and Resource Management Plan (1988)

The Inyo National Forest LRMP established Forest Management Direction (LRMP), including forest goals, forest objectives, standards and guidelines, management prescriptions, and management

area direction. The standards and guidelines set the minimal resource conditions for vegetative diversity and range resources. The standard and guidelines that pertain to the proposed action and analysis area are described in detail in the Range Management Report (Robson, 2008). When several standards and guidelines address the same resource or concern, generally the more stringent standards are applied.

1.4.2 Inyo National Forest LRMP Amendment 6 – Forestwide Range Utilization Standards (1995)

This document sets utilization standards for the grazing of domestic livestock that would accelerate the restoration and improvement of degraded range sites, and maintain those sites currently in good condition. A vegetation condition classification determined by toe-point transects compares the total number of desired species within a given area to the total number of herbaceous plants counted. This vegetation composition is applied to the utilization matrices—along with the watershed evaluation criteria—to determine proper use levels for a key area (LRMP Amendment 6, 1995). These utilization levels are set as a percentage of weight of a forage species that is allowed to be utilized by livestock. Standards are determined based on vegetation types within the project area including: Wet Meadow, Moist Meadow, Dry Meadow, Desert Shrub, Sagebrush, Bitterbrush, and Alpine Dwarf Shrub. These are presented in tables that have a different allowable use standard for early season use (E=pre-boot stage: before seed head is formed) and late season use (L=after seed maturity).

1.4.3 Sierra Nevada Forest Plan Amendment Range Standards and Guidelines (that relate to livestock grazing within project area)

The Sierra Nevada Forest Plan Amendment (2004) amends the Land and Resource Management Plans of the national forests in the Sierra Nevada to address various changed circumstances and information that was not sufficiently addressed in the original plans. One of these circumstances was to establish grazing utilization standards to better reflect the wide array of site-specific conditions and the management opportunities they may provide. Standards including use of noxious weed-free hay, streambank disturbances (specifics for TES and essential habitats), proper functioning condition (PFC) assessments, protection of bogs and fens from livestock trampling, placement of livestock handling facilities, utilization/bare ground, and trend for meadow areas and riparian browse use. The specific standards for grazing use are addressed in the Rangeland Management Report (Robson, 2008) and can be found in the Sierra Nevada Forest Plan Amendment Record of Decision (USDA Forest Service, 2004).

1.5 Public Involvement

The proposal has been listed in the Inyo National Forest Schedule of Proposed Actions (SOPA) since January 2007. The proposed action was sent to 62 interested parties in a letter dated June 25, 2007. Among these interested parties were 14 representatives of tribal organizations. A legal notice announcing a 30-day comment period was published in the Forest's paper of record, the Inyo Register, on June 27, 2007. Two letters were received in response to this request for comments.

1.5.1 Issues

An issue is a point of debate, dispute, or disagreement regarding anticipated effects of the proposed action. Issues may be “significant” or “non-significant.” Significant issues are defined as those directly or indirectly caused by implementing the proposed action. Significant issues are used to develop reasonable alternatives to the proposed action that respond to the argument or controversy presented in the issue and substantially accomplish the purpose and need. Non-significant issues are identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) not clearly relevant to the decision to be made; or 4) conjectural and not supported by good scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, “identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3).”

1.5.2 Non-significant Issues Requiring Further Clarification

To develop issues for the proposed project, the interdisciplinary team analyzed comments from the public and separated the issues into two groups: significant and non-significant issues. After analysis of the comments, it was determined that there were no significant issues, however the proposed action required some further clarification to address the comments. The following is a summary of the comments (shown in italics) that were received during scoping and the Forest’s responses. Several comments and concerns have already been addressed through laws, regulations, forest plans and amendments, or other higher level decisions.

Would like to see some background on grazing and multiple use mandate of USFS.

Response:

Laws such as the Multiple-Use Sustained-Yield Act (1960), Federal Land Policy and Management Act (1976), Public Rangelands Improvement Act (1978), and Rangeland Reform (1994) are determined by law at a higher level of decision making and are not subject to analysis in this EA. Additional information on these laws is accessible on the internet.

The Sierra Framework (Sierra Forest Plan Amendment) provisions are for high elevation species and do not apply to their allotments. Comment mentions the willow flycatcher, great grey owl, and Yosemite toad.

Response:

The Sierra Nevada Forest Plan Amendment (USDA Forest Service, 2004) standards and guidelines applicable to livestock grazing within the analysis area are summarized above under Section 1.4 (Forest Plan Direction) and are addressed in the Rangeland Management Report (Robson, 2008). The Biological Evaluation for Terrestrial Wildlife Species (Murphy, 2008) and Aquatic Species (Sims, 2008c) determined that these species are not known to occur, nor is there suitable habitat present for these species within the analysis area. Therefore, standards and guidelines outlined in the Sierra Nevada Forest Plan Amendment pertaining to the willow flycatcher, great grey owl, and Yosemite toad would not be applicable at this time.

Inyo Forest Plan Amendment 6 terminology, confusion of what the various levels refer to when addressing utilization, and to what does the early and late grazing refer.

Response:

This is explained in the Inyo National Forest LRMP Amendment 6 summary above under Section 1.4.2 (Forest Plan Direction), in the Rangeland Management Report (Robson, 2008), and in the Inyo National Forest LRMP Amendment 6 protocol in the Project Record.

1.5.2.1 Comments Specific to Hot Creek Allotment

Unaware of heritage resources within his/her particular allotment.

Response:

Approximately 50 percent of the grazing areas within the allotments have been surveyed for heritage resources. Survey results are summarized in the Heritage Effects Analysis Crowley Lake Basin Range NEPA (West, 2008) in the Project Record. The locations of these sites are kept confidential to protect the resource.

Laurel Pond area of the Convict Unit and the additional livestock watering sources that are planned.

Response:

See Modified Proposed Action under Chapter 2 (Alternatives), Section 2.4.2 (Alternative 2-Modified Proposed Action) below, which addresses these improvements.

Laurel Springs within the Meadow Unit and the proposed fencing of the sources.

Response:

See Modified Proposed Action under Chapter 2 (Alternatives), Section 2.4.2 (Alternative 2-Modified Proposed Action) below, which addresses these improvements.

Hot Creek streambank disturbance standard on a creek that is entirely fenced off from cattle and should not need a standard.

Response:

This standard of 10 percent streambank alteration will stand as is in the Modified Proposed Action for instances where cattle may be trailed through the unit or the fence system fails.

Disagreement that the bitterbrush sites in the Hot Creek Unit require resting until recovered.

Response:

Field data sheets in the project file and the summary in the Rangeland Management Report (Robson, 2008) indicate severely hedged bitterbrush occurs in four units (summarized under Section 3.3.2, Range Conditions) and that a rest-rotation system for bitterbrush recovery would be beneficial. See Modified Proposed Action for clarity (Section 2.4.2).

Cheatgrass is present within the Hot Creek Allotment and not desirable, but it is not a problem.

Response:

Cheatgrass is widespread within the Hot Creek Allotment, however no specific actions for cheatgrass are proposed. No mitigations were determined to be necessary to prevent the further spread of known populations because they are already widespread across the allotment.

Never heard of any concerns with watershed conditions or soil disturbance on the Hot Creek Allotment.

Response:

Field data sheets in the project record and analysis in the Air, Soil, and Watershed Specialist Report (Ellsworth, 2008) indicate several areas in unsatisfactory condition. See Modified Proposed Action in Chapter 2 (Alternatives), Section 2.4.2 (Alternative 2-Modified Proposed Action) and the existing watershed condition under Hydrologic Resources in Chapter 3 (Environmental Consequences), Section 3.3.7.1 for specific areas of concern.

Disagreement that sage grouse and bitterbrush condition require late turnout.

Response:

Justification for late turnout for sage grouse can be found in the Biological Evaluation for terrestrial wildlife species (Murphy, 2008) in the project file, and is summarized under Chapter 3 (Environmental Consequences), Section 3.3.8. The Modified Proposed Action in Chapter 2 (Alternatives), Section 2.4.2 (Alternative 2-Modified Proposed Action) describes a 10 percent reduction in late season use for bitterbrush vegetation types but does not require late turnout.

Chapter 2: Alternatives

2.1 Introduction

This section describes the proposed action and alternatives to the proposed action, including a no grazing alternative. Management practices or resource protection measures designed to minimize or eliminate environmental effects have been incorporated into the Modified Proposed Action. Maps for each allotment can be found in Appendix A, which display the boundaries of the allotments, allotment units, and the key areas.

2.2 Alternative Development Process

This chapter describes in detail two alternative ways to manage livestock grazing practices on lands and resources, Alternative 1 (No Grazing) and Alternative 2 (Modified Proposed Action). The original Proposed Action was developed following direction from the District Ranger in consultation with the Forest range and resource staff. The Forest's LRMP Amendment 6 provides a framework for developing utilization standards for domestic livestock that considers watershed condition and vegetative condition by specific habitat types.

The Inyo National Forest Land and Resource Management Plan (USDA Forest Service, 1988), the Forest Plan Amendment 6: Forestwide Range Utilization Standards (USDA Forest Service, 1995), and the Sierra Nevada Forest Plan Amendment (SNFPA) (USDA Forest Service, 2004) provide direction and the desired conditions for vegetation, riparian, aquatic, hydrology, water quality, soil, plant, wildlife, and heritage resources. Resource condition assessments in 2005 and 2006, along with grazing history and monitoring data, provided the means to assess the difference between existing conditions and desired conditions. With this comparison, management actions were identified and a proposed action was developed.

The implementation of LRMP Amendment 6 allotment by allotment formed the basis of the proposed action that was scoped with the public in June 2007 (legal notice published in the Inyo Register on June 28, 2007). With closer analysis of the utilization levels in that proposed action, a number of errors in applying Amendment 6 were identified, leading to some corrections in the utilization levels to meet LRMP Amendment 6 direction. Also, inconsistencies were picked up between the tabular display of the utilization level and the narrative portion of the actions. In correcting all of these errors and inconsistencies, it was determined that the proposed action that was scoped would become an "Alternative Considered but Not Analyzed in Detail" and that the Modified Proposed Action would be analyzed in detail in substitution.

Another change that was made was to not propose grazing for all classes of livestock in all allotments. It was considered an unnecessary action that was not ripe for analysis in light of the fact that few allotments would ever need to be changed from one class to another. Where it was important, or ripe for analysis, the action stayed. In most cases, however, only one class of livestock is being proposed by this EA.

Because no significant issues were identified during scoping, two alternatives were analyzed. They include: Alternative 1 (No Grazing) and Alternative 2 (Modified Proposed Action).

2.3 Alternatives Considered but Eliminated from Detailed Analysis

Federal agencies are required by NEPA 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). The following alternatives or components of alternatives were considered but eliminated from detailed consideration for reasons summarized below.

2.3.1 Proposed Action

As stated above, a number of errors in calculating utilization were made that deviated from the methodology in the Inyo NF LRMP Amendment 6. These errors were considered minor, yet would have led to an alternative that did not meet its intended objective: to implement the LRMP. For this reason it has been eliminated from detailed analysis.

2.4 Alternatives Considered in Detail

2.4.1 Alternative 1 – No Grazing

Purpose and Design

Alternative 1 represents the “no grazing” alternative. Under this alternative, all term grazing permits would be cancelled. No permits would be issued for the 12 affected allotments until and unless a subsequent NEPA decision to re-authorize grazing on any or all of the allotments is made. The purpose of Alternative 1 is to describe the effects of cancellation of grazing permits.

In all allotments, permittees would be given two years written advance notice of the cancellation of their permits as provided under 36 CFR 222.4(a)(1).

All range developments currently in existence on the allotments (such as fences and water developments) would be left in place but not maintained. If removal or maintenance of any developments for other resource needs is desired, a subsequent decision would need to be made regarding those developments. Permittees would be reimbursed for their depreciated share of cooperative range improvements where they participated in the development (FSH 1109.13 Chapter 70).

Allotment exterior boundary fences would be assigned to any adjacent permittees for continued maintenance. Private land boundary fences would remain the maintenance responsibility of the private landowner.

No forest plan amendments would be required to implement this alternative. Selection of this alternative would be consistent with the Forest Plan, as amended (36 CFR 219.10(c)).

2.4.2 Alternative 2 – Modified Proposed Action

The Modified Proposed Action authorizes grazing on the following allotments with the listed actions, restrictions, or mitigations. Many of the proposed actions under this alternative involve reducing utilization levels in key areas of the allotment in order to allow for the recovery of degraded vegetative or watershed conditions. Proposed reductions in use follow the standards specified in the Inyo NF LRMP Amendment 6. As discussed above, LRMP Amendment 6 identifies the standards for making changes to utilization based on vegetation and watershed condition assessments over time.

These standards allow use levels to be reduced in response to resource concerns such as compacted soils and unstable streambanks. Once conditions have recovered (LRMP Amendment 6, Appendices A and B), use levels can be readjusted. Most of the tables have a different allowable use standard for early season use (pre-boot stage: before seed head is formed) and late season use (after seed maturity).

All Allotments:

Table 2: Actions Common to All Allotments under Alternative 2.

Feature Type	Description
Forage	Reduction in allowable utilization of bitterbrush by 10% when used late for winter mule deer use.
Heritage Resources	Mitigation of heritage resources according to the 1996 MOU. The Heritage Resource Specialist would be consulted prior to the implementation of ground disturbing activities, such as range and watershed improvements to ensure standard resource protection measures for heritage resources are incorporated.
Meadows	Allowable use on meadow systems not identified as key areas will be established at 30% for early season and 40% for late season. Through adaptive management, allowable use may change when the meadow conditions, based on the Inyo NF LRMP Amendment 6 guidelines, are determined.

Alpers Canyon Allotment:

Allotment specific actions, restrictions, or mitigations:

1. Authorize grazing for cattle and horses.
2. Delay on-date until June 30th until recovery of upland watershed conditions is documented.
3. If late turnout and reduced use levels fail under current on-off permit, the allotment should be fenced to exclude private properties and a new permit issued as a term grazing permit. Fencing the forest boundary would be the responsibility of the adjacent land owner (permittee in this case). Before the boundary could be fenced it would have to be surveyed.

Table 3: Initial Utilization Levels Specific to Alpers Canyon Allotment.

Number	Key Area	Vegetation Type - Key Species	Allowable Use	
	Name and Location		Early	Late
1	Ranch Unit – riparian T2S R28E Sec 19	Moist Meadow -Sedge (Carex spp.)	35%	25%
2a	Ranch Unit – uplands T2S R28E Sec 19	Bitterbrush (Purshia tridentata)	30%	10%
		Sagebrush / Bunchgrass - Indian ricegrass (Achnatherum hymenoides), Needlegrass (Achnatherum spp., Hesperostipa comata), squirreltail (Elymus elymoides)	10%	40%
2b	Ranch Unit -Below drift fence T2S R28E Sec 19	Wet Meadow Nebraska Sedge (Carex nebrascensis)	40%	30%

Antelope Allotment:

Allotment specific actions, restrictions, or mitigations:

1. Authorize grazing for cattle.

2. Allow use of the Little Hot Creek Unit only after June 1st to reduce disturbance to sage grouse during the breeding season. (The date is subject to change with new information on sage grouse or sage grouse grazing interactions.)
3. Rest the Little Hot Creek Unit until bitterbrush hedging averages less than 15 percent severely hedged across all three key areas.
4. Upgrade the Antelope Springs water development (T3S, R28E, Section 10 & 15) so that the troughs are functional (work to be done in cooperation with the permittee).
5. After upgrade of Antelope Springs, use the South Unit last in the rotation when possible to reduce the spread of cheatgrass.

Table 4: Initial Utilization Levels Specific to Antelope Allotment.

Key Area		Key Species	Allowable Use	
Number	Name and Location		Early	Late
South Antelope Unit				
1	Little Antelope Springs T3S R28E Sec. 15	Moist Meadow - Sedge (Carex spp Juncus spp.	35%	25%
North Antelope Unit				
2	T3S R28E Sec. 01 and 12	Bitterbrush (Purshia tridentata)	50%	30%
		Sagebrush/Bunchgrass Indian ricegrass (Achnatherum hymenoides), needlegrass (Achnatherum spp. and Hesperostipa comata)	40%	60%
Little Hot Creek Unit				
Rest this unit (0% allowable use) until bitterbrush hedging averages <15% severely hedged across all three key areas. The standards below will apply once grazing resumes.				
3	T3S R28E Sec 24	Bitterbrush (Purshia tridentata)	50%	30%
		Sagebrush/Bunchgrass Indian ricegrass (Achnatherum hymenoides), needlegrass (Achnatherum spp.), sedge (Carex douglasii)	40%	60%
4a	Meadow and surrounding uplands T3S R28E Sec 13	Sagebrush/Bunchgrass Indian ricegrass (Achnatherum hymenoides), needlegrass (Achnatherum spp.), squirreltail (Elymus elymoides)	30%	50%
		Bitterbrush (Purshia tridentata)	40%	20%
4b	Uplands T3S R28E Sec 13	Bitterbrush (Purshia tridentata)	40%	20%
		Sagebrush/Bunchgrass Indian ricegrass (Achnatherum hymenoides), Needlegrass (Achnatherum spp., Hesperostipa comata), squirreltail (Elymus elymoides)	30%	50%

Casa Diablo Allotment:

Allotment specific actions, restrictions, or mitigations:

1. Authorize grazing for sheep.
2. Implement experimental cheatgrass and Russian thistle pulling and/or flaming project in several bedgrounds to test the feasibility of controlling cheatgrass and Russian thistle around the bedgrounds.
3. Construct a holding pen at the bedding grounds at Benton Crossing road windmill (T3S, R30E, Section 36) to restrict movement of sheep in order to protect resources. Holding pen would be about one acre and constructed of net wire, steel post, and wood corner braces. Several gates would be installed. Travel routes into and out of the holding pen will be evaluated with permittee during annual meetings.

