United States
Department of
Agriculture

Forest
Service

May 2009
Finalized July 2009

Environmental Assessment

High Meadow Restoration Project

Lake Tahoe Basin Management Unit, Region 5—USDA Forest Service

Legal Description: Southeast quarter, Section 12 and Northeast quarter, Section 13, Township 12 North, Range 18 East, Mount Diablo Baseline & Meridian (South Lake Tahoe Quadrangle map).

For Information Contact:
USDA Forest Service
Lake Tahoe Basin Management Unit
35 College Drive
South Lake Tahoe, CA 96150
530-543-2600
http://www.fs.fed.us/r5/ltbmu/

Table of Contents

SUMMARY

The Lake Tahoe Basin Management Unit (LTBMU) proposes to:

1) Amend the Land Resource Management Plan (LRMP) to establish management direction for the High Meadow area (see Map 1-1); and

2) Implement ecological restoration activities that are consistent with the adopted and existing management direction. The proposed restoration activities fall into three major categories:

    a. Construction of approximately 8,700 linear feet of new stream channels in order to restore historic meadow conditions and drainage patterns;

    b. Removal of approximately 300 acres of heavy concentrations of dead and dying conifers.

    c. Removal of approximately 25 acres of conifer trees that have encroached upon aspen stands and meadows.

3) Establish and implement an Access and Travel Management (ATM) Plan for the Upper Cold Creek and High Meadow area, which would include the following specific actions:

    a. Partial reroute of the main access road. Includes 1.4 miles of decommissioning and 1.2 miles of construction.

    b. Restore approximately 6.4 miles of unclassified road.

    c. Restore approximately 1.2 miles of unclassified trail (existing Upper Cold Creek trail).

    d. Construct approximately 7.2 miles of non-motorized trail.

The project area is approximately 1,790 acres in size and is generally located one mile east of South Lake Tahoe, CA. The High Meadow Complex, a 200 acre meadow, wetland and conifer forest complex resting on a glacially sculpted, fault-bounded basin, is the most recognizable and distinctive feature within the project area and is centrally located in the middle of the project area. The project area is within the LTBMU, Region 5 of the U.S. Department of Agriculture (USDA) Forest Service (see Figure 1 for a location map).
This action is needed because the acquired land is not incorporated into the LRMP. The current interim management does not provide long-term direction to ensure sustainable and proper land management, and the existing environmental conditions and trends in the area are resulting in environmental effects.

The proposed action is expected to lead to improved conditions in the functioning of riparian, meadow, and terrestrial ecosystems by reducing sedimentation, restoring and expanding meadow habitat and function, and encouraging long-term sustainability of aspen stands. In addition, recreational opportunities would be improved by increased non-motorized access to the area and to adjacent areas as loop access routes are improved.

In addition to the proposed action, the Forest Service also evaluated the following alternatives:

- *Alternative 2—No Action*—under this alternative, interim management direction would continue and no access travel management or ecological restoration activities would occur.
- *Alternative 3*—designed to respond to public concerns about the recreational impacts of re-locating the Upper Cold Creek trail, this alternative would retain the existing trail location and provide site-specific mitigation and trail improvements to address sedimentation concerns in lieu of constructing a new trail location and restoring the existing trail location. All other actions are the same as the Proposed Action.

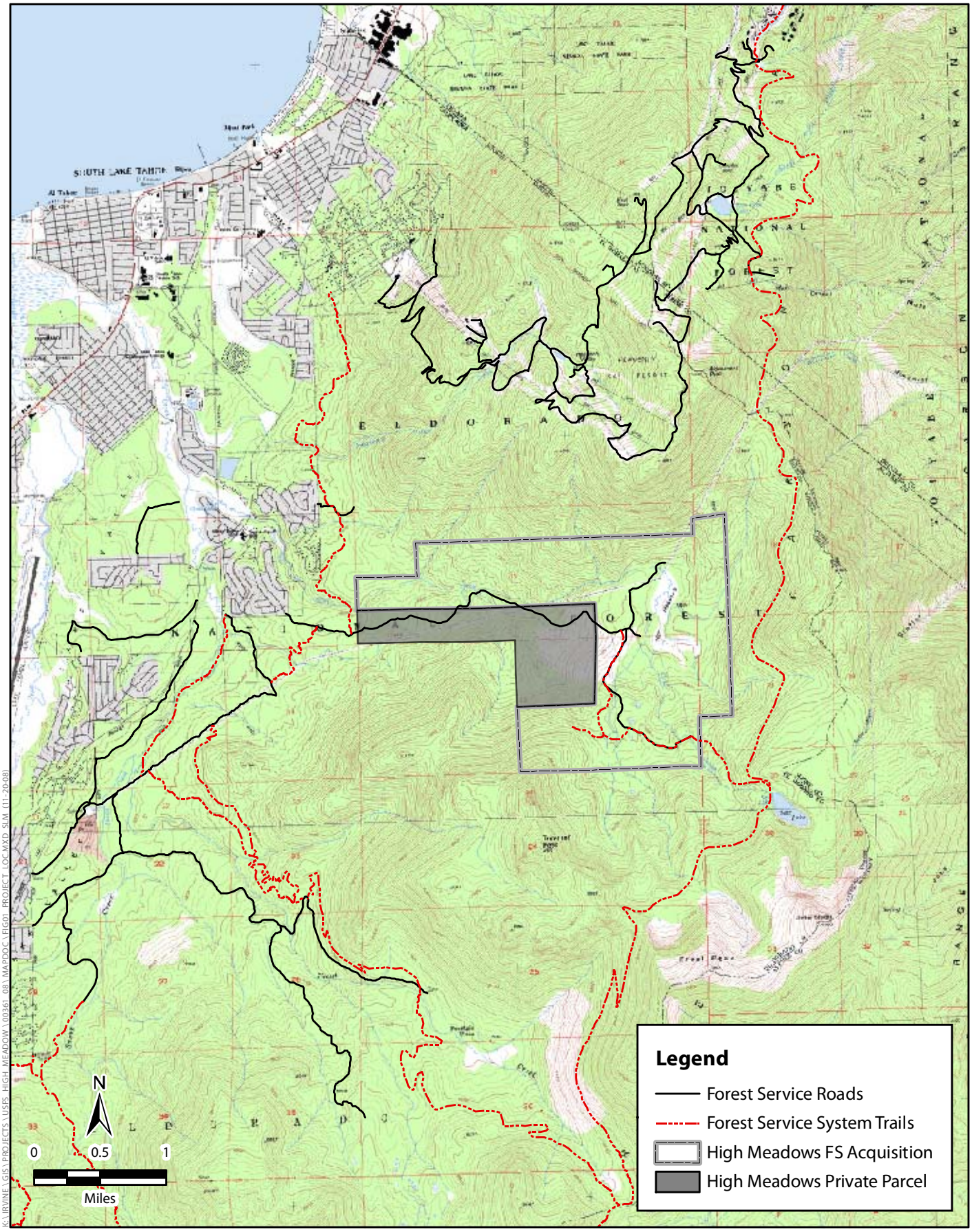
Based upon the effects of the alternatives, the responsible official will decide:

1) Whether or not to amend the LTBMU LRMP with land management direction for the project area.

2) Whether or not to implement the ecological restoration activities as described in the Proposed Action or select an alternative to the Proposed Action.

3) Whether or not to implement the ATM activities as described in the Proposed Action or select an alternative to the Proposed Action.

4) Whether or not a Finding of No Significant Impact (FONSI) can be supported by the environmental analysis contained in this Environmental Assessment (EA).



SOURCE: USGS 7.5' Quad., CA: South Lake Tahoe, Freel Peak, Minden & Woodfords

Figure 1
General Project Location
High Meadow Project

1.0 INTRODUCTION

1.1 Document Structure

The Forest Service has prepared this EA in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This EA discloses the direct, indirect, and cumulative environmental effects that would result from the proposed action and alternatives. The document is organized into four parts:

1. *Introduction:* The section includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
2. *Alternatives, including the Proposed Action:* This section provides a more detailed description of the agency's proposed action as well as an alternative method for achieving the stated purpose. Alternative 3 was developed based on significant issues raised by the public and other agencies. This discussion also includes project design features. Finally, this section provides a summary table of the environmental consequences associated with each alternative.
3. *Environmental Consequences:* This section describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by resource area. Within each section, the affected environment is described first, followed by the effects of the No Action Alternative that provides a baseline for evaluation and comparison of the other alternatives that follow.
4. *Consultation and Coordination:* This section provides a list of preparers and agencies consulted during the development of the EA.
5. *Appendices:* The appendices provide more detailed information to support the analyses presented in the EA.

Additional documentation may be found in the project planning record located at the LTBMU Forest Supervisor's Office in South Lake Tahoe, CA.

1.2 Background[1]

Prior to around 1850, the project area conditions reflected a balance of uses and influences of the Native American tribes in the area and natural processes. Human activity markedly changed in magnitude and form beginning in the 1850's Comstock Era, when logging, grazing, and widespread resource extraction fed the mining boom in western Nevada and

[1] This background information is based extensively on the "Ecological Assessment Report for High Meadow Complex" (Swanson 2007). This report provided an extensive and rigorous analysis of the environmental conditions of the project area as well as the surrounding ecosystems within the subwatershed that the project area is located within. The report describes the historic uses, the existing conditions of terrestrial and aquatic components of the ecosystem, and recommends various activities that would move the existing conditions toward desired conditions consistent with current and proposed land management direction. This report is hereby fully incorporated by reference.

brought with it many deleterious changes to the natural resources and landscape in the Lake Tahoe Basin and High Meadow area. These activities set into motion many changes in the physical and biological processes fundamental to ecosystem function recognized today. Perhaps the greatest example of this influence was the grazing of meadow lands and the diversion of creek flows and natural drainage systems in and around the High Meadow Complex. Reclamation altered and in some cases eliminated overbank flooding and affected other important geomorphic and hydrologic processes that govern meadow preservation and the integrity of vegetation, aquatic systems, and wildlife habitat and viability.

Beginning sometime after 1850, the High Meadow area was used by European settlers for timber extraction. Massive logging operations occurred throughout the Tahoe Basin in the mid to late 1800s. Logging was initially spurred by the Comstock mining boom in Nevada and the need for timber to support mining operations. The logging started in the Carson Range along the east side of the Tahoe Basin, and the Cold Creek Watershed was not spared in the process. Woodburns Mill was the first lumber mill in Lake Valley; it was constructed in 1860 on Trout Creek just upstream from Pioneer Trail not far from the lower end of the Cold Creek Watershed. Water from Cold Creek was used in later flume operations located at the confluence of Cold and Trout Creeks. The long history and proximity of the Pioneer Trail roadway likely contributed to expanded resource operations in the vicinity historically. In addition to the removal of old growth forests from the watershed, log skidding operations appear to have scarred portions of the landscape in the hills around High Meadow and the logging and resource activities left a disjunct network of roads through the area, some of which are used today by hikers, bikers, and horseback riders as part of an older backcountry trail network. Portions of these roadways have become absorbed in the landscape over time, but other exposed sections are highly degraded with ruts and runoff channels contributing increased sediment load in surface water runoff.

Seasonal grazing by cattle and sheep was a significant land use in the watershed, and meadow environments in particular, beginning in the late 1800s. These uses continued to some degree through the 1990s and were only terminated recently when the LTBMU acquired the watershed land in 2003. Vertical posts from former livestock corral structures are present in the meadow in the southeast portion of the Middle Meadow area of the High Meadow Complex. Wood siding, metal fragments, and other debris are evidence of a former cabin-like structure on the south knoll near the former corral area.

Creeks were modified and waters diverted across the High Meadow Complex to support seasonal grazing operations. The irrigation strategy was generally to drain the meadows as soon as possible after seasonal spring snowmelt, then divert water from stream channels in late summer and disperse flow over broad sloping meadows from “high-line” ditches. The structures used to divert flow were fairly rudimentary, including rock/timber dams, slide gates, and simple hand excavated ditches. Some water was diverted west of the project area to the dry (west) side of the NNE-trending lateral moraine, most recently to support irrigation for Christmas tree production on private land (Giovacchini Parcel). This diversion continues to function to convey water to the private parcel. A search of the Forest Service water rights database as well as the State Water Resources Control Board’s database did not show any documentation of any authorized water rights associated with this diversion. Additionally, no

documentation can be found that authorizes the use of the ditch to convey water to private property.