4. Close the bedding ground in Section 1, T4S, R30E to protect resources. An alternate bedding site, if needed, would be identified (possibly in Section 12, T4S, R30E).
5. Allow use only after June 1st in Watterson Canyon Unit to reduce disturbance to sage grouse during breeding season. (Date subject to change with new information on sage grouse or sage grouse grazing interactions.)

Table 5: Initial Utilization Levels Specific to Casa Diablo Allotment.

Key Area		Key Species	Allowable Use	
Number	Name and Location		Early	Late
Chidago Flat Unit				
1	T3S R31E Sec 34	Bitterbrush (<i>Purshia tridentata</i>)	40%	20%
		Desert Shrub Spiny hopsage (<i>Grayia spinosa</i>)	30%	20%
		Sagebrush/Bunchgrass (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	30%	50%
Chidago Canyon Unit				
2	T3S R30E Sec. 11, 12	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush/Bunchgrass Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i>)	40%	60%
Owens River Unit				
3	T3S R30E Sec. 20	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush/Bunchgrass Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	40%	60%
Watterson Canyon Unit				
4	T3S R30E Sec. 27	Bitterbrush (<i>Purshia tridentata</i>)	30%	10%
		Sagebrush/Bunchgrass Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	10%	40%
Moran Springs Unit				
5	T3S R30E Sec. 25	Bitterbrush (<i>Purshia tridentata</i>)	30%	10%
		Sagebrush/Bunchgrass Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	10%	40%

Clark Canyon Allotment:

Allotment specific actions, restrictions, or mitigations:

1. Authorize grazing for cattle and horses.
2. Allow use of the Owens River Unit only after June 1st to reduce disturbance to sage grouse during the breeding season. (Date subject to change with new information on sage grouse or sage grouse grazing interactions.)
3. Continue to restrict use in the McLaughlin Burn until an IDT (interdisciplinary team) considers condition to be able to withstand grazing (sufficient cover and risk of increasing cheatgrass infestation low). When use resumes in the McLaughlin Burn, utilize the burn area last to reduce risk of spreading cheatgrass to other areas.
4. Continue manual control of bull thistle population until no individuals are found two years in a row, or it is determined that manual control is no longer effective. If this occurs, implement alternative control methods.
5. Limit streambank trampling to 10 percent standard on Owens River banks.

Table 6: Initial Utilization Levels Specific to Clark Canyon Allotment.

Key Area		Key Species	Allowable Use	
Number	Name and Location		Early	Late
Clark Canyon Unit				
1	T2S R28E Sec 17	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses - Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	40%	60%
Owens River Unit				
2	T2S R28E Sec 22	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	40%	60%

Clover Patch Allotment:

Allotment specific actions, restrictions, or mitigations:

1. Authorize grazing for cattle.
2. Allow use only after June 1st each season to limit disturbance to sage grouse during the breeding season. (Date subject to change with new information on sage grouse or sage grouse grazing interactions.)
3. Continue bull thistle removal project until no individuals are found two years in a row, or it is determined that manual control is no longer effective. If this occurs, evaluate optional control methods.
4. Treat headcuts within the Clover Patch Meadows in the Modesty Unit to stabilize them and provide protection from livestock until recovered. After treatment, use level in Key Area 3 will increase by one level in the Amendment 6 protocol.
5. Move the troughs in the Clover Patch meadows pipeline out of the spring associated riparian and meadow vegetation.

Table 7: Initial Utilization Levels Specific to Clover Patch Allotment.

Key Area		Key Species	Allowable Use	
Number	Name and Location		Early	Late
Clover Patch Unit				
1	T3S R30E Sec 11	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	40%	60%
Long Canyon Unit				
2	T3S R30E Sec 14	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	40%	60%
Modesty Unit				
3	Lower Clover Patch Meadow T3S R30E Sec 2	Moist Meadow - Sedge (<i>Carex</i> spp.)	25%	15%

Hot Creek Allotment:

Allotment specific actions, restrictions, or mitigations:

1. Authorize grazing for cattle.
2. A rest rotation system will be implemented to rest pastures with bitterbrush on a rotating schedule until the recovery of bitterbrush condition class is documented.

3. Treat the headcuts in Lower Laurel Meadows and fence the treatments to exclude livestock until recovered.
4. Realign the Laurel Pond enclosure fence to create a water gap along the north portion of the pond. Restrict use of the Laurel Pond enclosure to protect waterfowl habitat.
5. Evaluate springs in Section 9, T4S, R28E that feed into Laurel Pond through multiple channels to determine if protection from livestock is warranted. Fencing would be installed if protection is warranted.
6. Range improvements that involve ground disturbance around Laurel Pond, its stream channels, and the springs would be coordinated with a Heritage Resource Specialist prior to implementation.
7. Allow only 10 percent streambank alteration on Hot Creek for wild trout waters.
8. Allow use of the Convict Creek and Hot Creek Units only after June 1st each season to limit disturbance to sage grouse during the breeding season. (Date subject to change with new information on sage grouse or sage grouse grazing interactions.)

Table 8: Initial Utilization Levels Specific to Hot Creek Allotment.

Key Area		Key Species	Allowable Use	
Number	Name and Location		Early	Late
Note: Each starred unit to be rested on a rotation until bitterbrush condition improves.				
Hot Creek Unit*				
1	T3S R28E Sec. 26	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Elymus elymoides</i> , <i>Agropyron desertorum</i>)	40%	60%
Long Canyon Unit*				
2	T3S R28E Sec. 28	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	40%	60%
Whitmore Unit*				
3	T4S R28E Sec. 1	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	40%	60%
Meadow Unit*				
4	T4S R28E Sec. 4	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	40%	60%
Convict Unit				
5	Laurel Pond Enclosure T4S R28E Sec. 10	Wet Meadow Sedges (<i>Carex</i> spp. <i>Juncus</i> spp.)	50%	40%
			50%	40%
Burn Unit				
6	T4S R28E Sec. 8	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Elymus elymoides</i>)	40%	60%
Laurel Meadows Unit				
7	T4S R28E Sec. 17 and 20	Sedges (<i>Carex</i> spp.)	40%	30%

Long Valley Allotment:

Allotment specific actions, restrictions, or mitigations:

1. Authorize grazing for cattle.
2. Allow use of the Wheatgrass, Long Valley, and Special Use Pasture Units only after June 1st each season to limit disturbance to sage grouse during the breeding season. (Date subject to change with new information on sage grouse or sage grouse grazing interactions.)
3. McLaughlin Spring water trough will be moved downstream approximately 200 hundred yards and be located outside of the riparian vegetation to avoid conflicts with other resources.
4. The spring source for Ford Spring will be protected from livestock use for resource protection by buck and pole fencing of approximately half an acre.
5. Treat headcuts below Bald Mountain Spring and fence for protection from livestock until recovered.

Table 9: Initial Utilization Levels Specific to Long Valley Allotment.

Number	Key Area Name and Location	Key Species	Allowable Use	
			Early	Late
Long Valley Unit				
1	T2S R28E Sec. 36	Bitterbrush (<i>Purshia tridentata</i>)	30%	10%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	10%	40%
Wheatgrass Unit				
2	T2S R28E Sec. 27 and 34	Bitterbrush (<i>Purshia tridentata</i>)	40%	20%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	30%	50%
Dry Creek Unit				
3	T2S R28E Sec. 29 and 33	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	40%	60%
McLaughlin Unit				
4	McLaughlin Springs T2S R28E Sec. 1 and 12	Moist Meadow Sedges (<i>Carex</i> spp.)	45%	35%
		Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	40%	60%
5	Bald Mtn. Springs T2S R28E Sec. 10	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	40%	60%
5b	Meadow below Bald Mtn. Springs T2S R28E Sec. 10	Moist Meadow Sedges (<i>Carex</i> spp)	35%	25%
Inaja Unit				
6	T2S R28 E Sec. 26 and 27	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	40%	60%
McLaughlin Springs Meadow Enclosure				
8	T2S R28E Sec. 12	Moist Meadow – Nebraska Sedge (<i>Carex nebrascensis</i>)	0%	0%
Ford Spring				
9	T2S R28E Sec. 13	Wet Meadow Nebraska Sedge (<i>Carex nebrascensis</i>)	50%	40%

McGee Allotment:

Allotment specific actions, restrictions, or mitigations:

1. The majority of the allotment has been found to not be capable for grazing of any kind of livestock within the boundaries and without trespass into the John Muir Wilderness. The few capable areas have been found to be unsuitable because of damage to vegetation, soil, and watershed resources. In addition, use of this allotment for domestic sheep grazing poses a high risk of disease transmission to the endangered Sierra Nevada bighorn sheep. Based on these findings, the Inyo National Forest proposes to not authorize livestock grazing and close the McGee Allotment.

Rock Creek Allotment:

Allotment specific actions, restrictions, or mitigations:

1. Authorize grazing of sheep within the Lower Owens, Upper Owens, and Hilton Units by current permittee with mitigations to prevent contact between domestic sheep and Sierra Nevada bighorn sheep.
2. The Rock Creek Unit and Highway Unit would remain vacant due to the potential risk of contact between domestic sheep and Sierra Nevada bighorn sheep.
3. Allow use of the Lower Owens River Unit and Upper Owens River Unit between June 1st and August 31st to reduce the risk of contact between domestic sheep and Sierra Nevada bighorn sheep.
4. Allow use of the Hilton Unit only between June 1st and August 5th to reduce the risk of contact between domestic sheep and Sierra Nevada bighorn sheep.
5. The Forest Service will continue to coordinate with the USFWS and California Department of Fish and Game (CDFG) to determine if future bighorn sheep movements require a reevaluation of domestic sheep grazing on the Rock Creek Allotment.
6. The following mitigation measures are applicable to the Lower Owens, Upper Owens, and Hilton Units:
 - In order to fully document the actual season of use, the permittee agrees to notify the Forest Service by telephone or in person, at least 24 hours before entering and exiting each allotment.
 - The permittee shall count all individual sheep upon entering and exiting the allotment. The full number will be reported to the Forest Service within 24 hours of the count.
 - The permittee shall use a marker sheep ratio of at least 1 to 20.
 - The permittee will remove any incapacitated (i.e., lack of ability to remain with the band) domestic sheep from the band before entering the allotments. The herder/permittee will immediately remove from the band any domestic sheep that becomes incapacitated after the band has entered the allotments.
 - The permittee will conduct daily counts of marker sheep following any significant change in sheep distribution (after leaving bed grounds, trailing, or movement to new feeding areas, etc.). These marker counts will be recorded in a daily log book. Sheep mortality and sheep removed from the allotment due to sickness will also be

documented. The logbook will be provided to the Forest Service at the end of the season and any time upon request.

- During the authorized grazing season, the permittee shall conduct one mid-season full count, document any mortality or removal of sick or injured animals, and provide this information to the Forest Service within 24 hours of the count.
- The permittee shall inform and educate his herders and camp tenders on Sierra Nevada bighorn sheep identification, prevention of contact, and escape procedures. The permittee shall document these meetings and instructions in the log book.
- The permittee shall ensure all sheep that graze the Hilton, Upper Owens, and Lower Owens Units are confirmed to be in their third trimester of pregnancy. This will reduce the likelihood of a Sierra Nevada bighorn sheep ram moving into the area due to domestic sheep being in estrus.
- Following the grazing season, the permittee shall assist the Forest Service with conducting a post-season sweep of the Hilton Unit. The post-season sweep will consist of checking for any sign of fresh domestic sheep tracks or actual sightings of potential stray animals.
- If at any time during the grazing season, a domestic sheep is determined missing from the band on the allotments, the permittee will notify the District Ranger immediately as defined in the Escape Management Plan/Communication Protocol and will begin a search for the missing animal(s). The District Ranger will notify the USFWS and CDFG of domestic sheep that have been reported by the permittee as missing from the band. The terms and conditions in the Escape Management Plan/Communication Protocol would be followed.
- The permittee will immediately initiate a comprehensive search as defined in the Escape Management Plan. The results will be immediately reported to the District Ranger. The District Ranger will forward the results of the search to the USFWS and CDFG. If, after three days the sheep are unaccounted for, the Forest Service will contact the USFWS.

Table 10: Initial Utilization Levels Specific to Rock Creek Allotment.

Number	Key Area Name and Location	Key Species	Allowable Use	
			Early	Late
Lower Owens River Unit				
1	T5S R30E Sec. 8	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Elymus elymoides</i>)	40%	60%
Upper Owens River Unit				
2	T4S R30E Sec. 27	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Elymus elymoides</i>)	40%	60%
Rock Creek Unit - Vacant				
3	T5S R30E Sec. 3	Bitterbrush (<i>Purshia tridentata</i>)	0%	0%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Elymus elymoides</i>)	0%	0%
5	T5S R30E Sec. 10; Witcher Meadow	Sedges (<i>Carex</i> spp.)	0%	0%
Highway Unit - Vacant				
4	T4S R30E Sec. 2	Bitterbrush (<i>Purshia tridentata</i>)	0%	0%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Elymus elymoides</i>)	0%	0%

Key Area		Key Species	Allowable Use	
Number	Name and Location		Early	Late
		spp., <i>Elymus elymoides</i>)		
Hilton Unit				
6	T4S R29E Sec. 33	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Elymus elymoides</i>)	40%	60%

Tobacco Flat Allotment:

Allotment specific actions, restrictions, or mitigations:

1. Authorize grazing for cattle.
2. Monitor bitterbrush condition on Upper Tobacco Flat Unit. If the combination of reducing the allowable use factor (below) and eliminating the overlapping use by sheep from the McGee Allotment (see proposed action for the McGee Allotment) does not result in less than 15 percent severely hedged bitterbrush within five years, rest the area until recovery is documented.
3. Allow use only after June 1st each season to limit disturbance to sage grouse during the breeding season. (Date subject to change with new information on sage grouse or sage grouse grazing interactions.)

Table 11: Initial Utilization Levels Specific to Tobacco Flat Allotment.

Key Area		Key Species	Allowable Use	
Number	Name and Location		Early	Late
Lower Tobacco Flat				
1	T4S R28E Sec. 12	Bitterbrush (<i>Purshia tridentata</i>)	40%	20%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Elymus elymoides</i>)	30%	50%
Upper Tobacco Flat				
2	T4S R28E Sec. 13	Bitterbrush (<i>Purshia tridentata</i>)	40%	20%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Elymus elymoides</i>)	30%	50%

Turner Allotment

Allotment specific actions, restrictions, or mitigations:

1. Authorize grazing for cattle.
2. There are ten springs or complexes of springs that require treatment, mainly in the form of exclusion from grazing. Spring 1440 is a complex of four springs that would require at least a half acre of enclosure fencing and some in-stream stabilizing and plantings. Spring 1441 would require an undetermined amount of enclosure fencing and the installing of a livestock water trough outside of the riparian influence. The remaining springs that are Functional At-Risk would require enclosure fencing to protect the spring sources. Temporary electric fencing may be used if a spring is determined to require immediate treatment. At least one permanent spring enclosure shall be constructed each season through the life of the permit or until recovery of the springs is achieved. Failure to adhere to this schedule may require resting the unit until mitigations can be completed. Heritage and rare plant surveys would be conducted before implementation of projects. Monitoring would be conducted on spring treatments to determine effectiveness.

3. Monitor *Astragalus johanis-howellii* population.
4. Continue to exclude grazing from O’Harrel Creek. Allow only incidental use (5%). If cattle are found in the enclosure, they must be removed immediately.
5. Allow use only after June 1st each season to limit disturbance to sage grouse during the breeding season. (Date subject to change with new information on sage grouse or sage grouse grazing interactions.)

Table 12: Initial Utilization Levels Specific to Turner Allotment.

Number	Key Area	Key Species	Allowable Use	
	Name and Location		Early	Late
Southwest Pasture				
1	T2S R29E Sec. 33 Uplands	Bitterbrush (<i>Purshia tridentata</i>)	30%	10%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	10%	40%
	Dry meadow	Moist Meadow Sedges (<i>Carex</i> spp.) and saltgrass (<i>Distichlis spicata</i>)	25%	15%
North Pasture				
2	O’Harrel Creek Enclosure T2S R29E Sec 23, 26, and 27	Bitterbrush (<i>Purshia tridentata</i>)	5%	5%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	5%	5%
3	T2S R29E Sec. 26	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	40%	60%
Southeast Pasture				
4	T2S R29E Sec. 36	Bitterbrush (<i>Purshia tridentata</i>)	50%	30%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	40%	60%

Watterson Allotment:

Allotment specific actions, restrictions, or mitigations:

1. Authorize grazing for all classes of livestock.
2. Allow use only after June 1st each season to limit disturbance to sage grouse during the breeding season. (Date subject to change with new information on sage grouse or sage grouse grazing interactions.)
3. Little Sagehen Spring would be excluded from use (through avoidance herding) or fenced for protection depending on the authorized class of livestock.
4. Treat headcuts in Kely Meadows and fence for protection from livestock until recovered.

Table 13: Initial Utilization Levels Specific to Watterson Allotment.

Key Area		Key Species	Allowable Use	
Number	Name and Location		Early	Late
Banner Unit				
1	T3S R30E Sec. 7	Bitterbrush (<i>Purshia tridentata</i>)	30%	10%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	10%	40%
2	T2S R30E Sec 5	Bitterbrush (<i>Purshia tridentata</i>)	40%	20%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	30%	50%
Watterson Unit				
3	T2S R30E Sec. 30	Bitterbrush (<i>Purshia tridentata</i>)	30%	10%
		Sagebrush and Bunchgrasses (<i>Achnatherum</i> spp., <i>Hesperostipa comata</i> , <i>Elymus elymoides</i>)	10%	40%
Kelty Unit				
4	T2S R30E Sec. 23	Moist Meadow Sedges (<i>Carex</i> spp.)	35%	25%
Sagehen Unit				
5	T2S R30E Sec. 26	Moist Meadow	35%	25%

2.5 Monitoring

Monitoring that would occur if the Modified Proposed Action were implemented is specified in the Monitoring Plan outlined below. This plan includes both implementation and effectiveness monitoring. Implementation monitoring is used to determine if the grazing activity is implemented as designed. Effectiveness monitoring is conducted to determine if the management practices applied have been effective in moving toward or maintaining desired condition and meeting resource objectives. The monitoring process involves collecting data to determine, what—if any—adjustments are needed to meet the desired conditions and the standard and guidelines outlined in LRMP Amendment 6 and SNFPA (2004). Project-specific monitoring would be conducted at the key areas as described in the Modified Proposed Action. At least 20 percent of the key areas shall be monitored annually.

Table 14: Monitoring Plan.

Monitoring Item	Method	Frequency	Variability Indicating Action/Action to be Taken
Implementation Monitoring (Permit Administration)			
Permit Compliance	Allotment and Units Inspections	Ongoing, annual permittee actual use reports	Follow Forest Service Handbook (FSH) Suspension and Cancellation Guidelines
Annual Operating Instructions (AOI)	AOI meetings	Annually	Non-compliance
Fee Payment	Bill for Collection	Annually	Bill not paid by due date
Livestock numbers	Count livestock	Random	Numbers outside of AOI authorized for season.
Excess use	Allotment inspections	Ongoing	All excess use
Improvement maintenance	Inspections	Ongoing	Failure to maintain improvements
Salting	Allotment inspections	Ongoing	Failure to follow AOI instructions
Range Readiness	R5 range readiness procedure	Pre-season and ongoing as needed	Adjust turn out date
Upland utilization	Height/weight curves, Ocular	20% of key areas Annually	Move livestock to next unit or off of the allotment
Riparian utilization	Key Species, Stubble height, Height/Weight Curves	20% of key areas Annually	Move livestock to next unit or off of the allotment
Streambank Stability/Disturbance	MIM, Alteration by livestock, Stability and Cover	20% of key areas Annually	Move livestock to next unit or off of the allotment
Browse utilization	Woody Species Regen., Woody species use.	20% of key areas Annually	Move livestock to next unit or off of the allotment
Effectiveness Monitoring			
Riparian Ecologic Condition and Trend	Rooted Frequency, Greenline MIM, PFC, Photo Points, BMP	3-5 years	Downward trend
Upland Ecological Condition and Trend	Line Intercept, Toe Point, Shrub age and form Class,	3-5 years	Downward trend
Watershed improvement projects (head-cut treatments)	Ocular, photo points,	Annually	Downward trend
Heritage Resources At Risk or Potentially At Risk	Systematic Field Visits Photo Point Monitoring	Minimum of nine sites monitored biannually. Two sites in four allotments (Antelope, Hot Creek, Long Valley, and Casa Diablo) and one site in Tobacco Flat allotment visited twice per year (pre- and post-grazing).	Potential adverse effects to heritage resources would initiate implementation of standard resource protection measures or formal NRHP evaluation to avoid adverse effects.

Chapter 3: Environmental Consequences

3.1 Introduction

This section summarizes the physical, biological, social, and economic environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It describes the environmental impacts of the proposal in relation to whether there may be significant environmental effects as described in 40 CFR 1508.27. Further analysis and conclusions about the potential effects are available in resource specialist reports and other supporting documentation located in the project record. These reports contain more detailed data, methodologies, analyses, conclusions, maps, references, and technical documentation that the resource specialist relied upon to reach the conclusions in this EA. The following documents are incorporated by reference and available upon request:

- *Air/Soil/Watershed Management Report for Rangeland Allotments in the Crowley Area.* Todd Ellsworth, Forest Soil Scientist/Watershed Program Manager. June 6, 2008.
- *Biological Assessment for the Owens Tui Chub within the Antelope Grazing Allotment.* Lisa Sims, Inyo National Forest Fish Biologist. September 23, 2008.
- *Biological Assessment for the Lahontan Cutthroat Trout within the Turner Grazing Allotment.* Lisa Sims, Inyo National Forest Fish Biologist. February 12, 2009.
- *Biological Assessment for Domestic Sheep Grazing Within the Crowley Lake Basin Grazing Allotment Project on the Rock Creek Sheep and Goat Allotment.* Leeann Murphy, Wildlife Biologist, Inyo National Forest. September 23, 2008.
- *Biological Evaluation for Sensitive Plant Species for the Crowley Lake Basin Grazing Allotments.* Kathleen Nelson, Inyo National Forest Botanist. May 24, 2008.
- *Biological Evaluation for Aquatic Wildlife for the Crowley Lake Basin Grazing Allotments.* Lisa Sims, Inyo National Forest Fish Biologist. October 29, 2008.
- *Biological Evaluation for Terrestrial Wildlife for the Crowley Lake Basin Grazing Allotments.* Leeann Murphy, Wildlife Biologist, Inyo National Forest. September 5, 2008.
- *Effects Analysis Crowley Lake Basin Range NEPA.* Crystal West, North Zone Archaeologist, Inyo National Forest. May 13, 2008.
- *Inyo National Forest Land and Resource Management Plan.* 1988.
- *Inyo National Forest Land and Resource Management Plan Amendment 6, Forestwide Grazing Utilization Standards.* 1995.
- *Inyo National Forest Land and Resource Management Plan Amendment, Sierra Nevada Forest Plan Amendment.* 2004.
- *Management Indicator Species Analysis for the Crowley Lake Basin Grazing Allotments.* Leeann Murphy, Wildlife Biologist, Inyo National Forest and Lisa Sims, Inyo National Forest Fisheries Biologist. September 23, 2008.
- *Noxious Weed Risk Assessment for the Crowley Lake Basin Allotments Analysis.* Kathleen Nelson, Inyo National Forest Botanist. March 17, 2008.

- *Rangeland Management Report for the Crowley Lake Group*. Joseph Robson, Forest Rangeland Management Specialist. December 18, 2008.
- *Social and Economics Effects Analysis*. Joseph Robson, Forest Rangeland Management Specialist. January 8, 2009.

3.2 Effects Relative to Significant Issues

No significant issues were raised during scoping.

3.3 Effects Relative to Pertinent Resources

3.3.1 Range Conditions

The Rangeland Management Report (Robson, 2008) provides a detailed analysis of range vegetation condition by allotment. Site specific data for each allotment was analyzed and summarized within the report to show existing resource conditions and trends in comparison with desired conditions outlined in the Inyo National Forest LRMP Amendment 6 (USDA Forest Service, 1995) and the Sierra Nevada Forest Plan Amendment (USDA Forest Service, 2004). An overall summary of the analysis for the Crowley Lake Watershed Group Allotments is provided below.

3.3.2 Existing Condition of the Crowley Lake Watershed Allotments

The existing vegetation conditions are described by allotment below. The Vegetation and Grazing System Matrices in the Inyo National Forest LRMP Amendment 6 provide the basis for determining vegetation conditions ranging from desired condition (excellent vegetation condition) to non-functioning (very poor vegetation condition). Field surveys established vegetation condition classifications of the key areas (data sheets available in the project record) to determine if desired conditions are being met. Departures from desired condition as described below as “a slight departure” or “a moderate departure” are describing the next lower vegetation condition class from the LRMP Amendment 6 matrices, with desired condition being at the top.

Proposed utilization standards, as described in the Modified Proposed Action above (Tables 3-13) and outlined for each allotment in Tables 15-26 below, are designed to accelerate the restoration and improvement of degraded range sites, as well as to maintain those sites currently in good condition. A vegetation classification determined by toe-point transects compares the total number of desired species within a given area to the total number of herbaceous plants counted. This vegetation composition is applied to the utilization matrices, along with the watershed evaluation criteria, to determine proper use levels for a key area (LRMP Amendment 6; USDA Forest Service, 1995). These utilization levels are set as a percentage of weight of a forage species that is allowed to be utilized by livestock. In many cases, there is a different allowable use standard for early season use (pre-boot stage; before seed head is formed) and late season use (after seed maturity).

Alpers Canyon Allotment

Vegetation conditions for Key Areas 1 and 2a have a slight departure from desired condition, and Key Area 2b is meeting desired condition. The aspen risk assessment indicates low risk as groves

have been fenced and regeneration is protected from livestock grazing impacts. There are no fens within the allotment.

Table 15: Vegetation Conditions and Proposed Utilization Levels - Alpers Canyon Allotment.

Key Area		Range Type	Vegetation Condition ¹	Proposed Allowable Use ²	
No.	Name			Early	Late
1	Ranch Unit	Moist Meadow	Slight departure from DC	35%	25%
2a	Ranch Unit	Sagebrush	Slight departure from DC	30% BB; 10% SB/BG	10% BB; 40% SB/BG
2b	Ranch Unit	Wet Meadow	DC	40%	30%

¹DC = Desired Condition

²BB = Bitterbrush; SB/BG = Sagebrush/Bunchgrass

Antelope Allotment

Key Area 1 in the South Antelope Unit is a moist meadow at Antelope Springs, which has a slight departure from desired condition due to low cover of desirable plant species and encroachment of silver sagebrush (ARCA). The remaining key areas (2 - 4b; North Antelope Unit and Little Hot Creek Unit) are meeting desired condition. Browse utilization on bitterbrush indicates that Key Area 3 is 65 percent moderately hedged, Key Area 4a is 49 percent moderately and 41 percent severely hedged, and Key Area 4b is 74 percent moderately hedged. No fens are located in the allotment.

Table 16: Vegetation Conditions and Proposed Utilization Levels – Antelope Allotment.

Key Area		Range Type	Vegetation Condition ¹	Proposed Allowable Use ²	
No.	Name			Early	Late
1	South Antelope Unit	Moist Meadow	Slight departure from DC	35%	25%
2	North Antelope Unit	Sagebrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
3	Little Hot Creek Unit	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
4a	Little Hot Creek Unit	Bitterbrush	DC	40% BB; 30% SB/BG	20% BB; 50% SB/BG
4b	Little Hot Creek Unit	Bitterbrush	DC	40% BB; 30% SB/BG	20% BB; 50% SB/BG

¹DC = Desired Condition per LRMP Amendment 6 matrices.

²BB = Bitterbrush; SB/BG = Sagebrush/Bunchgrass

Casa Diablo Allotment

Key Area 1 (Chidago Flat Unit) has a slight departure from desired condition due to low cover, low density of bunch grasses and herbaceous vegetation. Key Area 2 (Chidago Canyon Unit) and Key Area 3 (Casa Diablo) are at desired condition. Key Areas 4 (Watterson Canyon Unit) and 5 (Moran Springs Unit) have a moderate departure from desired condition because of low cover. No potential fens are located in the allotment.

Table 17: Vegetation Conditions and Proposed Utilization Levels – Casa Diablo Allotment.

Key Area		Range Type	Vegetation Condition ¹	Proposed Allowable Use ²	
No.	Name			Early	Late
1	Chidago Flat Unit	Bitterbrush	Slight departure from DC	40% BB; 30%DS; 30% SB/BG	20% BB; 20% DS; 50%SB/BG
2	Chidago Canyon Unit	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
3	Owens River Unit	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
4	Watterson Canyon Unit	Bitterbrush	Moderate departure from DC	30% BB; 10%; SB/BG	10% BB; 40% SG/BG
5	Moran Springs Unit	Bitterbrush	Moderate departure from DC	30% BB; 10%; SB/BG	10% BB; 40% SG/BG

¹ DC = Desired Condition per LRMP Amendment 6 matrices.

² BB = Bitterbrush; DS = Desert Shrub; SB/BG = Sagebrush/Bunchgrass

Clark Canyon Allotment

The key areas are within desired condition. No fens are located in the allotment.

Table 18: Vegetation Conditions and Proposed Utilization Levels – Clark Canyon Allotment.

Key Area		Range Type	Vegetation Condition ¹	Proposed Allowable Use ²	
No.	Name			Early	Late
1	Clark Canyon Unit	Sagebrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
2	Owens River unit	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG

¹ DC = Desired Condition per LRMP Amendment 6 matrices.

² BB = Bitterbrush; SB/BG = Sagebrush/Bunchgrass

Clover Patch Allotment

Key Areas 1 (Clover Patch Unit) and 2 (Long Canyon Unit) are at desired condition. Key Area 3 (Modesty Unit) within Clover Patch Meadow has a slight departure from desired condition due to sagebrush invasion into the meadow. The meadow has a high cover of wiregrass (*Juncus balticus*), which is a late successional species (Winward, 2000). The aspen risk assessment rated this area at low risk. No fens are located in the allotment.

Table 19: Vegetation Conditions and Proposed Utilization Levels – Clover Patch Allotment.

Key Area		Range Type	Vegetation Condition ¹	Proposed Allowable Use ²	
No.	Name			Early	Late
1	Clover Patch Unit	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
2	Long Canyon Unit	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
3	Modesty Unit	Moist Meadow	Slight departure from DC	25%	15%

¹ DC = Desired Condition per LRMP Amendment 6 matrices.

² BB = Bitterbrush; SB/BG = Sagebrush/Bunchgrass

Hot Creek Allotment

Key Area 1 (Hot Creek Unit) is meeting desired condition, with a note that the area has a large component of crested wheatgrass present. The remaining key areas are at desired condition.

Bitterbrush utilization within several units of the allotment indicates severe hedging: Hot Creek Unit at 63 percent severely hedged; Long Canyon Unit at 45 percent severely hedged, Whitmore Springs Unit at 35 percent severely hedged, and Meadow Unit at 27 percent severely hedged. The Burn Unit has less than 15 percent severely hedged bitterbrush, which meets desired condition.

No fens are located within the allotment.

Table 20: Vegetation Conditions and Proposed Utilization Levels – Hot Creek Allotment.

Key Area		Range Type	Vegetation Condition ¹	Proposed Allowable Use ²	
No.	Name			Early	Late
1	Hot Creek Unit	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
2	Long Canyon Unit	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
3	Whitmore Unit	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
4	Meadow Unit	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
5	Convict Unit	Wet Meadow	DC	50%	40%
6	Burn Unit	Sagebrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
7a	Laurel Meadows Unit	Moist Meadow	DC	40%	30%
7b	Laurel Meadows Unit	Moist Meadow	DC	40%	30%
7c	Laurel Meadows Unit	Wet Meadow	DC	40%	30%

¹ DC = Desired Condition per LRMP Amendment 6 matrices.

² BB = Bitterbrush; SB/BG = Sagebrush/Bunchgrass

Long Valley Allotment

Key Area 1 (Long Valley Unit) shows a moderate departure from desired condition due to low cover, and Key Area 2 (Wheatgrass Unit) has a slight departure from desired condition due to low cover. The remaining key areas are meeting desired condition.

Shrub condition class indicates that all the units are meeting desired condition. Key Area 1 (Long Valley Unit) has 7 percent severely hedged bitterbrush, Key Area 2 (Wheatgrass Unit) has 9 percent severely hedged bitterbrush and the remaining units show zero percent severely hedged bitterbrush.