The effects of grazing and irrigation practices are highly visible today in numerous diversion channels and structures, channelized and incised streams, hydrologic alteration (including dewatering) of former meadow areas, denuded meadows and stream banks, and soil disturbances. These changes have resulted in encroachment or invasion by lodgepole pine stands into meadow areas and the loss of woody riparian species (willow and alders) along stream channels. The effects of ditch construction and hydraulic diversion practices, combined with fire suppression and the cessation of native land management practices, negatively affected the landscape and meadow ecosystem function at the High Meadow Complex.

The LTBMU acquired the Cold Creek Watershed property in January 2003 under the authority of the Santini-Burton Act and currently manages over 90% of the land in the watershed. All activities proposed as part of this project are consistent with the Santini-Burton Act. Approximately 490 acres of the Cold Creek watershed remain in private ownership (principally the Giovacchini parcel in the lower watershed), and approximately 380 acres of the watershed are occupied by urban residential development near Pioneer Trail. Neither the Giovacchini parcel nor the residential development is within the proposed project area.

1.3 Overview of the Existing Condition

This section describes the existing condition of the project area in general. In chapter 3, the effects analysis for each resource includes a more detailed description of the existing condition for that resource.

1.3.1 Management Area Designation

The Forest Service acquired 1,790 acres of land in 2003, which has not been incorporated into the LTBMU LRMP. Upon acquisition of the land, the Forest Service established interim management direction by assigning the area to three management prescriptions that existed under the approved Lake Tahoe Basin Management Unit's Forest Land and Resource Management Plan.

Interim management also currently consists of two forest orders prohibiting overnight camping and Off Highway Vehicle (OHV) use. Camping and use of portable stoves is allowed within 300 feet of the Tahoe Rim Trail. The rest of the project area is closed to campfires and camping (Forest Closure order 19-06-02 dated June 21, 2006) as well as OHV and Over Snow Vehicle (OSV) use. (Forest closure order 19-08-12 dated November 22, 2006).

1.3.2 Ecosystem Restoration

In the meadow complex, there is still evidence of the damaging effects of grazing and irrigation practices with numerous diversion channels and structures channelized and incised streams, hydrologic alteration (including dewatering) of former meadow areas, denuded

meadows and stream banks, and soil disturbances. These changes have resulted in encroachment or invasion by lodgepole pine stands into meadow areas and the loss of woody riparian species (willow and alders) along stream channels. They have also led to incision of the stream channel and a subsequent lowering of the ground water table, leading to drying of some portions of the meadow. The lodgepole pine stands that surround the meadow area are exhibiting very high levels of mortality from the continued infestations of bark beetles. These stands are susceptible to additional mortality because there is strong inter-tree competition for limited water and growing space.

1.3.3 Access Travel Management (ATM) Plan

The current transportation system is a web of unclassified roads and trails. The existing system does not meet current access and recreation needs. All Forest Service system roads and trails are designated using a road classification system. Classified roads and trails under Forest Service jurisdiction are required to protect, administer, and use the National Forest for administrative and public access. A classified road may be characterized by 1 of 5 maintenance levels depending on the level of service required. Maintenance on level 1 roads is generally minimal and focused on maintaining drainage facility and runoff patterns. Level 5 roads are generally maintained as double-lane paved facilities, have high traffic volumes and speeds with a high degree of user comfort and convenience (FSH 7709.58). Not all classified roads are open for use by the public; some are only available for Forest Service administrative access, powerline maintenance, or reciprocal road easement with the private landowner. There are five Trail Classes, ranging from the least developed (Trail Class 1) to the most developed (Trail Class 5) (FSM 2309.18). All other roads and trails are unclassified. They have features that appear to be that of a classified road or trail. These are generally characterized as non-system and user created. Further they have no other jurisdiction such as an easement tied to them. Motorized use of unclassified roads is generally prohibited.

The miles of classified and unclassified roads and trails within the High meadow project area are shown below in Table 1. Within the project area there are a total of 6.2 miles of classified road, 6.4 miles of unclassified road and 2.8 miles of unclassified trail.

Table 1. Miles of Existing Classified and Unclassified Roads and Trails in the High Meadow Project Area

	Classified	**Unclassified**
Road	6.2	6.4
Trail	0	2.8

1.4 Desired Conditions

The LRMP as amended by the 2004 Sierra Nevada Forest Plan Amendment (SNFPA) (USDA 2004a) states that the desired condition for meadow and riparian ecosystems, such as those at the High Meadow Complex, are as follows:

- The ecological condition of meadow vegetation is late seral—50% or more of the relative cover of herbaceous layer is late seral with high similarity to the potential natural

community. A diversity of age classes of hardwood shrubs is present and regeneration is occurring.

- Meadows are hydrologically functional where areas of accelerated erosion are stabilizing and healing and vegetation rooting occurs throughout the available soil profile. Meadows exposed to perennial and intermittent streams have the following characteristics: stream energy from high flows is dissipated, reducing erosion and improving water quality; sediments are filtered and bedload captured, thereby aiding floodplain development; flood water retention and groundwater recharge are enhanced; and stream banks are stabilized by root masses against erosive action.

These desired conditions from the LRMP establish the framework for the following general restoration objectives for the High Meadow Complex:

1) Restore, protect, and maintain the ecosystem function that is important to the maintenance of healthy wildlife populations and species diversity.
2) Restore ecosystem function conditions as close as feasible to those which existed prior to modification by European settlement (beginning at approximately 1850), including the effects of sustainable land management practices carried out by the Washoe; coordination and use of Native American cultural practices for vegetation management and ecosystem restoration are specifically supported in the SNFPA (USDA 2004a, pages 25-26) and the South Shore Landscape Assessment (LTBMU 2004, page 6-18).
3) Rearrange, as necessary, recreational elements and structures in sensitive areas such that their presence and operations do not interfere with healthy physical and hydrological functioning of the riparian, meadow, and wetland ecosystems. The optimum desired condition calls for healthy ecosystem function and compatible and enhanced recreational opportunities.

These restoration objectives for the High Meadow Complex specifically, and the Cold Creek Watershed in general, will be evaluated along with recreational resource interests and other factors to determine the extent or degree to which LRMP objectives are implemented in future stages of the restoration projects in the watershed.

1.5 Purpose and Need for Action

The purpose of this proposed action is three-fold:

1) Amend the LRMP to establish management direction for the High Meadow area (see Map1-1); and

2) Implement ecological restoration activities that are consistent with the adopted and existing management direction. The proposed restoration activities fall into three major categories:

    a. Construction of approximately 8,700 linear feet of new stream channels in order to restore historic meadow conditions and drainage patterns;

b. Removal of approximately 300 acres of heavy concentrations of dead and dying conifers.

c. Removal of approximately 25 acres of conifer trees that have encroached upon aspen stands and meadows.

3) Establish an ATM Plan for the Upper Cold Creek and High Meadow area, which would include the following specific actions:

a. Partial reroute of the main access road. Includes 1.4 miles of decommissioning and 1.2 miles of construction.

b. Restore approximately 6.4 miles of unclassified road.

c. Restore approximately 1.2 miles of unclassified trail (existing Upper Cold Creek trail).

d. Construct approximately 7.2 miles of non-motorized trail.

This action is needed, because 1) the recently acquired public lands do not have long-term land management direction, and 2) there are existing environmental conditions that do not meet the desired conditions identified in the existing land management plan direction.

This action responds to the goals and objectives outlined in the LTBMU LRMP, and helps move the project area towards desired conditions described in that plan. The desired conditions, existing conditions, and project opportunities to meet desired conditions are more fully discussed in the *Ecological Assessment Report for High Meadow Complex* (Swanson, 2007).

1.5.1 Management Area Designation

The Forest Service acquired 1,790 acres of land in 2003, and there is a need to incorporate it into the LRMP and assign it to Management Areas. The purpose of incorporating this land into the LRMP is to provide direction as to the desired future condition and to guide management of this property.

1.5.2 Ecosystem Restoration

In September 2004, the LTBMU initiated an ecological assessment of the Cold Creek watershed that focused on the High Meadow Complex. The Ecosystem Assessment Report (Swanson 2007) identified a need to remove lodgepole pine from the meadow and surrounding area. Lodgepole pine has invaded the meadow due to the absence of fire and the dry meadow conditions resulting from the incised stream channel. Since the fall of 2006, there has been widespread lodgepole pine mortality in and around the High Meadow Complex, largely due to bark beetle kill. This has resulted in additional habitat degradation and increased risk of wildfire in the area.

There is a need to restore the Cold Creek channel through the High Meadow Complex in order to increase the potential for the meadow to store water and sediment and allow it to function as a wet meadow ecosystem thereby improving water quality. Currently there is a

reduced capability to store water or sediment in the meadow. The severity of the channel incision has caused Cold Creek to become hydrologically disconnected from the meadow. The stream is unable to contact the floodplain even during peak flows. Because the stream is no longer seasonally flooding the area, the meadow is no longer functioning as a wet meadow ecosystem. The channel is unstable and geologically lacks the ability to repair itself. There are multiple head-cuts in the stream profile indicating incision could continue. There continues to be extensive stream bank erosion and sloughing in areas where vegetation cannot stabilize the 4- to 7-foot-high vertical gully walls.

1.5.3 Access and Travel Management Plan

In August 2003, the LTBMU prepared a road and trail inventory and initial plan for treatment of the transportation system in the High Meadow project area. This plan identified a need to establish a sustainable road and trail system (thus reducing the need for road and trail maintenance and costs for maintenance), provide access to the power line for maintenance, and provide access for forest management projects. The purpose of this project is to reduce effects of the unclassified road and trail system on the environment including water quality and protect resources while providing for Forest Service administrative needs as well as current and future recreation needs by implementing the proposed action as described below.

1.6 Proposed Action

The actions proposed by the Forest Service to meet the purpose and need are as follows:

1.6.1 Management Area Designation

Incorporate 1,790 acres of newly acquired land into the LRMP. This would be considered a non-significant amendment to the Forest Plan. Adjacent management areas were analyzed against current uses of this area. Based on adjacent management area prescriptions and current non-motorized use of the area (biking, hiking, etc.) as well as the natural features found on the landscape (Cold Creek channel), the following proposal is made (see Figure 2 for a map of proposed management area designations):

a) Heavenly Management Area—Update this Management Area (MA) to include the portion of the project area north of Cold Creek from the west boundary to the power line as Prescription 9, Maintenance (444 acres). Management would maintain the camping and summer off-highway vehicle (OHV) and winter over-the-snow vehicle (OSV) closures from current forest orders while allowing for more opportunities for non-motorized dispersed recreation (Cold Creek trail).

b) Freel Management Area—Update this MA to include the area south of Cold Creek and east of the power line as it crosses Cold Creek as Prescription 3, Unroaded Recreation (1325 acres). Management would maintain the summer OHV and winter OSV closures while improving non-motorized trail access (Star Lake trail, trail to Monument Pass).

c) Tahoe Valley Management Area—Update this MA to include the area north of Cold Creek and west of the boundary with Heavenly MA as Prescription 10, Timber Stand