The aspen risk assessment rated the groves at McLaughlin Spring low risk as a new age class was recruited during the rest following the McLaughlin Fire. No fens are located in the allotment.

Table 21: Vegetation Conditions and Proposed Utilization Levels – Long Valley Allotment.

Key Area		Range Type	Vegetation Condition ¹	Proposed Allowable Use ²	
No.	Name			Early	Late
1	Long Valley Unit	Bitterbrush	Moderate departure from DC	30% BB; 10% SB/BG	10% BB; 40% SB/BG
2	Wheatgrass Unit	Bitterbrush	Slight departure from DC	40% BB; 30% SB/BG	20% BB; 50% SB/BG
3	Dry Creek Unit	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
4	McLaughlin Unit	Bitterbrush	DC	45% MM; 50% BB; 40% SB/BG	35% MM; 30% BB; 60% SG/BG
5	McLaughlin Unit	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
5b	McLaughlin Unit	Moist Meadow	DC	35%	25%
6	Inaja Unit	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
8	McLaughlin Springs Meadow Enclosure	Wet Meadow	DC	0%	0%
9	Ford Spring	Wet Meadow	DC	50%	40%

¹ DC = Desired Condition per LRMP Amendment 6 matrices.

² BB = Bitterbrush; SB/BG = Sagebrush/Bunchgrass; MM = Moist Meadow Sedges

McGee Allotment

Key Area 1 (Front Unit) has a slight departure from desired condition due to cheatgrass and other non-desirable species. Key Area 3 (Upper Tobacco Flat Unit) shows a slight departure from desired condition because of low cover, cheat grass, and rabbit brush. Key Area 5 (Mountain Top Unit) has an extreme departure from desired condition due to very low cover.

Shrub conditions in Key Area 3 (Upper Tobacco Flat Unit) shows 19 percent severely hedged bitterbrush, which would be a slight departure from desired condition.

No fens are located in the allotment.

Table 22: Vegetation Conditions and Proposed Utilization Levels – McGee Allotment.

Key Area		Range Type	Vegetation Condition ¹	Proposed Allowable Use
No.	Name			
1	Front Unit	Bitterbrush	Slight departure from DC	0%
3	Upper Tobacco Flat Unit	Bitterbrush	Slight departure from DC	0%
5	Mountain Top Unit	Alpine Dwarf Shrub	Extreme departure from DC	0%

¹ DC = Desired Condition per LRMP Amendment 6 matrices.

Rock Creek Allotment

Key Area 3 (Rock Creek Unit) has a moderate departure from desired condition due to low perennial cover as a result of the Birch Fire (2002). The remaining key areas are meeting desired condition. There are no fens within the allotment.

Table 23: Vegetation Conditions and Proposed Utilization Levels – Rock Creek Allotment.

Key Area		Range Type	Vegetation Condition ¹	Proposed Allowable Use ²	
No.	Name			Early	Late
1	Lower Owens River Unit	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
2	Upper Owens River Unit	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
3	Rock Creek Unit	Bitterbrush	Moderate departure from DC	0%	0%
4	Highway Unit	Bitterbrush	DC	0%	0%
5	Rock Creek Unit – Witcher Meadow	Moist Meadow	DC	0%	0%
6	Hilton Unit	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG

¹ DC = Desired Condition per LRMP Amendment 6 matrices.

³ BB = Bitterbrush; SB/BG = Sagebrush/Bunchgrass

Tobacco Flat Allotment

Key Area 1 (Lower Tobacco Flat Unit) is meeting desired condition. Key Area 2 (Upper Tobacco Flat Unit) has a slight departure from desired condition due to cheatgrass and other undesirable annuals.

Key Area 1 (Lower Tobacco Flat Unit) has five percent severely hedged bitterbrush and is meeting desired condition, and Key Area 2 (Upper Tobacco Flat Unit) has 19 percent severely hedged bitterbrush and is slightly departed from desired condition.

There are no fens within the allotment.

Table 24: Vegetation Conditions and Proposed Utilization Levels – Tobacco Flat Allotment.

Key Area		Range Type	Vegetation Condition ¹	Proposed Allowable Use ²	
No.	Name			Early	Late
1	Lower Tobacco Flat Unit	Bitterbrush	DC	40% BB; 30% SB/BG	20% BB; 50% SB/BG
2	Upper Tobacco Flat Unit	Bitterbrush	Slight departure from DC	40% BB; 30% SB/BG	20% BB; 50% SB/BG

¹ DC = Desired Condition per LRMP Amendment 6 matrices.

² BB = Bitterbrush; SB/BG = Sagebrush/Bunchgrass

Turner Allotment

Key Area 1a (Southwest Pasture Unit) shows a slight departure from desired condition due to low cover. The remaining key areas are meeting desired condition. The aspen risk assessment indicates the stands near O’Harrel Creek and the drainage to the south are at low risk with multiple age classes. The aspen groves at Spring 1440 are at high risk because of a one age class stand with no recruitment and evidence of disease and stress. There is one potential fen located at Spring 1442.

Table 25: Vegetation Conditions and Proposed Utilization Levels – Turner Allotment.

Key Area		Range Type	Vegetation Condition ¹	Proposed Allowable Use ²	
No.	Name			Early	Late
1a	Southwest Pasture	Moist Meadow	Slight departure from DC	25%	15%
1b	Southwest Pasture	Bitterbrush	No data	30% BB; 10% SB/BG	10% BB; 40% SB/BG
2a	North Pasture – O’Harrel Creek Enclosure	Wet Meadow	DC	5%	5%
2b	North Pasture – O’Harrel Creek Enclosure	Bitterbrush	DC	5%	5%
3	North Pasture	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG
4	Southeast Pasture	Bitterbrush	DC	50% BB; 40% SB/BG	30% BB; 60% SB/BG

¹ DC = Desired Condition per LRMP Amendment 6 matrices.

² BB = Bitterbrush; SB/BG = Sagebrush/Bunchgrass

Watterson Allotment

Key Area 1 (Banner Unit) has a moderate departure from desired condition because of low perennial cover and high occurrence of rabbit brush. Key Area 2 (Banner Unit) has a slight departure from desired condition due to low cover of desirable perennials and high cover of rabbit brush. Key Area 3 (Watterson Unit) shows a moderate departure from desired condition due to low cover of desirable perennials, no forage perennials, and high cover of rabbit brush. Key Area 5 (Sagehen Unit) has a slight departure from desired condition due to low cover of desirable plant species and presence of weedy annuals. Key Area 4 (Kelty Unit) is at desired condition. There are no fens located in the allotment.

Table 26: Vegetation Conditions and Proposed Utilization Levels – Watterson Allotment.

Key Area		Range Type	Vegetation Condition ¹	Proposed Allowable Use ²	
No.	Name			Early	Late
1	Banner Unit	Bitterbrush	Moderate departure from DC	30% BB; 10% SB/BG	10% BB; 40% SB/BG
2	Banner Unit	Sagebrush	Slight departure from DC	40% BB; 30% SB/BG	20% BB; 50% SB/BG
3	Watterson Unit	Sagebrush	Moderate departure from DC	30% BB; 10% SB/BG	10% BB; 40% SB/BG
4	Kelty Unit	Moist Meadow	DC	35%	25%
5	Sagehen Unit	Moist Meadow	Slight departure from DC	35%	25%

¹ DC = Desired Condition per LRMP Amendment 6 matrices.

² BB = Bitterbrush; SB/BG = Sagebrush/Bunchgrass

3.3.3 Direct and Indirect Effects of the Modified Proposed Action (Alternative 2)

The Modified Proposed Action is designed to minimize the effects of grazing and move the landscape towards the Desired Conditions outlined in the LRMP Amendment 6, Forestwide Range Utilization Standards (USDA Forest Service, 1995) and Sierra Nevada Forest Plan Amendment (USDA Forest Service, 2004). The allotment-specific actions were based on the existing conditions

and utilization standards under LRMP Amendment 6. LRMP Amendment 6 standards for livestock grazing as established through the Vegetation and Grazing System Matrices determine the proper utilization standards for the condition of the key area. These standards, if properly applied, will improve the degraded sites and maintain the satisfactory sites. Some actions involve structural range improvements to expedite recovery of sites in poor or non-functional condition or to protect other resources affected by livestock actions.

As LRMP Amendment 6 utilization standards are applied to riparian and upland rangeland vegetation, the Modified Proposed Action is expected to improve rangeland resource conditions by:

- Increasing desirable vegetation composition and percent cover.
- Increasing residual vegetation in areas where it is less than desirable.
- Reducing amounts of bare ground in areas where it is currently too prevalent.
- Reducing utilization of grass species, which would ensure more seed production in the fall.
- Reducing utilization of shrub species, which would increase biomass and seed production.
- Promoting adequate litter (not excessive), which insulates plant crowns and over wintering buds, protects and covers soil, holds moisture in the ground, extends growing season and increases root growth.
- Increasing plant cover to reduce soil erosion potential.

The direct effect of livestock grazing is the removal of plant cover; this is usually a temporary impact. Other direct effects include soil disturbance in the form of trailing, trampling (compaction), streambank alteration, and areas of disturbance from bedding, salting, and watering locations. These disturbances reduce vegetation cover, often requiring years to recover to a near natural state. Indirect effects of livestock grazing on plant community composition are alteration of the microenvironment and fire return intervals, and influence on ecosystem processes such as nutrient cycling, energy flow, and the water cycle. Community alteration can occur if selective grazing pressure occurs on a species mix. The individual plant effect of grazing or tolerance to grazing is dependent on the following factors:

- Intensity (amount of plant removed) and frequency (number of times a plant is grazed)
- Season of use
- Time of grazing
- Competition
- Site characteristic

The majority of rangeland cover types are at mid- to late-ecological status. These sites will continue to advance along their respective successional pathways; however, this alternative will most likely result in a slower rate of recovery than Alternative 1 (No Grazing). With the implementation of riparian and upland utilization standards as described in Alternative 2 (Modified Proposed Action), improved conditions are expected as a result of generally reduced utilization levels. Light to moderate livestock grazing (as prescribed in the Modified Proposed Action) on these cover types increase plant diversity, increase ground cover, and assist with the reestablishment of desirable native grasses, forbs, and shrubs. With these standards and guidelines, riparian and upland habitats in the

allotments are expected to improve habitats relative to their current conditions. There would be a beneficial change to ground cover and trend indicators.

Disturbance-induced seral states associated with past levels of heavy grazing exist in some areas within the analysis area. These are evident in the dominance of such species as rabbitbrush and Kentucky bluegrass. Return to original conditions on these isolated occurrences will be very slow or nonexistent (Winward, 1991). Within other areas that are in early seral state (primarily drier sites or sites that have been sprayed with herbicides and/or seeded), movement towards a higher ecological status will continue to advance into mid-seral position at a slower rate depending on the severity of disturbance and soil loss (Winward, 1998).

The reduction of allowable use of all bitterbrush vegetation communities by an additional ten percent at the end of season should ensure sufficient browse for fall and wintering wildlife. Regardless of current bitterbrush condition, stands will respond within the first season of reduced use by livestock not exceeding 30 percent of the current year’s leader growth for late season use. Safe utilization is considered to be 60 percent maximum of current twig length to be cropped each season (Samson and Jespersen, 1981). Cattle tend to utilize shrubs more intensely at the end of the season because of higher crude protein than cured out grasses; this may result in early removal of cattle from the allotment. Sheep utilize bitterbrush more consistently throughout the grazing season, preferring the young plants and buds.

Table 27 provides a summary of effects to rangeland vegetation by allotment. More detailed analysis is contained in the Rangeland Management Report (Robson, 2008).

Table 27: Summary of Direct and Indirect Effects by Allotment.

Key Area		Range Type	Riparian Vegetation	Rangeland Vegetation
No.	Name			
Alpers Canyon Allotment				
1	Ranch Unit	Moist Meadow	No change – no areas of significant riparian concern.	No change – no areas of significant rangeland health concerns.
2a	Ranch Unit	Sagebrush	NA	Progress toward and meet Desired Conditions within 10-15 years.
2b	Ranch Unit	Wet Meadow	No change – no areas of significant riparian concern.	No change – no areas of significant rangeland health concerns.
Antelope Allotment				
1	South Antelope Unit	Moist Meadow	Increase in desirable species and % cover, reduction in silver sagebrush encroachment.	Increase in forage production, decrease in soil disturbance and decrease in bare soil within 5-10 years.
2	North Antelope Unit	Sagebrush	NA	No change – no areas of significant rangeland health concerns. Slight increase in bitterbrush biomass.
3	Little Hot Creek Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns. Slight increase in bitterbrush biomass.
4a	Little Hot Creek Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns. Slight increase in bitterbrush biomass.
4b	Little Hot Creek Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns. Slight increase in bitterbrush biomass.
Casa Diablo Allotment				
1	Chidago	Bitterbrush	NA	Slight increase in herbaceous species

Key Area		Range Type	Riparian Vegetation	Rangeland Vegetation
No.	Name			
	Flat Unit			composition and cover within 10-15 years. Shrubs will exhibit increase in leader growth within 5 years.
2	Chidago Canyon Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns. Slight increase in bitterbrush biomass.
3	Owens River Unit	Bitterbrush	NA	No Change – no areas of significant rangeland health concerns. Slight increase in bitterbrush biomass.
4	Watterson Canyon Unit	Bitterbrush	NA	Slight increase in herbaceous species composition and cover within 10-15 years. Shrubs will exhibit increased leader growth within 5 years.
5	Moran Springs Unit	Bitterbrush	NA	Slight increase in herbaceous species composition and cover within 10-15 years. Shrubs will exhibit increased leader growth within 5 years.
Clark Canyon Allotment				
1	Clark Canyon Unit	Sagebrush	NA	No change – no areas of significant rangeland health concerns.
2	Owens River Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns.
Clover Patch Allotment				
1	Clover Patch Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns.
2	Long Canyon Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns.
3	Modesty Unit	Moist Meadow	Slight increase in desirable species and % cover; reduction in sagebrush spp. encroachment.	Increase in forage production; decrease in soil disturbance and decrease in bare soil within 5-10 years.
Hot Creek Allotment				
1	Hot Creek Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns. Moderate increase in bitterbrush biomass.
2	Long Canyon Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns. Moderate increase in bitterbrush biomass.
3	Whitmore Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns. Moderate increase in bitterbrush biomass.
4	Meadow Unit	Bitterbrush	NA	Slight increase in herbaceous species composition and cover within 10-15 years. Shrubs will exhibit increased leader growth within 5 years.
5	Convict Unit	Wet Meadow	No significant change in Sedges or Rushes. Species composition and % cover will remain similar to current condition.	No changes expected unless cattle are excluded. If cattle are excluded, significant increases in residue forage and litter which would be present into the next season. Large amount of residue would delay spring green up.
6	Burn Unit	Sagebrush	NA	No Change – no areas of significant rangeland health concerns. Slight increase in bitterbrush biomass.
7a	Laurel	Moist Meadow	No significant change in	No changes expected unless cattle

Key Area		Range Type	Riparian Vegetation	Rangeland Vegetation
No.	Name			
	Meadows Unit		Sedges or Rushes. Species composition and % cover will remain similar to current condition.	are excluded. If cattle are excluded, significant increases in residue forage and litter which would be present into the next season. Large amount of residue would delay spring green up.
7b	Laurel Meadows Unit	Moist Meadow	No significant change in Sedges or Rushes. Species composition and % cover will remain similar to current condition.	No change – no areas of significant rangeland health concerns.
7c	Laurel Meadows Unit	Wet Meadow	No significant change in Sedges or Rushes. Species composition and % cover will remain similar to current condition.	No change – no areas of significant rangeland health concerns.
Long Valley Allotment				
1	Long Valley Unit	Bitterbrush	NA	Moderate increase in herbaceous species composition and cover within 10-15 years. Shrubs will exhibit increased leader growth within 5 years.
2	Wheatgrass Unit	Bitterbrush	NA	Slight increase in herbaceous species composition and cover within 10-15 years. Shrubs will exhibit increased leader growth within 5 years.
3	Dry Creek Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns. Slight increase in bitterbrush biomass.
4	McLaughlin Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns. Slight increase in bitterbrush biomass.
5	McLaughlin Unit	Bitterbrush	NA	Slight increase in herbaceous species composition and cover within 10-15 years. Shrubs will exhibit increased leader growth within 5 years.
5b	McLaughlin Unit	Moist Meadow	No significant change in Sedges or Rushes. Species composition and % cover will remain similar to current condition.	No change – no areas of significant rangeland health concerns.
6	Inaja Unit	Bitterbrush	NA	No Change – no areas of significant rangeland health concerns. Slight increase in bitterbrush biomass.
8	McLaughlin Springs Meadow Enclosure	Wet Meadow	No significant change in Sedges or Rushes. Species composition and % cover will remain similar to current condition.	No changes expected until cattle are excluded. After exclusion, significant increases in residue forage and litter which would be present into the next season. Large amount of residue would delay spring green up.
9	Ford Spring	Wet Meadow	No significant change in Sedges or Rushes. Species composition and % cover will remain similar to current condition.	No changes expected until cattle are excluded. After exclusion, significant increases in residue forage and litter which would be present into the next season. Large amount of residue would delay spring green up.
McGee Allotment				
1	Front Unit	Bitterbrush	NA	Slight increase in herbaceous species composition and Significant increase

Key Area		Range Type	Riparian Vegetation	Rangeland Vegetation
No.	Name			
				in cover within 5-10 years. Undesirable species (cheatgrass) will likely remain without treatment. Shrubs will exhibit increased leader growth within 5 years.
3	Upper Tobacco Flat Unit	Bitterbrush	NA	No expected change in herbaceous species composition and Significant increase in cover within 5-10 years. Undesirable species (cheatgrass) will likely remain without treatment. Shrubs would exhibit increased leader growth within 5 years.
5	Mountain Top Unit	Alpine Dwarf Shrub	NA	Moderate increase in herbaceous species composition and Significant increase in cover within 10-15 years. Shrubs would exhibit increased vigor and leader growth within 10 years.
Rock Creek Allotment				
1	Lower Owens River Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns. Slight increase in bitterbrush biomass.
2	Upper Owens River Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns. Slight increase in bitterbrush biomass.
3	Rock Creek Unit	Bitterbrush	NA	Slight increase in herbaceous species composition and cover within 10-15 years. Shrubs will exhibit increased vigor and leader growth within 5 years.
4	Highway Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns. Bitterbrush will exhibit increase in vigor and biomass.
5	Witcher Meadow; Rock Creek Unit	Moist Meadow	No significant change in Sedges or Rushes. Species composition and % cover will remain similar to current condition.	No change – no areas of significant rangeland health concerns.
6	Hilton Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns. Slight increase in bitterbrush biomass.
Tobacco Flat Allotment				
1	Lower Tobacco Flat Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns. Slight increase in bitterbrush biomass.
2	Upper Tobacco Flat Unit	Bitterbrush	NA	Slight increase in herbaceous species composition and cover within 10-15 years. Shrubs will exhibit increased leader growth within 5 years.
Turner Allotment				
1a	Southwest Pasture Unit	Moist Meadow	Slight increase in Sedges and Rushes. Species composition and % cover will increase.	Increase in forage production; decrease in soil disturbance and decrease in bare soil within 5-10 years.
1b	Southwest Pasture Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns. Slight increase in bitterbrush biomass.

Key Area		Range Type	Riparian Vegetation	Rangeland Vegetation
No.	Name			
2a	North Pasture – O’Harrel Creek Enclosure	Wet Meadow	No significant change in Sedges or Rushes. Species composition and % cover will remain similar to current condition.	No changes expected. Increases in residue forage and litter which would be present into the next season. Large amount of residue could delay spring green up.
2b	North Pasture – O’Harrel Creek Enclosure	Bitterbrush	NA	Slight increase in herbaceous cover and litter within 5-15 years.
3	North Pasture Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns. Slight increase in bitterbrush biomass.
4	Southeast Pasture Unit	Bitterbrush	NA	No change – no areas of significant rangeland health concerns. Slight increase in bitterbrush biomass.
Watterson Allotment				
1	Banner Unit	Bitterbrush	NA	Moderate increase in herbaceous species composition and cover within 10-15 years. Shrubs would exhibit increased leader growth within 5 years. Undesirable species (rabbitbrush) will likely remain.
2	Banner Unit	Sagebrush	NA	Slight increase in herbaceous species composition and cover within 10-15 years. Shrubs would exhibit increased leader growth within 5 years.
3	Watterson Unit	Sagebrush	NA	Moderate increase in herbaceous species composition and cover within 10-15 years. Shrubs would exhibit increased leader growth within 5 years.
4	Kelty Unit	Moist Meadow	No significant change in Sedges or Rushes. Species composition and % cover will remain similar to current condition.	No change – no areas of significant rangeland health concerns.
5	Sagehen Unit	Moist Meadow	Slight increase in Sedges or Rushes. Species composition and % cover will increase.	Increase in forage production; decrease in weedy annuals; and decrease in bare soil within 5-10 years.

The effect of improved livestock grazing management through implementation of the Modified Proposed Action on these allotments would be to increase residual vegetation where needed, reduce litter accumulations in some of the areas, lessen amounts of bare ground where it currently exceeds the desired conditions, and increase the overall vigor of plants through better distribution of livestock across the allotments. Increasing beneficial vegetation and improving its vigor ensures that plenty of material is available for trapping sediment in runoff and overflow events. Additionally, adequate litter (not excessive) insulates plant crowns and over wintering buds, protects and covers soils, and holds moisture in the ground.

The majority of rangeland cover types are in a mid- to late-ecological status. Grazing-induced seral state would continue to be somewhat slower on certain sites due to the persistence of competitive species. The rate of recovery on sites that have been culturally treated and seeded to

crested wheatgrass may be reversed in the absence of grazing. A similar trend may occur in other types where native species, adapted to a grazing regime, may stagnate. Given this scenario, a few species that are physiologically more competitive would dominate sites and decrease natural diversity. Over the long term, ground cover and trend are not expected to increase.

3.3.4 Cumulative Effects of the Modified Proposed Action (Alternative 2)

Rangeland vegetation cover types are also influenced by the following disturbances:

- Fire, insect and disease, and noxious weed infestations
- Physical disturbances, such as dispersed recreation (e.g. camping, motor vehicle use, etc.)
- Soil productivity
- Climatic cycles

These stresses all influenced plant growth, composition, structure, and function. Evolving with settlement (heavy use) grazing and fluctuating climatic stresses has probably influenced rangeland ecosystems the most. Past fire suppression activities have been effective in limiting the spread of fire across this landscape. As a result, the nature of these types would remain or continue towards even-age structure and outside the range of natural variability. Fire-intolerant species and those species more tolerant but outside their specific habitats will continue to encroach into other cover types. Patterns of different age classes and distinct cover types would be more homogenous and the diversity of species would be lower. Additionally, these types would remain or become more decadent and susceptible to insects and disease. An increase in residue vegetation left in units no longer grazed could increase fire frequency and intensity, especially in meadow types.

Grazed-induced seral states associated with past levels of heavy grazing exist in some areas (Range Field Reviews, 2005-2006). These are evident in the dominance of such species as rabbit brush. Return to pristine conditions in these isolated occurrences is unlikely (Miller, 1994; Laycock, 1989).

Monitoring key areas provides insurance to all other areas of the pasture because the Forest chose key areas as a means of reflecting the effects of livestock grazing and its management. If a permittee follows the prescribed pasture management, the effect is more even distribution of livestock and grazing use across a pasture. Promoting more even use means that previous un-grazed plants would have more of a chance of being grazed (stimulating growth) and that individually, frequently grazed plants would be grazed fewer times. Better distribution is the key to maximizing grazing duration in pastures and allotments.

There would be no adverse cumulative effects of the Modified Proposed Action when combined with past, present, and reasonably foreseeable future actions within the project area. This alternative would meet the standards and guidelines in the Inyo National Forest LRMP (USDA Forest Service, 1988) as revised by LRMP Amendment 6, Forestwide Grazing Utilization Guidelines (USDA Forest Service, 1995) and the Sierra Nevada Forest Plan Amendment (USDA Forest Service, 2004).

3.3.5 Direct and Indirect Effects of No Grazing (Alternative 1)

In the absence of livestock, there would be no direct effects to the soils or vegetation from grazing and trailing that currently occurs on an annual basis. There would be no direct impact from livestock on riparian areas that are accessible to livestock.

Bitterbrush, willows, and aspen would not be grazed by livestock and therefore would respond rapidly resulting in increased leader growth and terminal bud retention going into winter, which should increase forage for wintering deer. Bitterbrush seed production would be expected to increase.

The removal of livestock grazing would allow riparian areas that are not in desired condition to improve in ecological condition. Riparian species would likely increase in cover and frequency. Streambanks would stabilize as riparian graminoids and shrubs become established on previously un-vegetated or unstable sites. This trend would probably continue through mid- to late-seral stage. Due to the dynamic nature of stream systems and natural hydrologic processes, however, this trend may not remain stable through time.

No livestock grazing on upland grasses (predominately bunchgrasses) would increase litter accumulation and decreases bare ground. This matting and accumulation of dead plant material would insulate the ground, provide some water-holding capacity, and decrease surface soil movement and erosion. Annual seed production of grasses would increase cover potential depending on the site and environmental conditions.

3.3.6 Cumulative Effects of No Grazing (Alternative 1)

Removal of livestock grazing would be expected to result in changes over time to the herbaceous plant communities in those areas currently grazed to a moderate or greater extent. The areas most likely to be affected are areas considered as suitable or primary range where the majority of livestock use occurs. Changes may appear as increases in cover or composition for those species most preferred for grazing by livestock, depending on the class of livestock.

Grazed-induced seral states associated with past levels of heavy grazing would still exist in some areas. These are evident in the dominance of such species as rabbit brush and Kentucky bluegrass. Return to pristine conditions in these isolated occurrences is unlikely (Miller, 1994; Laycock, 1989). Litter would likely increase over time. In most of the upland areas, this would be beneficial due to the current scarcity of ground cover.

Exclusion of livestock would result in minor localized benefits to soils where there are currently trailing or trampling impacts. For example: Sheep bedding areas in the Casa Diablo Allotment would remain similar to their current state for decades without outside influence. Any improvement, therefore, would be localized and would likely occur over a long timeframe as indicated by experience with other vacant or abolished allotments.

Other management practices and uses have contributed to altered fire regimes. Past fire suppression activities have been effective in limiting the spread of fire across this landscape. As a result, the nature of these types will remain or continue towards even-age structure and outside the range of natural variability. Additionally, these types will remain or become more decadent and susceptible to insects and disease. Fire-intolerant species and those species more tolerant but outside their specific habitats would continue to encroach into other cover types. Patterns of different age classes and distinct cover types would be more homogenous and the diversity of species would be lower.

The No Grazing Alternative would not contribute toward adverse cumulative effects for range conditions. Within ten to twenty years, this alternative would meet most of the standards and guidelines in the Inyo National Forest LRMP (USDA Forest Service, 1988), as amended by LRMP Amendment 6 (USDA Forest Service, 1995) and the Sierra Nevada Forest Plan Amendment (USDA Forest Service, 2004).

3.3.7 Hydrologic Resources

The following section is summarized from the *Air, Soil, and Watershed Management Report for the Crowley Lake Basin Group Allotments*, which is hereby incorporated by reference (Ellsworth, 2008).

The Crowley Lake Watershed Group Allotments exist in 19 Hydrologic Unit Code (HUC) 6th level management watersheds, including: Owens River/Dry Creek; Owens River/Mclaughlin Creek; Hot Creek; Black Lake; Upper Springs Canyon; Spring Canyon Creek/Yellowjacket Canyon; Spring Canyon Creek/Birch Creek; Antelope Springs; Lake Crowley; Owens River Gorge; Fish Slough; Owens River/Pleasant Valley Reservoir; Owens River/Wilfred Creek; Mammoth Creek; Convict Creek; Hilton Creek; Rock Creek; and Upper Rock Creek. The majority of stream channels in the allotments flow into the Owens River both above and below Crowley Lake. Portions of the Clover Patch, Casa Diablo, and Watterson Canyon allotments have stream channels that do not have connectivity with the Owens River.

3.3.7.1 Existing Watershed Condition of the Crowley Lake Watershed Allotments

Key Area Hydrologic Function and Proper Functioning Condition (PFC) were used to assess watershed conditions within the Crowley Lake Watershed Allotments. A summary of the assessment method is provided below, followed by a summary of existing watershed conditions by allotment.

Key Area Hydrologic Function

Inyo National Forest LRMP Amendment 6 establishes a protocol for assessing watershed condition in meadow and upland areas for vegetation condition, referred to as Key Area Hydrologic Function analysis. The LRMP Amendment 6 protocol ratings for watershed condition are Good, Fair, Poor, and Non-Functional. The following characteristics (indicators) were used to evaluate key area hydrologic function.

- Riparian Vegetation Types – Sod or Surface Organic Layer; Compaction; Hummocks; Rills and Gullies; Headcuts and Nickpoints; Bare Ground due to disturbance.
- Upland Vegetation Types – A-Horizon; Mass Soil Movement; Surface Litter and/or Rock; Flow Patterns; Bare Ground due to disturbance; Pedastalling; Compaction; Rills and Gullies; Headcuts and Nickpoints.

Proper Functioning Condition

Proper Functioning Condition (PFC) is a tool for measuring the health of riparian and aquatic systems. To determine the functioning condition of riparian systems, an interdisciplinary team evaluates the vegetative, geomorphic, and hydrologic development and structural integrity of an area

or reach of stream. A “functioning” system can adequately dissipate the high stream energy associated with peak discharges without unacceptable channel or riparian degradation. A “functioning at-risk” system has some features that make it more susceptible to degradation during a high flow event, while a “non-functional” system is degraded to the point that the energy associated with high flows is not adequately dissipated. A “functioning at-risk” stream is further rated as either an upward, downward, or not apparent trend. A reach that is “functional at-risk” or “non-functional” is likely negatively affecting beneficial uses.

Alpers Canyon Allotment

Three key areas within this allotment were rated as Good, Poor, and Non-Functional. A PFC assessment was completed in Alpers Canyon stream. The PFC assessment concluded that the reach analyzed was at PFC with an upward trend.

Table 28: Key Area Hydrologic Function - Alpers Canyon Allotment.

Key Area		Vegetation Type	Watershed Condition	Cause
No.	Name			
1	Ranch Unit	Riparian	Good	N/A
2a	Ranch Unit	Upland	Non-Functional	Surface Layer; Soil Movement; Surface Litter; Rills; Compaction; Bare Ground
2b	Ranch Unit	Riparian	Poor	Surface layer; Rills; Compaction; Bare Ground

Antelope Allotment

Three key areas were rated Fair, and two key areas were rated Poor.

Table 29: Key Area Hydrologic Function – Antelope Allotment.

Key Area		Vegetation Type	Watershed Condition	Cause
No.	Name			
1	South Antelope Unit; Little Antelope Springs	Riparian	Fair	Compaction; Bare Ground; Pedestalling
2	North Antelope Unit	Upland	Fair	Surface Layer; Soil Movement; Surface Litter; Compaction; Bare Ground
3	Little Hot Creek Unit	Upland	Fair	Surface Layer; Soil Movement; Pedestalling; Compaction; Bare Ground
4a	Little Hot Creek Unit	Upland	Poor	Surface Layer; Surface Litter; Compaction; Bare Ground
4b	Little Hot Creek Unit	Upland	Poor	Surface Layer; Soil Movement; Surface Litter; Compaction; Bare Ground

Casa Diablo Allotment

All five key areas were rated in Fair watershed condition.

Table 30: Key Area Hydrologic Function – Casa Diablo Allotment.

Key Area		Vegetation Type	Watershed Condition	Cause
No.	Name			
1	Chidago Flat Unit	Upland	Fair	Surface Layer, Soil Movement; Surface Litter; Compaction, Bare Ground
2	Chidago Canyon Unit	Upland	Fair	Surface layer; Compaction; Bare ground
3	Owens River Unit	Upland	Fair	Surface Layer; Surface Litter; Compaction; Bare Ground
4	Watterson Canyon Unit	Upland	Fair	Surface Layer; Soil Movement; Surface Litter; Pedastalling; Flow pattern; Bare Ground
5	Moran Springs Unit	Upland	Fair	Surface Layer; Soil Movement; Surface Litter; Bare Ground

Clark Canyon Allotment

Of the two key areas, one was rated Good and the other was rated Fair.

Table 31: Key Area Hydrologic Function – Clark Canyon Allotment.

Key Area		Vegetation Type	Watershed Condition	Cause
No.	Name			
1	Clark Canyon Unit	Upland	Good	N/A
2	Owens River unit	Upland	Fair	Surface Layer; Soil Movement; Surface Litter

Clover Patch Allotment

Of the three key areas within this allotment, two were rated Fair and one was rated as Poor watershed condition. There is one spring area where a PFC assessment was completed. Spring 1225 was rated as “Functional At-Risk” with a downward trend.

Table 32: Key Area Hydrologic Function – Clover Patch Allotment.

Key Area		Vegetation Type	Watershed Condition	Cause
No.	Name			
1	Clover Patch Unit	Upland	Fair	Surface Layer; Soil Movement; Surface Litter; Compaction; Bare Ground
2	Long Canyon Unit	Upland	Fair	Surface Layer; Soil Movement; Bare Ground
3	Modesty Unit; Lower Clover Patch Meadow	Riparian	Poor	Surface Layer; Hummocks; Rills; Compaction; Bare Ground; Headcuts

Hot Creek Allotment

Of the nine key areas within this allotment, two were rated as Good, six as Fair, and one as Non-Functional. Seven PFC assessments were completed. Four were rated at PFC, two were “Functional At-Risk” with no apparent trend (spring channels in the Meadow Unit), and one was rated “Functional At-Risk” with an upward trend (Lower Laurel Meadow).