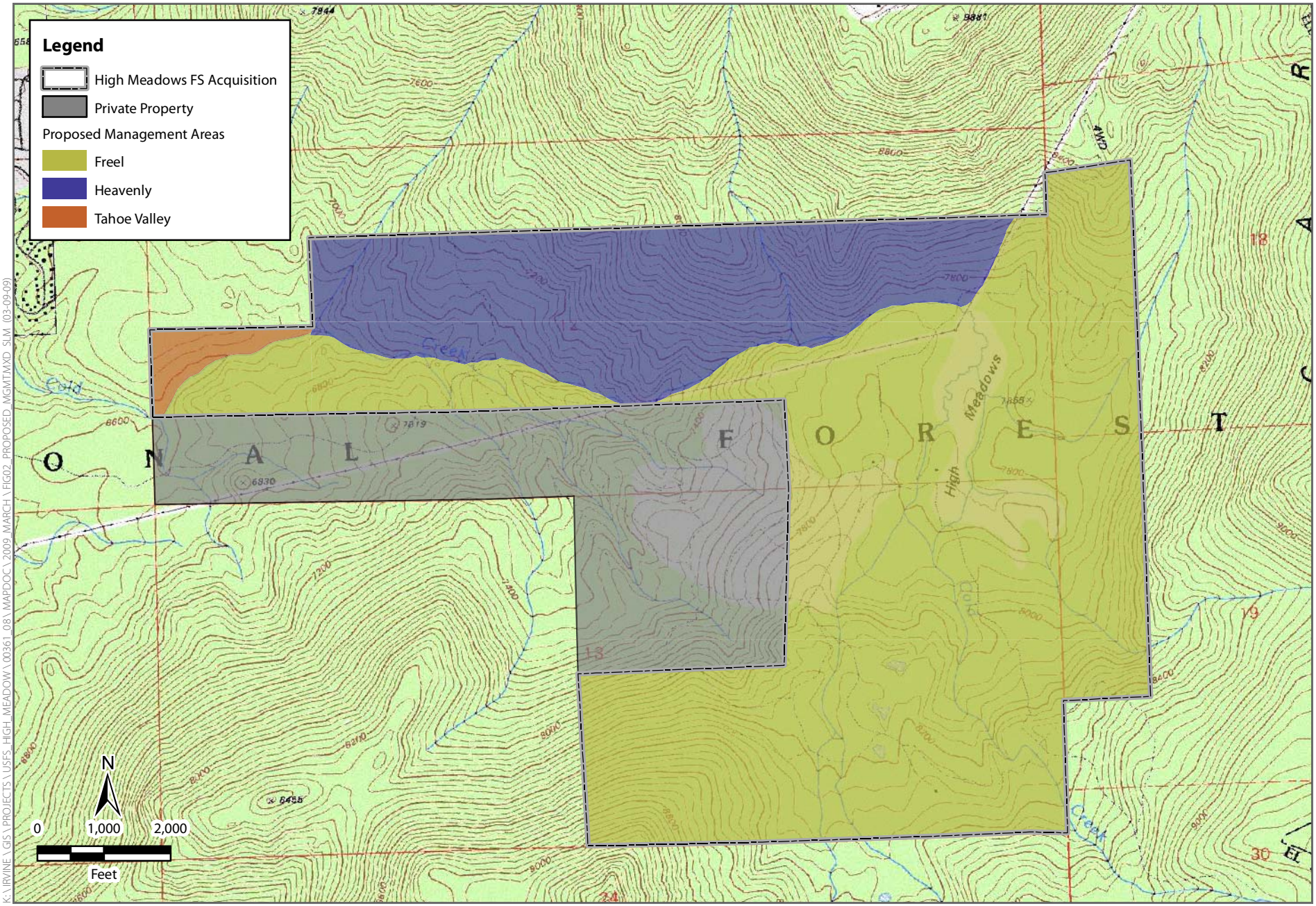
Maintenance (5 acres) and Prescription 11, Reduced Timber (22 acres). Management would provide dispersed recreation opportunities via the Cold Creek trail.

1.6.2 Ecosystem Restoration

Actions include:

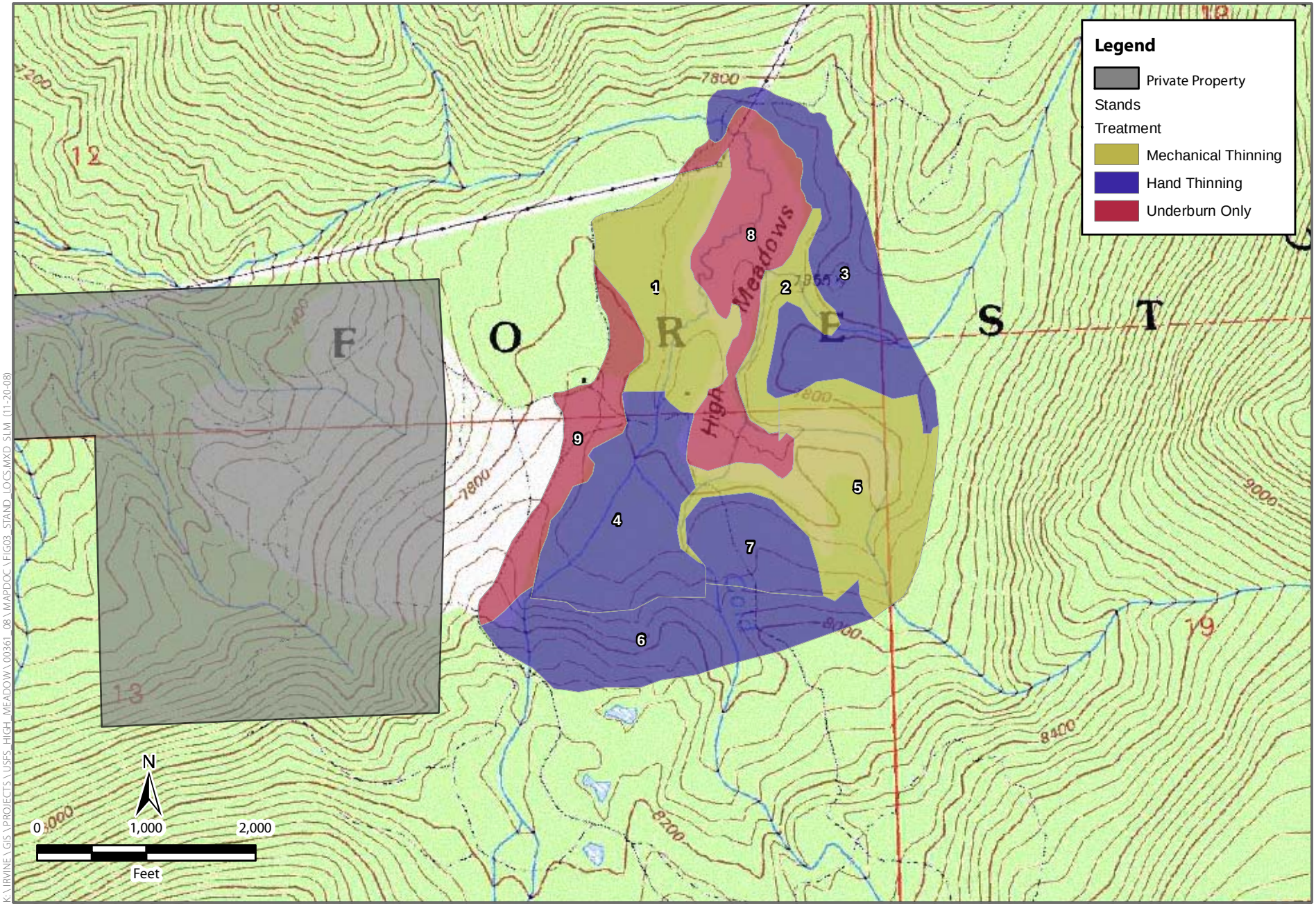
- Remove lodgepole pine in the areas surrounding the meadow using mechanical (113 acres) and manual methods (165 acres). See Figure 3 for locations of stand boundaries proposed for treatment. Removal of conifers in aspen stands that are at risk due to overtopping of the aspen canopy by encroaching conifers and reduction of aspen stand regeneration.
- Construct approximately 5 temporary landings to facilitate vegetation removal (see Figure 4a for potential landing locations.
- Prescribed underburn the lodgepole pine removal areas and the meadow complex (approximately 350 acres). See Figure 3 for the treatment stand boundaries, including Stand 8, which includes the meadow complex and areas of lodgepole pine removal within and immediately adjacent to the meadow environment.
- Construct approximately 8,700 linear feet of new channels and associated floodplain terrace on the Mainstem, East Fork, and North Fork of Cold Creek within High Meadow.
- Use of onsite materials to construct new channels, including excavating one acre of the North Fork alluvial fan to extract approximately 700 cubic yards of gravel/cobble from the North Fork fan (a quarry site) for grade control/riffle construction, 1,000 tons of boulders for weir grade control structures from project area, harvesting meadow sod from designated salvage areas around Lower, Middle and East Meadow (approximately 2.2 acres) to stabilize and vegetate new channel banks, and harvesting logs adjacent to the meadow for use in riffle structures, stream bank and meadow enhancements.
- Fill/decommission approximately 6,660 linear feet of existing stream channel.
- Remove/fill approximately 8,500 linear feet of "highline" ditches and 15,000 feet of other diversion ditches and gullies throughout the meadow complex.
- Install grade control (boulder weir) and a low-water vehicle crossing at the downstream end of the project near the Powerline Crossing.
- Utilize 4.4 miles of road for vegetation treatment and stream channel repairs. There will be approximately 700 feet of temporary roads installed for vegetation removal and roughly 9,300 feet of temporary roads installed for channel restoration. Approximately 150 feet of temporary road installed for channel restoration will also be used for vegetation removal.

See Figures A-1 through A-3 in Appendix D for an overview of the location of the proposed stream channel relocation and specific actions associated with the channel relocation and restoration.



SOURCE: USGS 7.5' Quad., CA: South Lake Tahoe, (Pub. 1977)

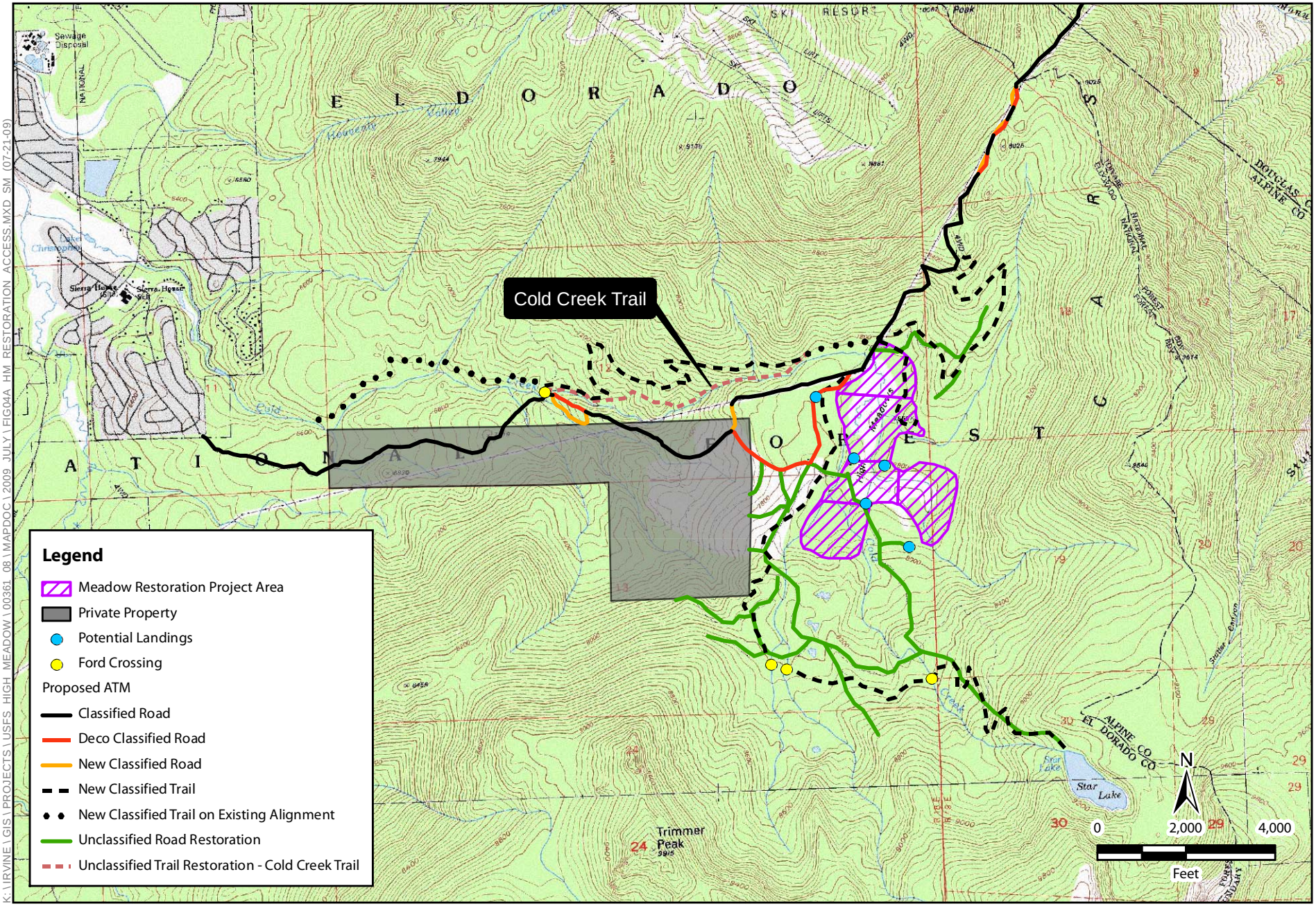
Figure 2
Proposed Management Area Designations
High Meadow Project