Table 33: Key Area Hydrologic Function – Hot Creek Allotment.

Key Area		Vegetation Type	Watershed Condition	Cause
No.	Name			
1	Hot Creek Unit	Upland	Fair	Surface Layer; Soil Movement; Surface Litter; Pedastalling; Compaction; Bare Ground
2	Long Canyon Unit	Upland	Fair	Surface Layer; Soil Movement; Surface Litter; Compaction; Bare Ground
3	Whitmore Unit	Upland	Fair	Surface Layer; Soil Movement; Surface Litter; Bare Ground
4	Meadow Unit	Upland	Good	N/A
5	Convict Unit	Riparian	Fair	Compaction
6	Burn Unit	Upland	Fair	Surface Layer; Soil Movement; Flow Patterns; Rills
7a	Laurel Meadows Unit	Riparian	Non-Functional	Surface Layer; Hummocks; Rills; Compaction; Bare Ground; Headcuts
7b	Laurel Meadows Unit	Riparian	Fair	Hummocks; Compaction; Headcuts
7c	Laurel Meadows Unit	Riparian	Good	N/A

Long Valley

Of the nine key areas within this allotment, five were rated in Good watershed condition, four were rated Fair, and one was rated as Poor. Five PFC assessments were completed with four at PFC and one “Functional At-Risk” with no apparent trend (Upper McLaughlin Creek).

Table 34: Key Area Hydrologic Function – Long Valley Allotment.

Key Area		Vegetation Type	Watershed Condition	Cause
No.	Name			
1	Long Valley Unit	Upland	Fair	Surface Layer; Soil Movement; Surface Litter; Bare Ground
2	Wheatgrass Unit	Upland	Fair	Surface Layer, Soil Movement; Surface Litter; Bare Ground
3	Dry Creek Unit	Upland	Good	N/A
4	McLaughlin Unit – McLaughlin Springs	Riparian	Good	N/A
5	McLaughlin Unit - Bald Mountain Springs	Riparian	Good	N/A
5b	McLaughlin Unit – Meadow below Bald Mountain Springs	Riparian	Poor	Surface Layer; Rills; Compaction; Bare Ground; Headcuts
6a	Inaja Unit	Upland	Fair	Surface Layer; Soil Movement; Surface Litter; Pedastalling; Flow Patterns; Bare Ground
6b	Inaja Unit	Upland	Good	N/A
8	McLaughlin Springs Meadow Enclosure	Riparian	Fair	Surface Layer; Compaction; Headcuts
9	Ford Spring	Riparian	Good	N/A

Rock Creek Allotment

Of the six key areas, three were rated as Fair and two were rated as Non-Functional. One PFC assessment was completed with the area found to be at PFC.

Table 35: Key Area Hydrologic Function – Rock Creek Allotment.

Key Area		Vegetation Type	Watershed Condition	Cause
No.	Name			
1	Lower Owens River Unit	Upland	Good	N/A
2	Upper Owens River Unit	Upland	Fair	Surface Layer; Compaction; Bare Ground
3	Rock Creek Unit	Upland	Good	N/A
4	Highway Unit	Upland	Good	N/A
5	Rock Creek Unit – Witcher Meadow	Riparian	Fair	Surface Layer; Compaction; Bare Ground
6	Hilton Unit	Upland	Fair	Surface Layer; Compaction; Bare Ground

Tobacco Flat Allotment

The two key areas within this allotment were rated in Fair watershed condition.

Table 36: Key Area Hydrologic Function – Tobacco Flat Allotment.

Key Area		Vegetation Type	Watershed Condition	Cause
No.	Name			
1	Lower Tobacco Flat Unit	Upland	Fair	Surface Layer; Soil Movement; Surface Litter; Pedastalling
2	Upper Tobacco Flat Unit	Upland	Fair	Surface Layer; Soil Movement; Surface Litter; Pedastalling; Bare Ground

Turner Allotment

Of the six key areas within this allotment, two were rated in Good watershed condition, two in Fair condition, one in Poor condition, and one rated as Non-Functional. Fifteen PFC assessments were completed, mostly springs at the bottom of the Glass Mountains. Four were rated as “Non-Functional” with a downward trend (Springs 1440, 1440C, 1441, and Lower Sanchez Creek below Spring 1443), seven were rated as “Functional At-Risk” with a downward trend (Springs 1440A, 1440B, 1442, 1444, 1445, 1446, and O’Harrel Creek Upper Exlosure 1447), one was rated as “Functional At-Risk” with no apparent trend (Upper Sanchez Creek), and three were rated at “PFC” with no apparent trend.

Table 37: Key Area Hydrologic Function – Turner Allotment.

Key Area		Vegetation Type	Watershed Condition	Cause
No.	Name			
1a	Southwest Pasture	Upland	Poor	Surface Layer; Soil Movement; Surface Litter; Pedastalling; Compaction; Bare Ground
1b	Southwest Pasture	Riparian	Non-Functional	Surface Layer; Hummocks; Compaction; Bare Ground
2a	North Pasture – O’Harrel Creek Enclosure	Riparian	Good	N/A
2b	North Pasture – O’Harrel Creek Enclosure	Upland	Good	N/A
3	North Pasture	Upland	Fair	Surface Layer; Pedastalling; Compaction; Bare Ground
4	Southeast Pasture	Upland	Fair	Surface Layer; Surface Litter; Compaction; Bare Ground

Watterson Allotment

Of the five key areas within this allotment, four were rated in Fair condition and one was rated as Poor condition. Eight PFC assessments were completed. One was rated as “Functional At-Risk” with an upward trend (Spring 1350 in Kelty Meadow), four were rated at PFC with no apparent trend, and three were rated at PFC with an upward trend.

Table 38: Key Area Hydrologic Function – Watterson Allotment.

Key Area		Vegetation Type	Watershed Condition	Cause
No.	Name			
1	Banner Unit	Upland	Fair	Surface Layer; Soil Movement; Surface Litter; Pedastalling
2	Banner Unit	Upland	Fair	Surface Layer; Soil Movement; Surface Litter; Pedastalling; Compaction
3	Watterson Unit	Upland	Fair	Surface Layer; Soil Movement; Surface Litter; Pedastalling; Compaction
4	Kelty Unit	Riparian	Poor	Surface Layer; Hummocks; Compaction; Bare Ground; Headcuts
5	Sagehen Unit	Riparian	Fair	Surface Layer; Surface Litter; Compaction; Bare Ground

In summary, fourteen key areas assessed were rated Good (25%); 31 key areas were rated Fair (56%); seven key areas were rated Poor (13%); and 3 key areas were rated Non-Functional (5%). Twenty-four key areas assessed were determined to be at Proper Functioning Condition (51%); 14 key areas assessed were determined to be Functional At-Risk (30%); and four key areas were determined to be Non-Functional (8%). Four key areas were not assessed due to inaccessibility or flow was piped through a trough.

3.3.7.2 Direct and Indirect Effects of the Modified Proposed Action (Alternative 2)

The Modified Proposed Action incorporates corrective actions based on soil and watershed data (LRMP Amendment 6 protocols and PFC) collected in allotment key areas. A summary of direct and indirect effects is provided below. A more detailed analysis by allotment can be found in the *Air, Soil, and Watershed Management Report* (Ellsworth, 2008).

Key areas in Good condition; aquatic features rated at Proper Functioning Condition (PFC) – The key areas and aquatic features rated as “Good” and “PFC” would remain in that condition. The upland and riparian indicators are functioning properly. Channel form is at or near potential for the stream type. Streambank stability is high. Key areas would remain in “Good” condition and aquatic features at “PFC” remain the same or gradually move to desired condition as natural processes function properly.

Key areas in Fair condition; aquatic features rated at Functional At-Risk (upward trend) – The key areas rated as “Fair” and aquatic features rated as “Functional At-Risk” with an upward trend would maintain their condition or slightly improve under the proposed grazing strategies. Generally, one or more of the riparian and upland indicators of proper hydrologic function is impacted in most of the key area. Generally, in the upland areas the mineral surface layer is thinner than what is expected, soil movement is evident and more than would be expected in undisturbed conditions, compaction is evident over much of the site, and bare ground is greater than expected in the natural range of variability. Riparian and wet meadow vegetation recovery would continue to stabilize the existing headcut control structures, accelerated soil erosion would decrease, hummocking and soil compaction would improve, and headcut extension would be reduced or halted. The actual rate of recovery for each characteristic depends on site-specific conditions and the degree of impairment. Riparian areas would improve rapidly compared to upland areas because the available water would allow for stabilizing plant growth. The condition of riparian key areas rated as “Fair” would gradually improve as natural recovery proceeds. Aquatic features at “Functional At-Risk” with an upward trend are susceptible to degradation due to high flows and would likely remain at current levels with slight improvements due to utilization levels based on current condition. The rate of recovery would depend on livestock distribution and timing of forage utilization.

Key areas in Poor or Non-Functional condition; Aquatic features Functional-At-Risk with a downward trend and Non-Functional condition – In these areas the upland and riparian indicators are substantially altered from potential. The riparian key areas rated as “Poor” or “Non-Functional” are disconnected from their meadow surface floodplain and the channel morphology is altered from potential (i.e., largely gullied channel compared to a relatively small, narrow surface stream). The water table has lowered and the herbaceous plant community has been altered from deep-rooted plants to a mix of them and shallower rooted ones, or dominated by the latter. Streambank stability is usually poor. In the case of PFC assessments, there are degraded attributes and the channel is not likely to withstand high flows without further degradation. These areas are candidates for active restoration to restore hydrologic function, and where feasible, they are proposed for restoration under this Modified Proposed Action. Riparian key areas rated as “Non-Functional” would be rested from grazing until the area recovers, and upland areas would have reduced grazing. Areas rated as “Poor” would continue to be grazed, thereby slowing the recovery process.

In areas assessed for PFC that were rated as “Functional At-Risk” or “Non-Functional”: The Modified Proposed Action includes specific activities to return the areas to PFC as required by Riparian Conservation Objective No.5, Standard and Guideline 117 (SNFPA; USDA Forest Service, 2004). In the Clover Patch Allotment, active headcut restoration and livestock barriers around the spring are proposed. In the Hot Creek Allotment, the area rated at “Functional at-Risk” would be rested. The springs in the Turner Allotment would be excluded from livestock and/or actively restored. It is anticipated that the areas will return to PFC. In areas where the hydrologic function

was impaired, active restoration would expedite a return to PFC. These areas would continue to be evaluated and management actions would be adjusted to ensure PFC is achieved.

Potential detrimental grazing impacts to sensitive riparian and meadow habitats would be reduced through the implementation of the Modified Proposed Action (i.e., restriction of livestock from degraded springs, movement of watering troughs out of streamside or spring zones, and “active restoration of Spring 1440,” etc.) and LRMP Amendment 6 utilization standards. The decreased utilization levels in key areas with a “Poor” Key Area Hydrologic Function rating (LRMP Amendment 6 protocol) would result in a continued upward trend of watershed health within these areas. Riparian and wet meadow vegetation recovery would continue to stabilize the existing headcut control structures, soil erosion would decrease, hummocking and soil compaction would improve, and headcut extension would be reduced or halted. The actual rate of recovery for each characteristic depends on site-specific conditions and the degree of impairment.

In non-fenced meadow and spring habitats, the trend of improved watershed condition would either continue at a slower rate than fenced areas or become slightly degraded, the distinction being dependent upon the level of riparian and meadow utilization by livestock. Improvements in watershed condition would also result from implementation of other watershed related improvements, which include relocation of troughs and salt blocks out of riparian and meadow areas, stabilization of any new headcuts, and maintenance of existing headcut treatment structures.

Removing forage base by fencing meadows would cause livestock to graze other areas. As a result, grazing intensity in non-fenced meadow and upland areas could increase. Watershed impacts to non-fenced areas, especially loss of vegetative recovery and soil stability, may likewise occur. Implementation of LRMP Amendment 6, Proper Functioning Condition assessments, and continued inventory and implementation of watershed improvement structures would allow for an adaptive management approach by identifying areas within the allotment in need of additional treatment or change in grazing strategy.

In conclusion, under the Modified Proposed Action, key areas in “Good” condition and aquatic features at “PFC” should remain so. Key areas in “Fair” condition and aquatic features at “Functional At-Risk” with an upward trend should show improvement within a 5 to 10 year period unless some unforeseen disturbances or changes in management occur. Key areas in “Poor” or “Non-Functional” condition and aquatic features that are “Functional At-Risk” with a downward trend or “Non-Functional” would improve by implementing the proposed grazing strategies and completing watershed restoration projects. Overall, implementation of the Modified Proposed Action would help move this area toward the desired conditions as outlined in the Inyo National Forest Plan (1988) and the SNFPA (2004). It will also help adhere to the Aquatic Management Strategy (AMS) as outlined in the SNFPA (2004).

Water Quality

Sediment. Sediment deposition and accumulation in meadow streams is expected to remain low under current management as evidenced by suitable existing condition.

Bacteria and Other Pathogens. Based on literature and sampling completed on the Forest regarding grazing-related introduction of fecal coliform and pathogens such as giardia (Derlet and Carlson, 2006; Suk, 1983 and 1986), it is likely that these contaminants are present in streams within the allotments as a result of current management. Cattle are one factor contributing to water-borne

pathogens, as other mammals also introduce these contaminants (Derlet and Carlson, 2006; University of California, 2000).

Nutrients. No evidence of eutrophication (i.e., elevated levels of aquatic plants) has been observed in the field and none is expected as current management would not result in increased risk of nutrient loading in streams. In 2005, Gavingan assessed an area adjacent and within this analysis and found that nitrogen inputs from cattle are minor and phosphorus inputs do not occur. It is therefore unlikely that nutrients are impacting downstream beneficial uses, including Crowley Lake.

3.3.7.3 Cumulative Effects of the Modified Proposed Action (Alternative 2)

Cumulative watershed effects (CWE) describe adverse changes in watershed condition resulting from past, present, and foreseeable future land use activities. No foreseeable future land use activities in addition to those already occurring are anticipated. Implementation of Alternative 2 (Modified Proposed Action) should result in decreased erosion and soil compaction, as well as improved riparian and meadow vegetation relative to the existing condition.

From a CWE perspective, the overall watershed condition would improve. The Inyo National Forest currently analyzes cumulative effects at the 6th level HUC (Hydrologic Unit Code) scale. HUC 6 watersheds vary in size from 10,000 to 50,000 acres. The HUC 6 watersheds containing the project area are also the maximum extent of analyses because any hydrologic effects from livestock 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 HUC 6 watershed (5th level watershed for example) would be too large, and would mask cumulative effects.

Ground disturbance from grazing that may affect hydrologic function occupies a small portion of the 6th level watersheds in this assessment. It occurs where cattle concentrate in and around meadows and other aquatic features such as springs. Cattle forage in upland areas that may or may not be hydrologically connected to stream channels and springs. While ground disturbance from cattle grazing in meadows and spring areas is usually present to some degree (i.e., watering access, streamside trailing, stream crossings, spring chiseling) it is essentially a site-scale rather than watershed-scale issue. Under current management, sedimentation from streambank and spring disturbance at the site scale is occurring especially in the Turner Allotment, but there is little or no downstream cumulative effect. Any effect would be masked by other weather-related erosion events or management activities in the watershed. In other words, cumulative downstream effects of stream sedimentation are negligible and largely undetectable.

Even though physical disturbance is low at the watershed scale, the activities in the 6th level HUCs were reviewed to determine the overall level of management activity in the context of livestock management. Activities that may affect soil and water quality within the analysis area include: Hot Creek fish hatchery; Hot Creek Resort; geothermal energy development activities; mineral exploration and extraction (e.g. Royal Gold, Gypsum Mine, Casa Diablo); past and current grazing; commercial stock drives; rangeland vegetation treatments (e.g. sagebrush conversion, prescribed and wildland fires, including Wildland Fire Use); recreation activities, including dispersed and developed camping (Brownstown Campground), fishing, Hot Creek interpretive site, OHV activity; roads and trails; research facilities (Sierra Nevada Aquatic Research Laboratory), utility lines, airport expansion, gravel pit, vegetation management/fuels reduction projects; and isolated restoration projects. Overall, the cumulative amount of intensive land use in this watershed and use within the Riparian Concern Areas (RCA), including grazing, is negligible to minimal.

3.3.7.4 Direct and Indirect Effects of No Grazing (Alternative 1)

Key Area Hydrologic Function and Proper Functioning Condition

Key areas in Good condition; Aquatic features rated at Proper Functional Condition (PFC) – The key areas and aquatic features rated as “Good” and “PFC” would remain in that condition. The upland and riparian indicators are functioning properly. In the case of PFC, channel form is at or near potential for the stream type. Streambank stability is high. Key areas in “Good” condition and aquatic features at “PFC” remain the same or gradually move toward desired condition as natural processes function properly.