K:\IRVINE\GIS\PROJECTS\USFS_HIGH_MEADOW\00361_08\MAPDOC\FIG03_STAND_LOCS.MXD SLM (11-20-08)

SOURCE: USGS 7.5' Quad., CA: South Lake Tahoe, (Pub. 1977)

Figure 3
Specific Project Location: Stand Locations for Fuels Reduction and Aspen Management
High Meadow Project



SOURCE: USGS 7.5' Quad., CA: South Lake Tahoe, Freel Peak, Minden & Woodfords

Figure 4a
High Meadows Restoration and Access and Trail Management
High Meadow Project

The following table summarizes the attributes of each stand where thinning and/or fuel treatment is proposed, including its size, its description, and the proposed treatment:

Table 2. Summary of Stand Attributes

Stand #	Acres	Description and Proposed Treatment
1	40	Mechanically Thin—For areas outside of the three no-treat retention areas, remove all live trees that are less than 20" dbh; this would leave approximately 10 trees per acre average between 20" and 40" dbh. Remaining trees would be mostly in patches and not evenly distributed through the stand. Remove all dead trees, leaving three of the largest snags per acre of the largest diameter classes. Lop and scatter all activity fuels, pulling all fuels outside of drip line of residual trees whenever possible. Follow-up with a prescribed underburn.
2	14	Mechanically Thin—Remove all live trees that are less than 20" dbh; this would leave approximately 10 trees per acre average between 20" and 40" dbh. Remove all dead trees, leaving three of the largest snags per acre of the largest diameter classes. Lop and scatter all activity fuels, pulling all fuels outside of drip line of residual trees whenever possible. Follow-up with a prescribed underburn.
3	49	Hand Thin—Understory thin trees up to 14" dbh to attain an average spacing of 25 feet between residual trees. This would leave approximately 70 trees per acre. Fell all dead trees up to 20" leaving three of the largest snags per acre of the largest diameter classes. Lop and scatter all activity fuels and follow-up with a prescribed underburn.
4	47	Hand Thin—For areas outside of the PAC, understory thin trees up to 14" dbh to attain an average spacing of 25 feet between residual trees. This would leave approximately 70 trees per acre. Remaining trees would be mostly in patches and not evenly distributed through the stand. Fell all dead trees up to 20" leaving three of the largest snags per acre of the largest diameter classes. Lop and scatter all activity fuels and follow-up with a prescribed underburn. For areas within the PAC and other aspen boundaries, thin all conifers up to 14" dbh. This would leave approximately 20 aspen trees per acre of various size classes and about 30 lodgepole pine per acre with diameters that range between 14" and 30". Fell all dead trees up to 7" dbh. Fell all dead trees between 7" and 20" dbh leaving six snags per acre of various size classes of which three are greater than 15" dbh with a goal of leaving snags 45” dbh and greater. Lop and scatter all activity fuels, pulling all fuels outside of drip line of residual trees whenever possible. Follow-up with a prescribed underburn.
5	59	Mechanically Thin—For areas outside of the PAC, remove all live trees that are less than 18" dbh; this would leave approximately 20 trees per acre average between 18" and 40" dbh. Remove all dead trees, leaving three of the largest snags per acre of the largest diameter classes. Lop and scatter all activity fuels, pulling all fuels outside of drip line of residual trees whenever possible. Follow-up with a prescribed underburn. For areas within the PAC, thin trees up to 20" dbh leaving a residual basal area of about 100 square feet of basal area per acre. Thin primarily from below, but leaving some of the smaller trees to provide a variety of size classes and structure. Maintain at least 40% canopy cover. Remove all

Stand #	Acres	Description and Proposed Treatment
		dead trees leaving six of the largest snags per acre. Lop and scatter all activity fuels and follow-up with a prescribed underburn. For areas within the aspen boundaries (within PAC), remove all live conifers leaving only aspen. Remove all dead trees leaving six snags per acre greater than 15" dbh. Lop and scatter all activity fuels, pulling all fuels outside of drip line of residual trees whenever possible. Follow-up with a prescribed underburn.
6	49	Hand Thin—Understory thin trees up to 14" dbh to attain an average spacing of 20 feet between residual trees. This would leave approximately 100 trees per acre. Fell all dead trees up to 20" leaving six of the largest snags per acre of the largest diameter classes. Lop and scatter all activity fuels and follow-up with a prescribed underburn.
7	20	Hand Thin—Understory thin trees up to 12" dbh to attain an average spacing of 20 feet between residual trees. This would leave approximately 100 trees per acre. Fell all dead trees up to 20" leaving six of the largest snags per acre of the largest diameter classes. Lop and scatter all activity fuels and follow-up with a prescribed underburn.
8	44	This is the main portion of High Meadow; remove lodgepole pine by hand-cutting in order to eliminate meadow encroachment by conifers. Lop and scatter activity fuels by pulling fuels out of meadow and into adjacent conifer stands, outside of drip lines of residual trees. Follow-up with a prescribed underburn
9	24	Underburn only

Within all stands, the residual material left after cutting and removal of dead material would be lopped-and-scattered to a height less than approximately 18 inches and followed-up with a prescribed underburn.

Description of Fuel Treatment Methods

A. Mechanical Removal/Thinning—113 acres

The general prescription for ground based mechanical treatments would be to remove understory trees that are less than 20 inches in diameter at breast height (dbh). All dead trees would be removed to achieve desired conditions for fuel loading (< 15 tons per acre), retaining a minimum of three of the largest snags per acre of the largest diameter classes. The type of mechanical equipment used for thinning operations would depend on vegetation removal needs, operational feasibility, and cost efficiency. They include whole tree yarding using mechanical harvesters and whole tree skidding, commercial fuelwood sales using small skidders, and cut-to-length harvest with log forwarding operations. Treated material would be removed either as sawlogs, fuelwood, or biomass. Activity fuels would be lopped and scattered, outside of drip line of residual trees whenever possible. Approximately 700 feet of temporary road would be constructed for mechanical thinning and would be restored following management activities. Approximately 150 feet of temporary road installed for channel restoration will also be used for vegetation removal. Existing landings would be used where available; otherwise, new landings would be constructed. New landings may average 1 to 2 acres in size in order to safely facilitate the handling and removal of biomass

material. See Figure 4a for locations of these potential landings. When operations have been completed, rehabilitation of landings would be implemented. Rehabilitation would include measures to insure proper drainage and provision of sufficient groundcover. All treated stands would be underburned to reduce fuel loadings to desired levels.

B. Manual Removal/Treatment—165 acres
The prescription for hand thinning treatments includes understory thinning of trees up to 14 inches dbh based on a desired residual tree per acre and average spacing (approx. 70 trees per acre and 25 feet between residual trees). Hand thinned stand treatments include hand cutting of trees along with lopping and scattering of activity fuels. Live trees less than 14" inches dbh would be felled; dead trees up to 20 inches dbh would be felled, while retaining a minimum of three of the largest snags per acre (6 snags per acre in goshawk PAC; stands 6, 7 and southern end of stand 4) in the largest diameter classes. Hand treatments may need future follow-up treatments (10 to 20 years) to remove a portion of the larger (greater than 14 inches dbh) understory trees in order to achieve the desired stand densities. All treated stands would be underburned to reduce fuel loadings to desired levels.

C. Hand Thinning in Goshawk Protected Activity Centers (PAC) and Aspen Areas
The prescription for hand thinning in PACs that include aspen is to thin all conifers from aspen stands up to 14 inches dbh resulting in residual trees consisting of approximately 20 aspen trees per acre of various size classes and about 30 lodgepole pine per acre with diameters that range between 14 inches and 30 inches. All dead trees up to 20 inches dbh would be felled, while retaining a minimum of six snags per acre of various size classes of which three would be greater than 15 inches dbh (or of the largest size classes available) for wildlife habitat.

1.6.3 Access Travel Management Plan

The ATM plan is intended to establish a managed and maintained road and trail system through restoration, re-routes, and new construction. Stream crossings would be designed to facilitate natural hydrologic processes, geomorphic function, and free movement for aquatic dependent species. Roads and trails would be located to reduce effects to wildlife from existing recreation uses. These actions would allow for dispersed non-motorized recreation, access for forest management and restoration activities, access to the main power line to South Lake Tahoe, and protection of restored resources. Trails and roads would provide non-motorized multiple uses and administrative vehicle use. Interconnecting roads and trails forming loops are inherent to the system of routes. The re-routes and new construction would provide a loop with the Tahoe Rim trail from Monument Pass to Star Lake. Specific actions include:

- Partial reroute of the main access road. Includes 1.4 miles of decommissioning and 1.2 miles of construction. This road services utility lines and provides administrative access (i.e. firefighting, emergencies, forest health treatments, provide for reciprocal easement access).
- Restore approximately 6.4 miles of unclassified road.
- Restore approximately 1.2 miles of unclassified trail (existing Upper Cold Creek trail).

- Construct approximately 7.2 miles of non-motorized trail. These trails would be approximately 18 inches to 24 inches wide (a "Class 2" trail, consistent with the Forest Service Handbook 2309.18 criteria for trail classes).
- Place barriers at the eastern end of the private property boundary including at FS road 12N21. Barriers could include a gate, boulders, logs, etc. and would allow for short-term vehicular administrative access to implement this project.
- Maintain 0.5 mile of classified FS road 12N21A that services the utility line.

See Figure 4a for locations of proposed road and trail construction, restoration, and decommissioning. Both decommissioning and restoration may include: recontouring, subsoiling, mulching, planting, and adding drainage features. Forest Service engineering or hydrology staff will determine in the field which methods are to be applied to specific roads or trails. All road development, use, and closure will occur on a phased basis, closing or restoring part of the system before opening a new section. Road restoration would occur after vegetation removal activities are completed. Temporary roads constructed for vegetation treatments and stream restoration will be closed and rehabilitated following completion of activities. The system roads remaining after project completion will be designed to Forest Service safety and environmental standards. Design standards and Best Management Practices (BMPs) will be employed during construction or reconstruction to ensure the environment is protected. The remaining road system, following project completion, would be added to the Forest Service System and be subject to continued maintenance and management. The remaining roads would be for administrative purposes only; the meadow would remain as a non-motorized public access recreation area. Roads and trails would be managed as outlined in Appendix E.

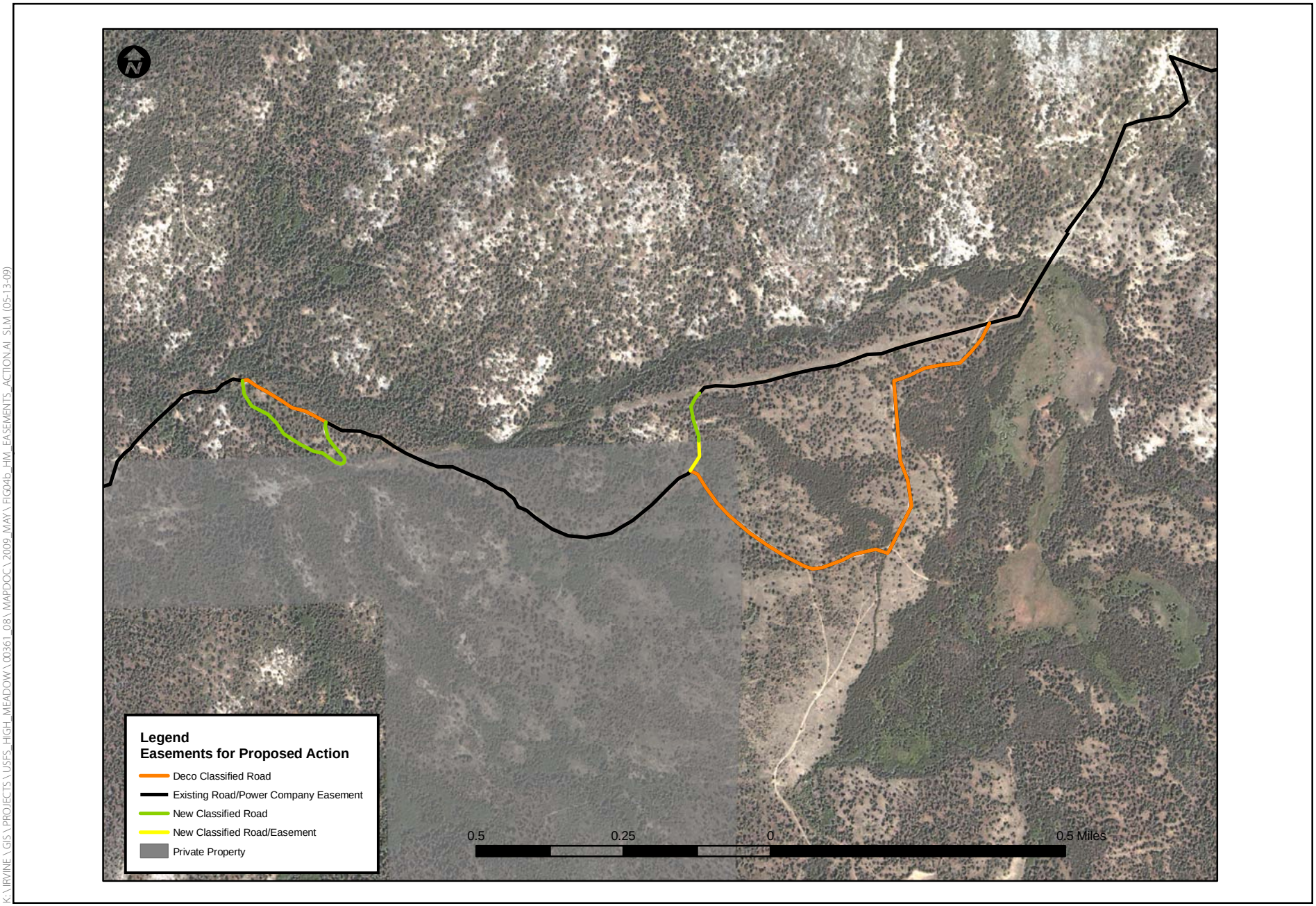
Easements

In order to access the meadow area, the Forest Service has an existing reciprocal road easement through private property on road 12N21. The project outlined in the proposed action is to update two parts of that easement.

1. In the lower section of road, the proposal would decommission the main road and build a new road on an existing old roadbed to avoid a steep section. The new road may cross onto private property for a short section (less than 300 feet).
2. The second update would occur near the upper section of the road. Approximately 4800 feet of road (700 feet of road on private property) would be decommissioned and 800 feet of new road (300 feet of road on private property) would be built to access the powerline road. The road would continue along the powerline (on the existing power company easement) for 2600 feet to the east end of the meadow where the road crosses cold creek (see Figure 4a).

The existing easement would need to be updated to reflect these changes.

Should the private landowner not agree with these two reroutes in an updated easement, the road would remain in its' existing location with no change in use. BMP's would be maintained and there would be no change to the easements. See Figure 4b for the proposed



K:\IRVINE\GIS\PROJECTS\USFS_HIGH_MEADOW\00361_08\MAPDOC\2009_MAY\FIG04b_HM_EASEMENTS_ACTION.AI SLM (05-13-09)

Figure 4b
Road Easements under Proposed Action and Alternative 3
High Meadow Project

road alignment if this occurs. Please see Figure 4c for an illustration of road easements if no action would occur.

Table 3. Proposed Construction, Decommissioning (Classified), and Restoration (Unclassified) of roads and trails shown in miles

	Construction	Decommission	Restore
Road	1.2	1.4	6.4
Trail	7.2	0	1.2

Table 4. Mileage of Classified and Unclassified Roads and Trails after Implementation of Proposed Action

	Classified	Unclassified
Road	5.5*/6.2	0
Trail	8.8	0

* mileage if easements are updated

1.7 Management Direction

The LTBMU LRMP as amended guides overall LTBMU land management and resource protection through prescriptions, standards, and guidelines. In 2001, the USDA Forest Service Regional Foresters from Regions 4 and 5 issued a ROD (USDA 2001) approving implementation of the 2001 Sierra Nevada Forest Plan Amendment (SNFPA), an amendment to all forest plans in the Sierra Nevada, including the LRMP; the origins of the 2001 SNFPA date back to the early 1990s with completion of the congressionally mandated Sierra Nevada Ecosystem Project (1996). This policy directs stewards of the National Forests in the Sierra Nevada to investigate the ecological health of riparian and wetland systems and to work toward remediation of degraded systems while preserving recreation access and resources. Decisions regarding recreational activities and management are also to be made at the local level and based on site-specific conditions (USDA 2004a). The 2004 SNFPA specifically advocates restoration of natural geomorphic processes as a means to restore ecosystem function and self-sustaining wildlife populations and native plants in aquatic, riparian, and meadow systems where significant declines in habitat quality have occurred (USDA 2004a).

The 2004 SNFPA incorporates the aquatic management strategy (AMS) to restore aquatic systems and associated wildlife habitats as a fundamental component (USDA 2004a, Appendix A). The basic principle of the AMS is to retain, restore, and protect the processes and landforms that provide habitat for aquatic and riparian dependent organisms while producing the highest levels of water quality. Key elements of the AMS include attainment of specific AMS goals, watershed restoration, riparian area designation and management, standards and guidelines to maintain natural watershed processes and mitigate management effects, and development and implementation of monitoring and adaptive management programs.

AMS goals target and provide management direction for the following areas important to ecosystem function:

Water Quality: Improve water quality to meet goals of the Clean Water Act (CWA) and Safe Drinking Water Act (SDWA).

Wildlife Species Viability: Maintain and restore habitat as a means to restore and maintain wildlife species viability.

Plant and Animal Community Diversity: Maintain and restore species composition and structural diversity of plant and animal communities in riparian and meadow settings and provide desired habitats and ecological functions.

Special Habitats: Provide self-sustaining habitat for species dependent upon unique habitat areas, such as springs, seeps, vernal pools, and fen.

Watershed Connectivity: Maintain and restore connectivity within and between watersheds to provide for unobstructed movement for survival, migration, and reproduction of wildlife species.

Floodplains and Water Tables: Maintain and restore the connections of floodplains, channels, and water tables to distribute flood flow and sustain the diverse habitats that result from flooding processes.

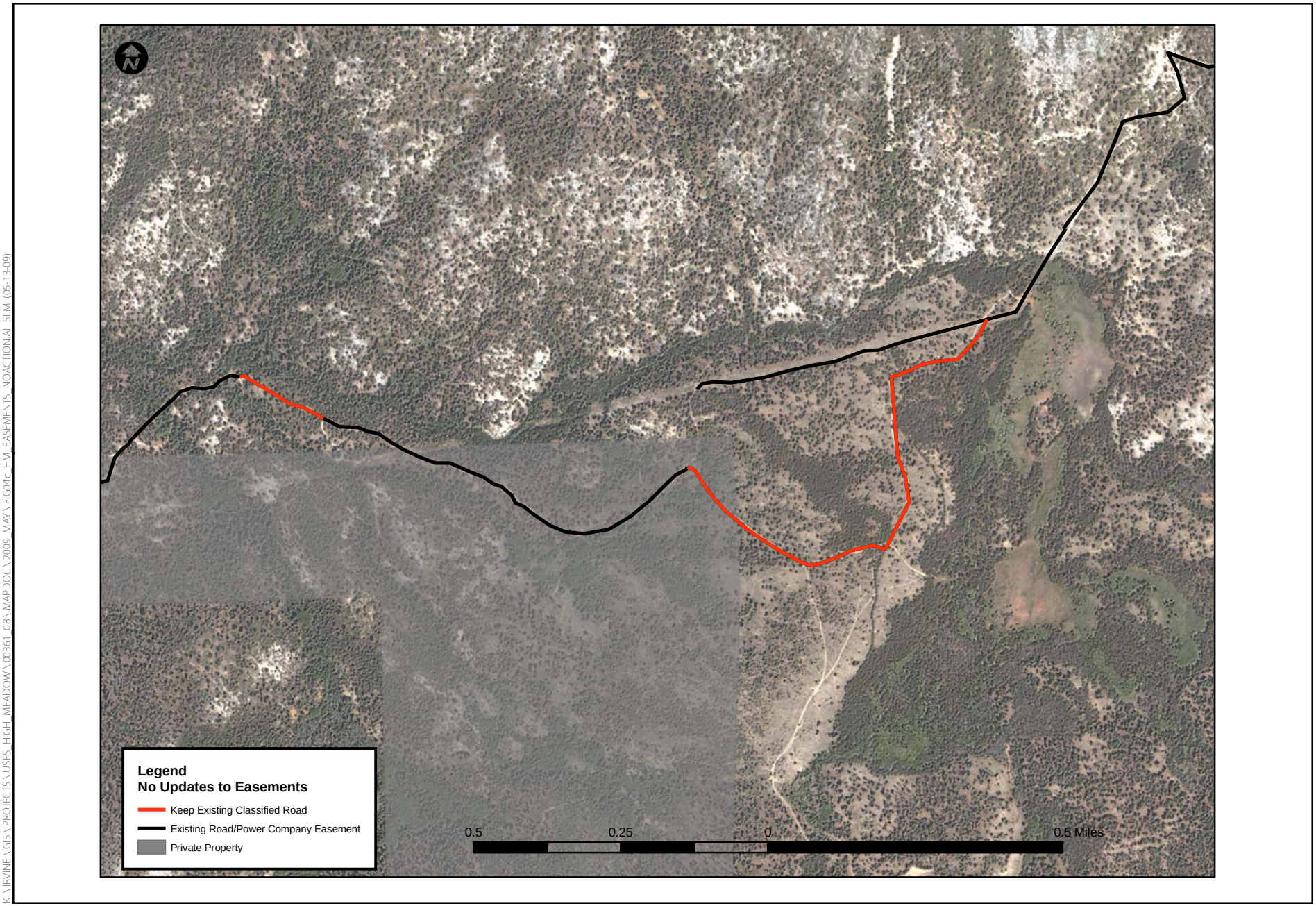
Watershed Conditions: Maintain and restore favorable soil and vegetative conditions to absorb and filter precipitation and regulate runoff to sustain favorable streamflow conditions.

Streamflow Pattern and Sediment Regime: Maintain and restore streamflows sufficient to sustain desired conditions for riparian, aquatic, wetland, and meadow habitats, and keep sediment regimes as close as possible to those with which aquatic and riparian biota evolved.