Key areas in Fair condition; Aquatic features rated at Functional At-Risk (upward trend) – Ongoing natural recovery would likely result in improved hydrologic function in the long term. Riparian and upland indicators of proper hydrologic function are present in most of each key area and over time the remaining area would improve. Riparian areas would improve rapidly compared to upland areas. The condition of riparian key areas rated as “Fair” would gradually improve as natural recovery rehabilitates the remainder of the key area. In the case of PFC at least one of the attributes is impaired putting the aquatic feature at risk of degradation with a relatively high flow event. Soils that have been compacted should recover with natural frost heave and root action, which can take up to 10 or 20 years. Due to the dry climate and short growing season (especially at elevations greater than 8,000 ft.), recovery is expected to be slow and removing grazing pressures would maximize recovery. Hummocked areas that have not undergone water table changes could be expected to return to natural vegetative and soil hydrologic potential relatively rapidly. Areas that have undergone drops in water table would be able to establish new floodplains and water table levels and develop to the new ecological potential. Soil bacteria, fungi, and macroinvertebrates would be able to re-colonize degraded sites, aiding in their recovery. Overall, watershed stability would be expected to increase.

Key areas in Poor or Non-Functioning condition; Aquatic features rated as Functional At-Risk with a downward trend and Non-Functional – The key areas rated as “Poor” or “Non-Functioning” condition would improve somewhat over time due to natural recovery processes. The upland indicators such as compaction and bare ground would slowly improve as vegetative recovery proceeds. Soils that have been compacted should recover with natural frost heave and root action, which can take up to 10 or 20 years. A few severely impacted areas may take longer than two decades to recover. Optimal vegetative growth would add to the soil cover through live vegetation, litter cover, and incorporation of organic matter into the soil surface, adding additional stability to soil aggregates. All of these factors would help minimize erosion and restore lost soil fertility in areas that had been degraded. Due to the dry climate and short growing season (especially at elevations greater than 8,000 feet), recovery of ground cover is expected to be slow and removing grazing pressures would maximize recovery. The aquatic features would reset at a new, lower level and grow vegetative cover at that elevation. Water table recovery would vary depending on the current extent of the incision. It is not likely that the more severely degraded key areas and aquatic features would reach desired condition; that is, floodplain connectivity, normal channel morphology, high water table, and stable streambanks.

Water Quality

Sediment. There would be no sedimentation from streambank disturbance by livestock once previously disturbed locations have healed over with vegetative cover. The period of recovery to suitable cover is variable depending on site-specific current condition within the riparian area.

Bacteria and Other Pathogens. The contribution of cattle would cease. Some level of these contaminants would remain in the streams from other sources such as horses and other native mammals (Derlet and Carlson, 2006).

Nutrients. The contribution of cattle to nutrient loading would cease. No change from present condition is expected as there has been no observation of eutrophication in the aquatic features within the allotments in this assessment.

3.3.7.5 Cumulative Effects of No Grazing (Alternative 1)

Activities that may affect soil and water quality within the analysis area include recreational use and artificial water level alteration at Crowley Lake and Laurel Pond, as well as management of Hot Creek Fish Hatchery, Hot Creek Resort, geothermal activities, mineral exploration and extraction (e.g. Royal Gold, Gypsum Mine, Casa Diablo); past and current grazing, commercial stock drives, rangeland vegetation treatments (e.g. sagebrush conversion, prescribed and wildfires, including Wildland Fire Use); recreation activities: dispersed and developed camping (Brownstown Campground), fishing, Hot Creek interpretive site, OHV activity; roads and trails, research facilities (Sierra Nevada Aquatic Research Laboratory), utility lines, airport expansion, gravel pit, and isolated restoration projects.

This action, when combined with past, present, and future foreseeable actions would not result in any adverse cumulative effect to soil and water resources in this area. This alternative proposes the elimination of grazing, which would most likely result in some net improvements to water and soil resources that may counter any soil and water effects occurring from the above actions. If, however, grazing no longer occurs in the project area, there may be more grazing pressures on surrounding National Forest System lands, Bureau of Land Management (BLM), Los Angeles Department of Water and Power (LADWP), or private lands. This could lead to minor to moderate, long-term, widespread negative effects to soil and water resources on non-National Forest System lands. However, that is based on other agencies or landowners allowing for increased grazing on their land, which is unknown.

3.3.8 Wildlife (Terrestrial and Aquatic)

This section was summarized from the Biological Assessments, Biological Evaluations, and Management Indicator Species Analysis for wildlife and aquatic species, which are hereby incorporated by reference (Murphy 2008; Murphy 2008b; Murphy and Sims 2008; Sims 2009; Sims 2008; Sims 2008b).

3.3.8.1 Direct, Indirect, and Cumulative Effects of the Modified Proposed Action (Alternative 2)

Federally Listed Threatened and Endangered Species

Biological Assessments were completed for three federally listed species that could potentially be affected by the proposed grazing activities, including Lahontan cutthroat trout (threatened), Owens tui chub (endangered), and Sierra Nevada bighorn sheep (endangered).

Lahontan cutthroat trout

The Lahontan cutthroat trout occurs within the upper portion of O'Harrel Creek, within the Turner Allotment. Grazing was removed in the upper portion of the stream in the early 1980s. As part of the Modified Proposed Action, this enclosure would continue to be maintained and enforced. Therefore, grazing would not occur within the O'Harrel enclosure, with the exception of up to five percent incidental use should cattle inadvertently enter the enclosure. This incidental use (5%) would have minimal impacts on the vegetation and streambanks. It is unlikely that any incidental use by cattle would occur in the upper, occupied habitat area, as historically cattle have used the lower end of the enclosure, where currently fish have not been observed. Habitat conditions are expected to continue to improve and move toward a more diverse and stable vegetative community, providing stability along streambanks and improved habitat conditions for Lahontan cutthroat trout. It was determined that this project would not likely adversely affect individuals or habitat of the Lahontan cutthroat trout (Sims, 2008).

Cumulative Effects: The Modified Proposed Action is not expected to contribute towards adverse cumulative effects for Lahontan cutthroat trout.

Owens tui chub

The Owens tui chub occurs within Little Hot Creek and associated water impoundments that were created below the existing dam structure on Little Hot Creek, within the Antelope Allotment. There is an enclosure fence around the habitat, which would continue to be maintained and would exclude grazing activities within the immediate vicinity of Owens tui chub habitat. In addition, rest of the meadows above the Owens tui chub enclosure until upland vegetation improves would allow for improved watershed and vegetative conditions. It was determined that implementation of the Modified Proposed Action would have no effect to habitat or individuals of the Owens tui chub (Sims, 2008b).

Cumulative Effects: Activities occurring concurrently within the Little Hot Creek watershed include the existence and use of unimproved roads, recreation activities, and a privately owned mine. Little Hot Creek draws many visitors to the area who seek recreational opportunities within the hot waters, including bathing. All of these activities cumulatively contribute sediment and other substances to the stream system, which ultimately settles out in the reservoir. The cumulative impacts of all these actions would be reduced when grazing impacts are reduced through measures proposed in this alternative. These actions include rest and reduced utilization of the meadows—and subsequent watershed improvement—above the Owens tui chub habitat. The Modified Proposed Action is not expected to contribute towards adverse cumulative effects for Owens tui chub.

Sierra Nevada bighorn sheep (SNBS)

The Wheeler Herd Unit (occupied by SNBS) and the Convict Herd Unit (currently unoccupied) are located within two miles of the Rock Creek Allotment. The Rock Creek Allotment does contain potentially suitable winter foraging habitat for SNBS. With the establishment of forage utilization levels, there would be no displacement of SNBS due to forage competition, as these levels allow for the continuation of suitable forage for SNBS. There would be no direct or indirect effect to critical habitat, as it is not located within the Rock Creek Allotment.

Of greatest concern from the Modified Proposed Action is the potential for direct contact that could lead to disease transmission. The disease transmission from domestic sheep to SNBS could be classified as a potential direct effect and could significantly impact SNBS if it were to occur. The Modified Proposed Action is designed to both eliminate and reduce the risk of contact and disease transmission by monitoring and eliminating domestic sheep use in areas that are located in closest proximity to occupied habitat and are considered suitable SNBS winter habitat, and by implementing minimizing measures in areas with a lower risk of contact.

The grazing strategy under the Modified Proposed Action is designed to reduce the likelihood of contact due to the vacancy of the Rock Creek and Highway Units. These two units present the highest risk due to their close proximity to occupied habitat and the presence of winter range accessible to SNBS following the Birch Fire in 2002. Leaving these units vacant would eliminate the risk of contact between domestic and SNBS within these higher risk units. The implementation of minimizing measures within the Hilton Unit, Upper Owens Unit, and Lower Owens Unit to ensure all domestic sheep are accounted for during the grazing season (full counts and marker counts); reducing the risk of straying domestic sheep (breed of domestic sheep; pregnant ewes, herder camp location, and the use of herding and guard dogs); and the change in season of use on the Hilton Unit; would reduce the risk of contact between domestic sheep and SNBS. These units are also lower risk due to the distance from occupied SNBS habitat and U.S. Highway 395 as a barrier (Lower Owens and Upper Owens Units are located on the other side of the highway). It was determined that the Modified Proposed Action may affect, but is not likely to adversely affect, the SNBS within, near, and/or associated with the Rock Creek Allotment (Murphy, 2008b; USDI Fish and Wildlife Service, 2008).

Cumulative Effects: The Modified Proposed Action is not expected to contribute towards adverse cumulative effects for Sierra Nevada bighorn sheep.

Forest Service Sensitive Species

Biological Evaluations were completed for Forest Service sensitive species potentially occurring on the Inyo National Forest (Murphy, 2008; Sims, 2008c).

Terrestrial Wildlife

The Biological Evaluation for terrestrial wildlife species (Murphy, 2008) identified one sensitive wildlife species known to occur and have suitable habitat within the project area. The Crowley Basin, or Long Valley, is within the Southern Mono “population management unit” (PMU) for the greater sage grouse (Sage Grouse Conservation Plan 2004). Based on existing vegetation data, there are approximately 53,055 acres of potential sage grouse habitat within the twelve allotments. Within the Crowley Basin as a whole (National Forest System lands, both within and outside the project area and other public and private lands), there are approximately 102,650 acres of potentially suitable habitat;

of this there are 53,870 acres of suitable sage grouse foraging habitat (outside two miles of a lek) and 48,780 acres of nesting habitat (within two miles of a lek). Sage grouse use of habitat within the allotments includes nesting, roosting and foraging, primarily during fall, winter, and spring months. Use of adjacent non-National Forest System lands is much higher and includes substantially more use during the summer months. This is likely due to the presence of extensive wet meadow systems along the upper Owens River and extending outward from the shoreline of Crowley Lake. These meadow systems include the majority of leks and high quality brood rearing habitat within the basin.

It was determined that the Modified Proposed Action may impact individual sage grouse, but would not result in a trend towards federal listing or loss of viability (Murphy 2008). The following provides some of the rationale for this determination based on the effects analysis, which is discussed in greater detail within the Biological Evaluation.

- Direct disturbance of individuals is likely occurring at a low level, but not during the time of year when disturbance would constitute a negative impact, such as the breeding and nesting seasons. Livestock will not be authorized to graze until after June 1 each year, when sage grouse have completed the breeding and nesting season for this area.
- The majority of sage grouse leks and brood-rearing habitats are not located within the Crowley Lake Basin grazing allotments.
- Wet meadow systems on adjacent non-National Forest System lands are more heavily utilized by sage grouse between late spring and early fall when livestock are present on the Crowley Lake Basin grazing allotments.
- All meadow systems will have an established allowable use standard based on current conditions or conditions after adaptive management monitoring.
- Utilization standards will continue to allow for suitable cover. Proposed livestock grazing will not generally impact sagebrush cover, and residual grass height within the project area is maintaining suitable cover.
- Implementation of the Modified Proposed Action is expected to substantially reduce the acreage of sage grouse habitat that would be heavily used by livestock.
- Some level of habitat alteration is occurring under current grazing systems and is expected to continue, to a lesser degree, through implementation of the Modified Proposed Action.

There would be no affect to any other Forest Service sensitive terrestrial wildlife species potentially occurring on the Inyo National Forest.

Cumulative Effects: Past, present, and reasonably future foreseeable actions that would continue and are more significant to sage grouse use of Long Valley include, 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, wildfires, conversion or loss of suitable habitat due to cheatgrass or noxious weeds, presence of fences, and livestock grazing on Los Angeles Department of Water and Power (LADWP) land. These activities are cumulatively lowering sage grouse habitat suitability over time, promoting the spread of invasive weeds, increasing the risk of mortality due to the presence of fences around lek areas, 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. Based on the rationale summarized above, the Modified Proposed Action would not likely contribute toward adverse cumulative effects for sensitive terrestrial wildlife species.

Aquatic Wildlife

The Biological Evaluation for aquatic wildlife species (Sims 2008b) determined that there would be no affect to Forest Service sensitive aquatic species potentially occurring on the Inyo National Forest.

Management Indicator Species

A Management Indicator Species (MIS) Report, which analyzed the project-level effects on MIS habitat was completed (Murphy and Sims 2008) and is briefly summarized here. The MIS whose habitat would potentially be either directly or indirectly affected by the Modified Proposed Action and were selected for project-level MIS analysis include: macro-invertebrates (riverine and lacustrine), Pacific tree frog (wet meadow), greater sage grouse (sagebrush), and yellow warbler (riparian). It was determined that the project-level impacts would not alter the existing trend in the habitat, nor will it lead to a change in the distribution of macro-invertebrates, Pacific tree frog, greater sage grouse, and yellow warbler. The implementation of the LRMP Amendment 6 grazing standards was designed to specifically improve, maintain and promote the recovery of watershed conditions throughout the allotments. In addition, allowable use standards would be adjusted based on the condition of key areas within the allotments. This would maintain or improve suitable habitat conditions for each of these species.

3.3.8.2 Direct, Indirect, and Cumulative Effects of No Grazing (Alternative 1)

Under the No grazing Alternative, it was determined that there would be no direct, indirect, or cumulative effects to PTES species or MIS habitat.

3.3.9 Plants and Noxious Weeds

Summarized from the Biological Evaluation for Sensitive Plant Species and Noxious Weed Risk Assessment for the Crowley Lake Basin Grazing Allotments, which are hereby incorporated by reference (Nelson 2008; Nelson 2008b).

3.3.9.1 Direct, Indirect, and Cumulative Effects of Modified Proposed Action (Alternative 2)

The plant species Biological Evaluation for the Crowley Lake Basin Grazing Allotments (Nelson 2008) identified five sensitive plant species known to occur in the project area (Long Valley milkvetch, Lemmon's milkvetch, Mono milkvetch, Mono Lake lupine, and Inyo phacelia) and four sensitive species for which potential habitat exists within the project area (Bodie Hills rockcress, upswept moonwort, scalloped moonwort, and common moonwort). It was determined that based on the continuation of livestock grazing at light to moderate use levels, and the expected reduction in overall trampling and habitat impacts compared to historical levels, that the proposed project may impact individuals, but will not lead to a trend toward federal listing for these Forest Service sensitive plant species. No federally listed proposed, threatened, or endangered plant species have potential habitat or occur within or adjacent to the project area.

The Noxious Weed Risk Assessment (Nelson 2008b) identified five invasive weed species known to occur within the project area, including cheatgrass, red brome, bull thistle, Russian thistle, and mullein. Many of the areas with weed infestations would have changes in livestock management that reduce the amount of trampling and associated ground disturbance due to a reduction in livestock numbers or a shortened season. This should contribute to higher levels of vegetation cover and litter, and less bare ground and disturbance in those areas, which should reduce the weed risk. Some areas would have the same or slightly higher use than the existing permitted amount, with weed risk from livestock alteration of habitat occurring at continued present or slightly higher levels. The overall risk of habitat alteration from this project contributing to weed vulnerability is moderate. Measures taken to reduce spread and control of existing infestations (pasture rotations and other direct control efforts) would lessen this risk compared to the current situation.

Cumulative Effects: The Modified Proposed Action authorizes continued grazing, and sensitive plant occurrences would continue to be affected to some degree by trampling and grazing. Based on the fact that some historical occurrences have been relocated, and it is possible further searches would locate more of these, it does not seem likely that the Modified Proposed Action would cause a significant cumulative impact for sensitive plant species. Monitoring included with the Modified Proposed Action would help to verify that no additional occurrences would be extirpated due to implementation of the Modified Proposed Action.

3.3.9.2 Direct, Indirect, and Cumulative Effects of No Grazing (Alternative 1)

Under the No Grazing Alternative, it was determined that there would be no direct, indirect, or cumulative effects to PTES plant species.

3.3.10 Heritage Resources

Summarized from the Heritage Resource Report for the Crowley Lake Basin Allotment Analysis, which is hereby incorporated by reference (West 2008).