Stream Banks and Shorelines: Maintain and restore the physical structure and conditions of stream banks and shorelines to minimize erosion and sustain desired habitat diversity

The LTBMU has designated Riparian Conservation Areas (RCAs) where management is directed towards preserving, enhancing, and restoring habitats in riparian and meadow settings, such as those associated with the Cold Creek Watershed. The AMS calls for analysis of RCAs and development of Riparian Conservation Objectives (RCOs) for evaluating prescriptions to determine if an existing or proposed land use activity is consistent with the desired conditions of the AMS goals. The RCOs are driven by analysis of physical (e.g., soils, geology, and hydrology) and biological (e.g., wildlife species vitality, habitat needs, habitat quality) factors; relevant RCOs for High Meadow are outlined in Chapter 4 (Section 4.1) of the Ecological Assessment Report for the High Meadow Complex (Swanson, 2007). RCOs #2, #5, and #6 contain elements particularly relevant to the restoration needs for the High Meadow Complex project area:

> **RCO #2:** Maintain or restore: (1) the geomorphic and biological characteristics of special aquatic features, including lakes, meadows, bogs, fens, wetlands, vernal pools, springs; (2) streams, including in-stream flows; and (3) hydrologic connectivity both within and between watersheds to



K:\IRVINE\GIS\PROJECTS\USFS_HIGH_MEADOW\00361_08\MAPDOC\2009_MAY\FIG04c_HM_EASEMENTS_NOACTION.AI SLM (05-13-09)

Figure 4c
Road Easements if No Action
High Meadow Project

provide for the habitat needs of aquatic-dependent species. (RCO #2 is linked to AMS goals 2, 3, 4, 5, 6, 8, and 9.)

RCO #5: Preserve, restore, or enhance special aquatic features, such as meadows, lakes, ponds, bogs, fens, and wetlands to provide ecological conditions and processes needed to recover or enhance the viability of species that rely on these areas. (RCO #5 is linked to AMS goals 1, 2, 3, 4, 7, and 9.)

RCO #6: Identify and implement restoration actions to maintain, restore, or enhance water quality and maintain, restore, or enhance habitat for riparian and aquatic species. (RCO #6 is linked to all nine AMS goals.)

1.8 Decision Framework

Given the purpose and need, the deciding official will review the proposed action and the other alternatives in order to make the following decisions:

1) Whether or not to amend the LTBMU LRMP with permanent land management direction for the project area as a non-significant amendment.

2) Whether or not to implement the ecological restoration activities as described in the Proposed Action or select an alternative to the Proposed Action.

3) Whether or not to implement the ATM activities as described in the Proposed Action or select an alternative to the Proposed Action.

4) Whether or not a Finding of No Significant Impact (FONSI) can be supported by the environmental analysis contained in this EA

1.9 Public Involvement

The LTBMU sought input regarding a proposal to implement stream restoration, fuels reduction, access and travel management, and amend the LTBMU LRMP located on National Forest System (NFS) lands within the Lake Tahoe Basin in the High Meadow area. The plan includes 1) restoration of Cold Creek as it flows through High Meadow in order to increase the potential for the meadow to store water and sediment; 2) removal of lodgepole pine from the meadow and surrounding area that is dead as a result of bark beetle infestation; 3) establishment of a managed and maintained road and trail system that is integrated with forest ecology, minimizes effects, and provides sustainable recreation access for multiple uses on public lands through restoration, re-routes, and new construction.

As part of the public involvement process, and as required by management direction, the agency subjected the initial meadow restoration project design to a peer review. On August 28 and 29, 2007, the proposed meadow restoration activities were reviewed by Mr. Matt Kiesse of River Run and Toby Hanes of Hydro Science. The peer review findings were documented in a letter to the Forest Service from Mr. Mitchell Swanson of Swanson Hydrology, dated September 7, 2007 (Project Record Document N). This letter lists

numerous observations about the proposed activities and includes recommendations to slightly modify the final proposal. The Forest Service reviewed this letter, concurred with its findings, and revised the final proposal to reflect the peer review.

The proposal was listed in the Schedule of Proposed Actions on October 1, 2006. The proposal was provided to the public and other agencies for comment during scoping, which began on March 7, 2008, and ended on April 7, 2008. Public scoping included a public meeting held on March 27, 2008, at the Lake Tahoe Basin Management Unit Forest Supervisor's Office in South Lake Tahoe, and 39 scoping letters mailed or hand delivered on March 10, 2008, to interested parties requesting comments for consideration in the High Meadow Projects EA by April 7, 2008. Additionally, public notices were placed in the *Tahoe Daily Tribune* on March 20, 2008, notifying readers of the public meeting and where to go for more information. Copies of these notices are on file (Project Record Documents D1–D20). In response to the scoping request, formal input was received, summarized and responded to in a Scoping Summary Report (Appendix B).

A 30 day comment period was provided for the Pre-Decisional EA. The legal notice for the 30 day comment period was published on May 23, 2009 in the Tahoe Daily Tribune and a letter notifying interested parties of the opportunity to comment was mailed to scoping respondents, agencies, and interested public (Project Record Documents A5 and A6). A total of 11 letters were received providing comments to the project record (Project Record Documents D1-D11). The Forest Service response to those comments is found in Appendix D of the EA. To address public comments, the Forest Supervisor, project ID team leaders and team members reviewed the comments and as a result, updated the monitoring and adaptive management section of the EA to include additional information on levels where the FS would take action on the Upper Cold Creek Trail to reduce or eliminate use conflict, updated information in the EA to further document the effects of the alternatives.

1.10 Issues

The Forest Service separated the issues into three groups: (1) Non-Significant Issues, (2) Significant Issues considered but eliminated from detailed study, and (3) Significant Issues.

- **Non-Significant Issues** do not meet the Purpose and Need for the project; are outside the scope of the proposed action; are already decided by law, regulation, or Forest Plan; are not supported by scientific evidence; are addressed by project design features; or are addressed by additional information or clarification of the proposed action. Non-Significant issues also represent opinions and statements which do not present problems or alternatives.

- **Significant Issues considered but eliminated from detailed study** meet the Purpose and Need for the project but were considered in alternatives already studied and eliminated, or additional project design features were developed which reduced or eliminated the effects.

- **Significant Issues** meet the Purpose and Need for the project and are "significant" in the extent of the geographic distribution, the duration of effects, or the intensity of

interest or resource conflict and therefore merit consideration for the development of an alternative to the proposed action.

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)…" A list of non-significant issues and reasons regarding their categorization as non-significant may be found in Appendix B (Scoping Summary Report).

As for significant issues, the Forest Service identified one topic raised during scoping.

Recreational User Experiences: Several commenters are concerned that the proposed action (specifically the upper portion of the Cold Creek Trail from the crossing of Cold Creek up to High Meadows) would eliminate their opportunities to experience the unique scenic value of the existing trail, particularly in the fall, when the changing colors of the leaves of the aspens put on a visual "show." In addition, mountain bike users are concerned that the challenging experience of the existing trail would be compromised if the new trail is designed as a less-challenging experience.

1.11 Other Laws, Regulations, or Policy

National Forest Management Act

This Act requires the development of long-range land and resource management plans. The LTBMU LRMP was approved in 1988 as required by this Act. It has been amended several times, including the Sierra Nevada Forest Plan Amendment, (2004). The LRMP provides guidance for all natural resource management activities. The Act requires all projects and activities are consistent with the LRMP. The LRMP has been reviewed in consideration of this project. The High Meadow Restoration Project was designed to be consistent with the LRMP. A Forest Plan consistency matrix and review for this project was completed (Project Record Document B).

Endangered Species Act

In accordance with Section 7(c) of the Endangered Species Act, the United States Fish and Wildlife Service (USFWS) list of "endangered and threatened species that may be affected by Projects in the Lake Tahoe Basin Management Area" (updated on January 31, 2008) was reviewed (Project Record Document C).

National Historic Preservation Act

Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effect of a project on any district, site, building, structure, or object that is included in, or eligible for inclusion in the National Register. Section 106 of the National Historic Preservation Act (P.L. 89.665, as amended) also requires federal agencies to afford the State Historic Preservation Officer a reasonable opportunity to comment. Surveys were conducted for Native American religious or cultural sites, archaeological sites, and historic properties or areas that may be affected by this decision (Project Record Document E). The State Historic Preservation Officer provided a

determination that there were no cultural sites eligible for listing on the register of National Historic sites (Project Record Documents F and G).

Clean Water Act (Public Law 92-500)

All Federal agencies must comply with the provisions of the Clean Water Act. The Clean Water Act regulates forest management activities near federal waters and riparian areas. The design features associated with the proposed action ensure that the terms of the Clean Water Act are met, primarily pollution caused by erosion and sedimentation.

Clean Air Act (Public Law 84-159)

Forest Service managers would follow specified provisions for smoke management whenever fire is prescribed for pile and underburning. The following documents provide Forest Service managers with the guidance and direction for smoke management to protect air quality: (1) Interim Air Quality Policy on Wildland and Prescribed Fires, issued by the Environmental Protection Agency in 1998; (2) Memorandum of Understanding between the California Air Resources Board (CARB) and the USDA Forest Service, signed on July 13, 1999; and (3) Smoke Management Guidelines in Title 17 of the Code of Federal Regulations.

The project area lies within the Lake Tahoe Air Basin and the El Dorado Air Quality Management District. As a matter of regional policy, a smoke management plan would be submitted to and approved by El Dorado Air Quality Management District, who would issue a Burn Permit to the LTBMU prior to any underburning that would occur within the High Meadows project area. Adherence to the smoke management plan for undersburning would reduce negative impacts to communities. By adhering to a smoke management plan approved by the Lake Tahoe Basin Management Unit Forest Supervisor and the El Dorado Air Quality Management District, particulate matter emissions from underburning would not violate California Ambient Air Quality (CAAQ) emission standards. Dust abatement would be accomplished by applying water to roads, landings, and skid trails at a frequency that would control dust.

Environmental Justice (Executive Order 1289)

Executive Order 12898 requires that all federal actions consider potentially disproportionate effects on minority and low-income communities especially if adverse effects to environmental or human health conditions are identified. Adverse environmental or human health conditions created by any of the alternatives considered would not affect any minority or low income neighborhood disproportionately.

The activities proposed in all alternatives were based solely on the existing and desired condition of the vegetation, sensitivity of the environment, and practical treatment access in response to the Purpose and Need. In no case was the treatment prescription design based on the demographic makeup, occupancy, property value, income level or any other criteria reflecting the status of adjacent non-federal land. Federally owned lands proposed for treatment are distributed throughout the project area, and are intermixed with non-federal lands. Reviewing the location of the proposed treatments in any of the alternatives in relationship to non-federal land, there is no evidence to suggest that any minority or low

income neighborhood will be affected disproportionately. Conversely there is no evidence that any individual, group or portion of the community will benefit unequally from any of the actions in the proposed alternatives.

Migratory Bird Treaty Act of 1918 as amended (16 USC 703-712)
The original 1918 statute implemented the 1916 Convention between the United States and Great Britain (for Canada) for the protection of migratory birds. Later amendments implemented treaties between the United States and Mexico, Japan, and the Soviet Union (now Russia). Specific provisions in the statute include the establishment of a Federal prohibition, unless permitted by regulations, to "pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention . . . for the protection of migratory birds . . . or any part, nest, or egg of any such bird." Because forestlands provide a substantial portion of breeding habitat, land management activities within the Lake Tahoe Basin Management Unit can have an impact on local populations. The High Meadow Restoration Project would not adversely impact any populations or habitat of migratory birds.

California Environmental Quality Act [CEQA] (Public Resources Code, § 21080)
CEQA applies to discretionary projects to be carried out or approved by public agencies. The Lahontan Water Board's process to grant a conditional waiver of waste discharge requirements or waste discharge requirements for vegetation/timber harvest activities on National Forest lands is a discretionary act subject to CEQA. Prior to approving a project, the Lahontan Water Board must certify that: (1) the Environmental Document has been completed in compliance with CEQA; (2) that the Lahontan Water Board has reviewed and considered the information contained in the Environmental Document; and (3) that the Environmental Document reflects the Lahontan Water Board's independent judgment and analysis (Cal. Code Regs., tit. 14, § 15090.) For water quality improvement projects, i.e. projects with the primary purpose of reducing, controlling or mitigating existing sources of erosion or water pollution, project specific CEQA documents are not required.

Invasive Species, Executive Order 13112 of February 3, 1999
This EA covers botanical resources and noxious weeds. The project's design features designed to minimize risk of new weed introductions.

Recreational Fisheries, Executive Order 12962 of June 6, 1995
The effects to fish habitat from the project are expected to be extremely limited. Direct effects on fish productivity and the quality of the recreational fishery would be negligible.

Floodplain Management, Executive Order 11988 of May 24, 1977 and Protection of Wetlands, Executive Order 11990 of May 24, 1977
These executive orders provide for protection and management of floodplains and wetlands. Compliance with these orders will be assured by incorporating the project riparian

management objectives and adhering to the project design features, including the implementation of Best Management Practices.

Special Area Designations
There are no specially-designated areas that would be affected by the High Meadow Restoration Project (i.e**.** Research Natural Areas. Inventoried Roadless Areas, Wilderness Areas, Wild and Scenic Rivers).

2.0 ALTERNATIVES, INCLUDING THE PROPOSED ACTION

This chapter describes and compares the alternatives considered for the High Meadow project. It includes a description of each action alternative considered. This section also presents the alternatives in comparative form, defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. Any future actions in this area would be analyzed with additional environmental documentation.

2.1 Alternatives

2.1.1 Alternatives Considered But Not In Detail

An alternative was considered that would have built the proposed new Cold Creek trail alignment and would also have added the existing Cold Creek trail alignment with trail re-routes and site-specific mitigation measures to reduce erosion at numerous sites along the trail. The existing trail and the new trail would both become part of the designated trail system and would be eligible for and receive regular maintenance. All other proposed restoration activities would be the same as the Proposed Action. This alternative was not considered in detail for the following reasons:

1) The initial cost of constructing the new trail location and installing trail re-routes and site-specific erosion control measures on the existing trail location would be more expensive than the Proposed Action;
2) This alternative was not any more responsive to the Purpose and Need than the Proposed Action or Alternative 3;
3) This alternative was not any more responsive to the public's concerns than Alternative 3.

An alternative was considered that would have instituted alternating use days for mechanized users (e.g. mountain bike riders) and non-mechanized users (equestrian and hikers). This alternative would have reduced conflicts between user groups. This alternative was not considered in detail for the following reasons:

1. This alternative was not responsive to the Purpose and Need and to the significant issue of concern about loss of the recreational experiences associated with Cold Creek if the Proposed Action is implemented.

2. There is not sufficient information upon which to fully consider this alternative. The proposed Monitoring Plan (see Appendices) is intended to gather information regarding the degree, nature, and scope of user conflicts. These monitoring results may be used in the future to consider potential use changes.

2.1.2 Alternatives Considered in Detail

Alternative 1— Proposed Action

Please see Section 1.6 for a complete description.

Alternative 2—No Action

Under the No Action alternative, current management direction would continue to guide management of the project area on an interim basis. None of the four components of the ecological restoration work would be implemented to meet the purpose and need. Unclassified roads or trails may be subject to closure and restoration to prevent and mitigate resource damage. The following activities would continue. These include:

- Management of the upper Cold Creek as a non-system trail.
- Use of the FS road 12N21 for recreation access.

Alternative 3—Retain Current Location of Upper Cold Creek Trail, with approximately1 mile of re-routes, and Include All Other Proposed Activities

This alternative is developed to respond to the concerns of various users of the trail that re-locating the trail and restoring the existing trail would impact recreationists by eliminating a desired recreation experience (hiking near Cold Creek and/or a challenging mountain bike experience). The trail alignment proposed in this alternative would keep recreations as close to the Cold Creek as possible while creating a sustainable trail. This alternative proposes to adopt all of the proposed management direction, implement all of the proposed ecological restoration activities (see Proposed Action), and retain the current location of the Upper Cold Creek trail with trail re-routes, site-specific mitigations, and trail design measures that minimize or eliminate points of erosion. There are seven re-route segments totaling 6,134 feet (EA, Figure 5). The re-routes are included to respond to the need to reduce sedimentation from the unclassified portion of the upper Cold Creek Trail into Cold Creek. One reroutes has a 2,278-foot segment (segment 2, EA, Figure 5) that will take the trail approximately 750 feet upslope from the existing alignment to bypass a steep, erosive segment adjacent to the stream to address water quality concerns. The remaining six reroutes closely follow the existing trail alignment with segments 1 (580 feet), 3 (908 feet) and 5 (422 feet) aligned closer to the stream than the existing alignment. The seven segments of existing trail that are re-routed will be restored by outsloping or eliminating the existing trail bed and restoring trail crossings or barren stretches of trail where erosion is occurring. The new location of the trail as described in the proposed action (Alternative 1) will not be built. The current location of the Upper Cold Creek trail (with the seven re-routed segments) would be

added to the LTBMU's designated trail system and would be eligible for regular maintenance and management.

Table 5. Mileage of Classified and Unclassified Roads and Trails after Implementation of Alternative 3

	Classified	Unclassified
Road	5.5*/6.2	0
Trail	8.7	0

* mileage if easements are updated

2.2 Design Features Common to All Alternatives

Activities associated with implementation of all action alternatives could have localized, short-term effects. In order to minimize potential environmental effects and in response to public comments on the proposal, the following requirements are applicable to all action alternatives. These design features are intended to minimize or avoid effects to soils, water, vegetation, wildlife, fisheries, heritage resources, recreational resources, and air quality. The applicable BMPs are listed in Appendix A.

2.2.1 General Design Features (Applicable to all activities)

Hydrology/Soils

1. Generally plan surface disturbance activities to begin after June 15 and no later than October 15, depending on stream flow and weather conditions unless a grading ordinance exemption is obtained from the TRPA.

2. Implement water quality protection BMPs during and following project activities. See Appendix B for a list of BMPs.

3. A spill prevention plan would be established for each activity of this project and maintained, and the contractor will be required to maintain a cache of materials to contain and treat any spill.

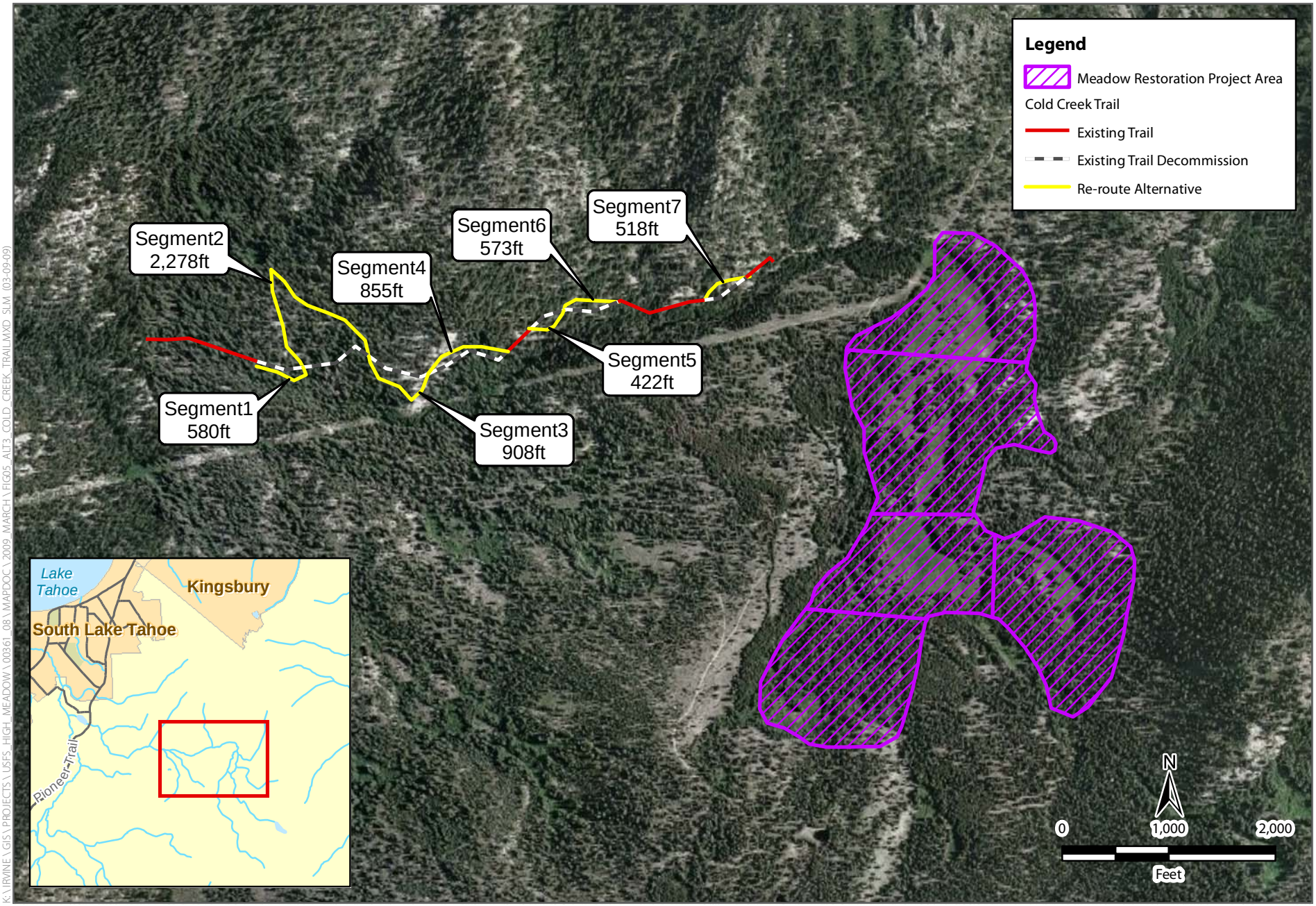
Recreation

Prepare a Project Implementation Plan to ensure that all potential effects to recreationists and users are minimized through a well planned schedule, phased implementation, and timing of project activities. The Plan would address the following phases and requirements:

A. Pre-Construction Phase

Develop a Communication and Sign Plan that includes:

- News Releases describing project activities.
- Signage posted at the various access roads and trailheads that describe the purpose of the project and safe travel suggestions.



K:\IRVINE\GIS\PROJECTS\USFS_HIGH_MEADOW\00361_08\MAPDOC\2009_MARCH\FIG05_ALT3_COLD_CREEK_TRAIL.MXD SJM (03-09-09)

SOURCE: ESRI Streetmap USA (2007); ESRI USA Imagery (2005; 0.5m)

Figure 5
High Meadow Restoration Project
Alternative 3 - Cold Creek Trail Re-routes and Decommissioning Segments

B. Construction Phase

Due to potential safety hazards to the public inherent in the construction process, implement the following strategies:

- Alternative Routes and Signage: In lieu of an all out closure, some existing travel routes could be detoured to redirect users around construction activities. Detours should be adequately posted with signage that meets Forest Service design standard guidelines.
- Closures and Signage: Use of heavy equipment on access routes may preclude the safe use of those routes by the public; therefore, the area should be temporarily closed. Temporary closures should be adequately posted with signage that meets Forest Service design standard guidelines.

C. Post Construction Phase

A Sign Plan would be implemented at the completion of the project to provide public information regarding appropriate trail use and etiquette, as well as seasonal information on such issues as fire restrictions or other administrative concerns affecting public uses. .

Scenic Resources

1. Native materials or similar imported materials local to the surrounding landscape would be used for construction of any required drainage armoring or other constructed features.

Heritage Resources

1. All known cultural sites (except for the road system), would be flagged and all activities would avoid these areas. Along the boundaries, trees would be felled away from the boundaries to avoid inadvertent effects.
2. In the event that any new sites are discovered during project implementation, the Forest Archaeologist would be notified and the procedures of 36 CFR Part 800 would be implemented.
3. All project areas not previously surveyed would be surveyed prior to commencement of activities on any new or existing trails. In the event that any new sites are discovered during surveys, the project activities would be adjusted (i.e. trail alignments routed around, sites flagged and avoided) to avoid impacts to any cultural sites.

Wildlife and Fish

1. For northern goshawk PACs: a limited operating period (LOP) would be maintained, prohibiting vegetation treatments within approximately 0.25 mile of the nest site during the breeding season (February 15 through September 15) unless surveys confirm that northern goshawks are not nesting. If the nest stand within a PAC is unknown, either apply the LOP to a 0.25-mile area surrounding the PAC, or survey to determine the nest stand location. (SNFPA 60.76). LOP may be waived for use of early season underburning in up to 5% of LTBMU goshawk PACs per year (SNFPA 61.79).
2. For California spotted owl PACs: a LOP would be maintained, prohibiting vegetation treatments within approximately 0.25 mile of the activity center during the breeding

season (March 1 through August 15) unless surveys confirm that California spotted owls are not nesting. Prior to implementing activities within or adjacent to a California spotted owl PAC and the location of the nest site or activity center is uncertain, conduct surveys to establish or confirm the location of the nest or activity center (SNFPA 60.75).