3.3.10.1 Direct, Indirect, and Cumulative Effects of the Modified Proposed Action (Alternative 2)

The protection of cultural resources has been incorporated into the Modified Proposed Action, and would follow the stipulations in the Programmatic Agreement (PA) among the USDA, Forest Service, and the Advisory Council on Historic Preservation, Regarding Rangeland Management Activities on National Forest System Lands (June 26, 1995) and the Memorandum of Understanding among the USDA Forest Service, Pacific Southwest Region, California State Historic Preservation Officer, and the Nevada State Historic Preservation Officer regarding Rangeland Management Activities, 1996 (MOU) and the Rangeland Heritage Resources Management Activities, Inyo National Forest, California and Nevada, 1997 (INF Supplemental).

Standard procedures for protecting cultural resources (standard resource treatments, including monitoring) would be followed for activities that are located within High Use areas, which are defined in the MOU as “Areas which receive concentrated use from livestock grazing activities, where use is intense enough to cause possible degradation of the environment and or heritage resources through erosion, compaction, or trampling.” These areas would include seeps, springs, watering troughs and bedding areas. Cultural resource records search and field surveys have been completed resulting in 49 heritage resources that have been identified within High Use areas. Of

these, 26 heritage resources have been identified as at risk or potentially at risk from continued grazing. Prescribed standard protection measures or monitoring for these 26 resources would mitigate any adverse effects or identify unknown adverse effects that may occur with continued grazing. Standard protection measures for this project may include, but are not limited to maintaining or reconstructing existing range improvements, constructing new range improvements to reduce or eliminate impacts to cultural resources and removing or re-locating the High Use area to another location devoid of cultural resources. Seventeen resources have been recommended for an annual monitoring program, which would track site condition over the next five years and test the assumption that continued grazing would not have an adverse effect to these sites. Three resources require standard protection measures to avoid adverse effects from continued grazing and four High Use areas have been removed or relocated in order to avoid further damage to heritage resources. The Heritage Resource Specialist would be kept informed of the status of various stages of the project, so standard protection measures can occur prior to project implementation, and monitoring of sites near activity areas can occur based on the timing of activities. Information regarding the field surveys and management recommendations for heritage resource sites and features are contained in the Heritage Resource Report (West 2008; Heritage Resource Report #R2006-05-04-01211). By following these standard procedures outlined in the PA and MOU, it was determined that there would be no adverse effects to cultural resources from implementing this project (Ibid). There would be no cumulative effects to cultural resources.

3.3.10.2 Direct, Indirect, and Cumulative Effects of No Grazing (Alternative 1)

Under the No Grazing Alternative, it was determined that there would be little to no direct, indirect, or cumulative effects to cultural resources.

3.3.11 Socio-Economic Effects

The allotments for this planning area are located in Mono County, California. Since residents in Inyo and Mono Counties would be most likely to experience the direct social and economic impacts of the Crowley Lake Watershed grazing allotments, the analysis included the demographic information and statistics for both Mono and Inyo Counties only. Some residents of these communities depend upon a variety of forest resource-related activities and access to resources for their economic livelihood. These activities include ranching, fishing, and tourism-related activities. A summary of the demographic information and statistics can be found in the project file.

Five of the permittees within the project area have base ranches in Mono County, 2 in Inyo County and 3 in other locations outside the local area of influence. Additionally 5 of the Permittee/Owners live outside the local area of influence.

3.3.11.1 Direct, Indirect, and Cumulative Effects of the Modified Proposed Action (Alternative 2)

Alternative 2 would authorize livestock grazing on eleven of the twelve allotments within the Crowley Lake Watershed Allotments. Grazing on these allotments would allow the permittees to move livestock off their base ranches during the summer months and utilize forage on the Forest. This management option would increase the likelihood for economically viable year round livestock

operations. The permittee and local community would benefit from continued operation of the base ranch including jobs and revenue contributed to the local economy.

Alternative 2 requires resource mitigation measures and some compromises between users and resources so the potential benefits of this action alternative are greater than the current situation by proactively addressing resource concerns. This alternative would have a benefit and value to a larger diversity of interest groups.

Alternative 2 requires allotments be managed more actively than existing conditions. Due to the changes in monitoring, starting and ending dates for grazing, requirements for moving herds, possible boundary or classification changes in allotments, and other mitigation measures in Alternative 2, it is difficult to predict the impact to ranching operations and AUM levels. Some operators may be effective in monitoring and using forage from National Forest System lands, while others may be unable to adapt to the new conditions. Outside forces play a large role in the ability for ranchers to maintain an operation’s profitability.

Some ranches may not be able to adapt to the new management practices and or profit margins could become too small to remain in business. Some ranching operations could possibly fail. Other ranching operations may actually benefit from the new management practices as a result of increased land performance and vegetation health. Enhanced ecosystem conditions may mean increased nutritive value of forage which could result in higher weight gains on livestock, especially calves, which would likely increase rancher profit margins depending on market activity.

With the closing of the McGee Creek Allotment, 978 AUMs (741HM) will no longer be available; a minimal value of \$1,000.35 @ \$1.35 x 741 HM. This would be some inconvenience to the permittee but should not significantly effect his overall operation. Two units in the Rock Creek Allotment would be left vacant resulting in an estimated loss of 236 AUMs (179 HM) or about \$241.65 minimal value in grazing fees. The permittee in the Rock Creek allotment has already adjusted to this decrease since a fire burned the area in 2002 (Birch Fire), and the area has been rested.

In Alternative 2 the total reduction would be 1214 AUMs from the current 10,540 AUMs leaving 9,326 AUMs available for grazing.

Table 39: Summary of Changes in AUMs, Head Months, and Grazing Fee Values.

Alternative	AUMs Provided for Livestock Industry	Head Months	Net loss of AUMs	Minimal Grazing Fees Value @ \$1.35 per HM
Existing	10,540	7,807	0	\$10,539.45
Modified Proposed Action	9326 (estimate)	7,065	1,214	\$9,537.75

3.3.11.2 Direct, Indirect, and Cumulative Effects of No Grazing (Alternative 1)

This alternative would not meet the national direction of developing or maintaining sustainable land uses that contribute to economic goals, or of providing forage to qualified livestock operators from lands suitable for grazing consistent with land management plans, or of providing opportunities for economic diversity by promoting stability for communities that depend on range resources for their livelihood. In 2007, cattle were in the top 5 agricultural commodities for Mono and Inyo counties (California Farm Bureau Federation 2008).

Alternative 1 would have the greatest economic impact. The elimination of all grazing within the Crowley Lake Watershed Grazing Allotment analysis area would result in the loss of some (estimated 30%) of the permittees' primary or sole income source with some additional part-time or seasonal jobs also being eliminated. Permittees and the local communities would not have the opportunity to generate jobs and revenue from livestock operations utilizing forage on the Forest. The local and out of county livestock industry would lose 10,540 AUMs of forage at a minimum value of \$10,539.45 @ \$1.35 x 7,807 HM. There would be a reduction in grazing fees returned to the National Forest for Range Betterment funding.

A few of the ranching operations could go out of business, with the largest effect occurring to the sheep producers. The elimination of all grazing on the Crowley Lake Watershed grazing allotments would likely cause somewhat of a negative impact to local communities if operations cease and income-producing businesses move away. Alternative 1 does little to support local communities trying to maintain a rural lifestyle with an agricultural influence. There would be limited social effects by the loss of ranchers and their employees and economic effects would likely be minimal because of the small number of total ranches involved. At least 3 of the producers are based elsewhere and only utilize the summer grazing, shipping their stock elsewhere for sale. These producers would no longer require seasonal workforces who spend at least four months living in Mono County. Without use of the Forest Service grazing allotments, several of the permittees may have to reduce herd size to a point that it is not economically viable to continue in the business. This could result in the loss of their other federal grazing permits and private land leases. Some ranches may be sold or converted to smaller acreage home sites or developments.

3.4 Effects Relative to Finding of No Significance (FONSI) Elements

In 1978, the Council on Environmental Quality published regulations for implementing the National Environmental Policy Act (NEPA). These regulations (40 CFR Parts 1500-1508) include a definition of "significant" as used in NEPA. The ten elements of this definition are critical to reducing paperwork through use of a finding of no significant impact (FONSI) when an action would not have a significant effect on the human environment, and is therefore exempt from requirements to prepare an environmental impact statement (EIS). Significance as used in NEPA requires consideration of the following ten intensity factors in the appropriate context for that factor.

1. Beneficial and adverse impacts.

Mitigations and management requirements designed to reduce the potential for adverse impacts were incorporated into the Modified Proposed Action (ie. standards and guidelines outlined in the Inyo National Forest LRMP (USDA Forest Service 1988), as amended by Forest Plan Amendment 6, Forestwide Range Utilization Standards (USDA Forest Service 1995), and the 2004 Sierra Nevada Forest Plan Amendment (USDA Forest Service 2004). These mitigations and management requirements would minimize or eliminate the potential for adverse impacts caused by livestock grazing activities.

A discussion of potential effects was summarized above from supporting analysis (Ellsworth 2008, Murphy 2008, Murphy 2008b, Murphy and Sims 2008, Nelson 2008, Nelson 2008b, Sims

2009, Sims 2008, Sims 2008b, Robson 2008, and West 2008). All analyses prepared in support of this document considered both beneficial and adverse effects of the proposed action; however, beneficial effects were not used to offset or compensate for adverse effects in the analyses. None of the potential effects of the Modified Proposed Action or No Grazing Alternative would be significant, even when considered separately from the beneficial effects that occur in conjunction with those effects.

2. The degree to which the proposed action affects public health or safety.

None of the alternatives considered would have an effect upon public health and safety.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

There are no parklands, prime farmlands, wild and scenic rivers, or ecologically critical areas within the project area.

The allotments contain meadows, springs, and riparian features that would classify as wetlands. Based on the environmental analysis completed for hydrology, range, wildlife, and botany, the Modified Proposed Action would not have a significant adverse effect to riparian values. The resource protection standards applied in the Modified Proposed Action alternative, including fencing of sensitive sites, reduced forage utilization levels and limitations on the amount of bank disturbance, would ensure a lack of significant effects to wetlands.

The protection of cultural resources has been incorporated into the Modified Proposed Action, and would follow the stipulations in the Programmatic Agreement (PA) among the USDA, Forest Service, and the Advisory Council on Historic Preservation, Regarding Rangeland Management Activities on National Forest System Lands (June 26, 1995) and the Memorandum of Understanding among the USDA Forest Service, Pacific Southwest Region, California State Historic Preservation Officer, and the Nevada State Historic Preservation Officer regarding Rangeland Management Activities, 1996 (MOU) and the Rangeland Heritage Resources Management Activities, Inyo National Forest, California and Nevada, 1997 (INF Supplemental). Details regarding the field surveys and management recommendations for heritage resources sites and features are contained in the Effects Analysis Crowley Lake Basin Range NEPA (West 2008) and Heritage Resource Report (#R2006-05-04-01211). By following the recommendations outlined in this report, including the use of the standard procedures outlined in the PA and MOU, it was determined that there would be no adverse effects to cultural resources from implementing this project (Ibid).

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

The proposed project follows the management direction in the Inyo National Forest Land and Resource Management Plan (USDA Forest Service 1988), as amended by Forest Plan Amendment 6, Forestwide Range Utilization Standards (USDA Forest Service 1995), and the 2004 Sierra Nevada Forest Plan Amendment (USDA Forest Service 2004). The Modified Proposed Action was developed by comparing existing conditions with desired conditions. Potential adverse effects have been minimized or eliminated to the point where there are few effects to draw controversy. Public

involvement efforts did not reveal any significant issues or any other significant controversies regarding environmental effects of this proposal. Based on comments from the public and the analysis of effects from the ID Team, there are not significant effects expected to the quality of the human environment from implementing any of the alternatives, including the Modified Proposed Action alternative.

5. *Degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.*

The proposed project follows the management direction in the Inyo National Forest Land and Resource Management Plan (USDA Forest Service 1988), as amended by Forest Plan Amendment 6, Forestwide Range Utilization Standards (USDA Forest Service 1995), and the 2004 Sierra Nevada Forest Plan Amendment (USDA Forest Service 2004). It implements management requirements designed to reduce the potential for adverse effects, and has incorporated utilization standards for the grazing of domestic livestock that would accelerate the restoration and improvement of degraded range sites and maintain those sites currently in good condition.

Local expertise in implementation of grazing activities minimizes the chance of highly uncertain effects or effects which involve unique or unknown risks. Livestock grazing has occurred in the eastern Sierra for more than a century and on the allotments within the Crowley Lake Watershed Grazing Allotments analysis area for decades. Many of the grazing practices used decades ago are no longer used due to a better understanding of range conditions, the needs of livestock, and effects of grazing on resource values. Rangeland health on the Inyo National Forest has continued to improve overtime. Proposed activities are routine in nature, employing standard practices and protection measures, and their effects are generally well known.

6. *The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.*

The Crowley Lake Watershed Allotment Analysis represents a site-specific project that does not set precedence for future decisions with significant effects or present a decision in principle about future considerations. Any future decisions would require a site-specific analysis to consider all relevant scientific and site-specific information available at that time. These activities are in accordance with the best available science to manage grazing activities at this time.

7. *Whether this action is related to other actions with individually insignificant but cumulatively significant impacts.*

A cumulative effect is the consequence on the environment that results from the incremental effect of the action when added to the effects of other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes the other actions and regardless of land ownership on which the actions occur. A cumulative effects analysis was completed separately for each resource area. None of the resource specialists found the potential for significant adverse cumulative effects (Ellsworth 2008, Murphy 2008, Murphy 2008b, Nelson 2008, Nelson 2008b, Sims 2009, Sims 2008, Sims 2008b, Robson 2008, and West 2008).

8. *The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.*

It was determined that there would be no adverse effect to cultural resources from implementing this project (West 2008; HRR #R2006-05-04-01211), and the Modified Proposed Action does not adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places. Protection of heritage resources in the area was incorporated into the Modified Proposed Action through such measures as maintaining or reconstructing existing range improvements, constructing new range improvements, and moving existing range improvements. Based on analysis documented in the Heritage Resource Report, the Modified Proposed Action would not cause loss or destruction of significant, scientific, cultural, or historical resources.

9. *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.*

There are three federally listed threatened or endangered wildlife species that are known to occur or have suitable habitat within the project area. These species include: Lahontan cutthroat trout (threatened), Owens tui chub (endangered), and Sierra Nevada bighorn sheep (endangered). There is no critical habitat identified within the analysis area. Based on analysis documented in the Biological Assessments, it was determined that this project would not likely adversely affect individuals or habitat of the Lahontan cutthroat trout, Owens tui chub, and Sierra Nevada bighorn sheep (Murphy 2008b, Sims 2009, Sims 2008; and USDI Fish and Wildlife Service 2008).

No federally listed threatened or endangered plant species have potential habitat (including critical habitat) or occur within or adjacent to the project area (Nelson 2008).

10. *Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.*

The Modified Proposed Action would not threaten a violation of Federal, State, or local law, or requirements imposed for the protection of the environment. The proposed action is consistent with the National Environmental Policy Act (NEPA), National Forest Management Act (NFMA), Endangered Species Act (ESA), Clean Water Act, and the National Historic Preservation Act (NHPA). The Modified Proposed Action is fully consistent with the Inyo National Forest Land and Resource Management Plan (USDA Forest Service 1988), as amended by LRMP Amendment 6, Forestwide Range Utilization Standards (USDA Forest Service 1995), and the 2004 Sierra Nevada Forest Plan Amendment (USDA Forest Service 2004).

Chapter 4: Agencies and Persons Consulted

USDI Fish and Wildlife Service, Ventura Field Office, Ventura, CA
USDI Bureau of Land Management, Bishop Field Office, Bishop, CA
Lacey Livestock, Tobacco Flat Allotment Permittee
Gary and Alonna Giacomini, Turner Allotment Permittee
Cashbaugh Trust, Antelope Allotment Permittee
Ansolabehere Sheep Company, McGee Allotment and Casa Diablo Allotment Permittee
Alpers Ranch LC, Alpers Canyon Allotment Permittee
Arcularius Ranch, Clark Canyon Allotment Permittee
Four J Cattle Company, Clover Patch Allotment Permittee
Dave Wood, Hot Creek Allotment Permittee
Arcularius Holdings, LLC, Long Valley Allotment Permittee
Joe Echenique, Rock Creek Allotment Permittee

Chapter 5: References

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Appendix A: Allotment Maps

- Map 1: Apers Canyon Allotment
- Map 2: Antelope Allotment
- Map 3: Casa Diablo Allotment
- Map 4: Clark Canyon Allotment
- Map 5: Clover Patch Allotment
- Map 6: Hot Creek Allotment
- Map 7: Long Valley Allotment
- Map 8: McGee Allotment
- Map 9: Rock Creek Allotment
- Map 10: Tobacco Flat Allotment
- Map 11: Turner Allotment
- Map 12: Watterson Canyon Allotment