3. Surveys would be conducted in compliance with the Pacific Southwest Region's survey protocols during the planning process when vegetation treatments are likely to reduce habitat quality are proposed in suitable northern goshawk nesting habitat that is not within an existing California spotted owl or northern goshawk PAC. Suitable northern goshawk nesting habitat is defined based on the survey protocol (SNFPA 54.34)
4. Culverts or other stream crossings would not create barriers to upstream or downstream passage for aquatic-dependent species (e.g., bottomless culverts with natural bed material) (SNFPA 63.101).

5. All trash created during construction would be properly contained in wildlife-proof containers and removed at the end of each day. No trash would be left overnight on site due to the potential of attracting wildlife.

2.2.2 Ecosystem Restoration Design Features

Hydrology/Soils

Disturbance to surface water and subsurface water may occur during any stream channel/floodplain restoration activity that requires excavation, fill, or use of heavy machinery in or near wet areas. Some short term, localized disturbance to soil and water quality would occur during construction of the new channels and associated inset floodplains and during initiation of flow into the new channel, and to a lesser extent filling of the existing channel, and clearing and grading for temporary access roads. A variety of BMPs will be employed to prevent negative impacts to soil and water resources. Detailed specification for these BMPs will be documented in the final design plans for the project. These design plans will available at the LTBMU offices and will also be attached to the Storm Water Pollution Prevention Plan (SWPPP), required by the Lahanton Regional Water Quality Control Board (LRWQCB) to obtain the necessary permits prior to project implementation. Additionally, the LTBMU would apply for a Basin Plan Prohibition Exemption for waste discharge from LRWQCB for implementation of the stream/meadow restoration because even with all BMPs in place it is likely that turbidity in the stream channel will at some point during the project be elevated above the water quality standard. A summary of BMPs is presented below as design features to protect soil and water quality:

1. Stream channel construction activities would occur after groundwater levels within channel construction zones are five feet below the ground surface elevation (as measured from existing groundwater piezometers). From previous groundwater data, this is estimated to occur around August 1.

2. No permanent roads or trails would be constructed for stream channel/floodplain ecosystem restoration; temporary roads would be designed to minimize soil erosion, compaction, and stream bank deterioration. Temporary roads would be completely restored following project activities.

3. Soil erosion controls would be installed, such us as filter fabric, silt fencing, straw wattles or other suitable means to contain material on site. BMPs of this nature would be used along areas such as temporary access roads, the stockpile areas, the gravel extraction site, and along the haul road between staging area and the existing LTBMU roads. In the event that the implementation requires more than one field season, fill used for temporary meadow access roads would be removed, stockpiled at the staging area, and reinstalled at the beginning of the next field season. Stockpile locations would be placed in upland areas along existing roads. Stockpiles remaining after October 15 will be winterized, which would include covering the piles.

4. Onsite dust abatement procedures would be implemented as necessary on all disturbed areas sites including forest system and temporary access roads, stockpile areas, and the gravel extraction site, to ensure fine sediments are not transported offsite as airborne particles. Abatement procedures would include both watering and physically covering bare soils.

5. The project would be phased such that the new channel would be completed and allowed a minimum of one growing season to revegetate, prior to any diversion of the existing stream. Live sod would be placed on newly excavated channel banks and watered, to facilitate rapid establishment of stabilizing bank vegetation. Limited flows would be diverted into the newly constructed channel segments and reactivated historic watercourses, before new channels are connected to Cold Creek flows. Turbid water within pools of the newly constructed reaches would be pumped and dispersed out onto the floodplain through sprayers until turbidity standards are met. Channels would be fully connected to Cold Creek (mainstem channel), or floodplain outlet (lower meadow channel), once turbidity levels are achieved.

6. Once flows are fully diverted into the newly constructed channels, the existing channel would be allowed to drain completely. The existing channel would then be filled with excavated material from new channel construction stored at the stockpile areas. The filled channel would be revegetated with sod plugs, native seed, live willows, and mulch.

7. Sod borrow sites and filled channel would be restored using approved revegetation techniques as outlined in the Cold Creek Restoration Project Design Report (Project Record Document C2). These sites would be irrigated for at least one year, and up to two years, post construction.

8. Water from the stream would be siphoned to use as water supply for construction activities such as dust abatement and irrigation. A screen would be placed over the siphon to avoid impacts to fish. Siphoning would be ceased if stream flow level falls below a level that would affect fisheries resources, as determined by a LTBMU fisheries biologist.

Scenic/Visual Quality

1. All stockpiled materials would be removed following activity, and minimize visual evidence of all construction activity.

2. Final grade, topsoil, and vegetation would be established in any in-filled stream channels consistent with surrounding landscape. Should 50% of any planted material not survive, it would be replanted.

Wildlife and Fish

1. Water drafting sites would be located to avoid negative effects to in stream flows and depletion of pool habitat for brook trout (SNFPA 63.101). Use screening devices for water drafting pumps. Use pumps with low entry velocity to minimize removal of aquatic species, including juvenile fish, amphibian egg masses, and tadpoles, from aquatic habitats (SNFPA 64.110).
2. Salvage/recovery of fish would be conducted within anticipated construction dewatering or diversion zones operations by electro-shocking or other suitable means as developed through consultation with the California Department of Fish and Game and LTBMU fisheries staff.
3. Riparian vegetation, expected to be displaced during construction operations, would be stockpiled and transplanted either after the bird breeding season or after any active bird nests within the plants have fledged young.

Botany

1. The population of sensitive moss species Bolanders candle moss (*Bruchia bolanderi*) would be buffered, flagged, and avoided to prevent restoration activities from impacting the occupied and surrounding habitat.
2. There are two populations of Yosemite moonwort or little grapefern (*Botrychium simplex*), which is not a sensitive plant but is uncommon in the Basin within the footprint of the project. Its habitat is easily damaged with disturbance. The Botrychium simplex populations would be buffered, flagged, and avoided to prevent restoration activities from impacting the occupied and surrounding habitat.
3. Botanical surveys have been conducted for the project area. If any sensitive plants or noxious weeds are found, additional design features and mitigations would be added to the project design to avoid effects.
4. Rehabilitation of sod borrowing areas would occur to prevent the establishment of noxious weeds on newly disturbed areas.
5. Use of plant species native to the area or species approved (by Forest Service botany staff) for local use would be required when revegetating disturbed sites and landscaping improvements.

2.2.3 Fuels Treatment Design Features

Air Quality

1. A burn plan would be prepared and reviewed by the Lake Tahoe Basin Management Unit Forest Fire Management Officer prior to implementation of any prescribed underburning. This burn plan would include a Smoke Management Plan, which is the basis for obtaining a burn permit from the El Dorado County Air Quality Management District. In

order to minimize the effects of prescribed underburning on air quality, monitoring, mitigation, and contingency measures would be identified in the Smoke Management Plan. Desirable meteorological conditions such as favorable mixing layer and transport wind speeds are required in the Smoke Management Plan to facilitate venting and dispersion of smoke from populated areas.

Botany

See design features for ecosystem restoration above.

Hydrology/Soils

1. To provide ground cover and protect soil resources in areas of ground disturbance, including landings and temporary roads, masticated or chipped material would be spread over the disturbed areas, with a maximum depth of approximately 4”

2. Temporary roads and landings used for Mechanical Thinning would be completely restored following project activities.

3. Mechanical equipment operations in SEZs would be limited to CTL operations or operations using equipment that has been demonstrated to adequately protect soil and water resources (i.e. equipment that is lighter on the land, rubber-tired equipment, equipment that operates on a bed of slash, or other innovative technologies that reduce impacts to soils).

4. High Meadow SEZ stands that determined to be suitable for treatment with ground based equipment using the SEZ Sensitivity Rating System as deemed appropriate by a LTBMU hydrologist or soil scientist may be treated with ground- based equipment under operable soil moisture conditions.

5. SEZ stands that are determined not suitable for ground based equipment using the SEZ Sensitivity Rating System as deemed appropriate by a LTBMU hydrologist or soil scientist would be treated by hand crews, endlining, or mechanical over-snow operations.

6. When only a portion and SEZ stand is determined not suitable for ground based equipment by an LTBMU hydrologist or soil scientist using the SEZ Sensitivity Rating, the less sensitive part may be treated with mechanical equipment, but the sensitive portions of these stands would be treated by hand crews, endlining, or mechanical over-snow operations. Areas not suitable for ground base treatments, those with wet soils or other sensitive features, would be flagged for hand treatment prior to commencement of mechanical operations.

7. No ground based mechanical equipment would be allowed to operate within 25 feet of a perennial stream or waterbody. When removing trees within the 25 foot buffer, equipment may reach in, however ground contact must be avoided.

8. Prescribed fire would be planned to ensure that fire intensity and duration do not result in detrimentally burned soils.

9. Underburning prescriptions would be designed to avoid negative effects on soil and water resources. Flame heights would not exceed two feet within 50 feet of stream courses or on wetlands unless higher intensities are required to achieve specific objectives consistent with the Forest Plan standards, above.

10. No ignition would be allowed in SEZs; fire would be allowed to back into these areas.

11. Specific prescribed fire design criteria would apply within SEZs to address the resource concerns associated with underburning in SEZs:
    a. A 50-foot buffer (no underburning) would be maintained along perennial or intermittent streams, lakes, bogs, and fens.
    b. Fire would be allowed to creep into this buffer, maintaining flame lengths of less than two feet in height, except where sensitive plant occurrences, fens, and noxious weeds (cheatgrass) are present.

Recreation

1. A short-term forest order closing a portion of the project area during implementation could occur depending upon visitor use and the timing of fuels treatment activities. Generally fuels treatment activities will occur Monday through Friday.

Scenic

1. The size of mechanical harvest landings would be minimized, and mechanical harvest areas would be located outside of views from the Tahoe Rim trail, if possible.
2. For fuel treatments and thinning work within the foreground of the Star Lake and High Meadow trail segments, mitigation treatment measures such as 6-inch stumps, or lop and scatter of vegetative material to minimize the visual effects would be included. For public safety, felling of trees immediately adjacent to the Star Lake and High Meadow trails would be completed in the spring and early summer months, and a spotter would be present to facilitate safe visitor passage.

3. Construction of temporary roads, meadow restoration, and stand improvement work would be accomplished to the extent practical in a manner that closely duplicates the existing lines, forms, colors, and textures of the surrounding landscape character. Straight linear project activities would be avoided so that linear management activities will not be visible from the Tahoe Rim trail or the Star Lake/High Meadow trail.

Wildlife and Fish

For treatments within aspen stands:

1. Wood slash would be removed to allow sunlight to reach the forest floor, unless a prescribed fire is planned to stimulate additional suckering. In the latter case, only

scattered branches and tops would be left (broadcast underburning of heavy fuel loadings will likely kill too many shallow aspen roots and result in poor suckering).

2. Prescribed fire treatments would be designed to minimize disturbance of groundcover and riparian vegetation in RCAs.
    a. Prescribed underburn activities in meadows and aspen stands are desired; however, they should be designed to protect existing late seral vegetation (e.g., willow along streams and within meadows, larger overstory aspen trees).
3. Some mid- and large-diameter live trees that are currently in decline, have substantial wood defect, or that have desirable characteristics (teakettle branches, large diameter broken top, large cavities in the bole) would be retained to serve as future replacement snags and to provide nesting structure (SNFPA 51.11).
4. Snags would be clumped and distributed irregularly across the treatment units (SNFPA 52.11).
5. Small patches of mortality would be retained in old forest emphasis areas (Stand 1), as per SNFPA 53.17.
6. Larger diameter trees (e.g., large coarse woody debris) would be left on the ground (including recently felled trees) to the extent possible without exceeding a desired fuel load of 10 tons per acre, with the exception of areas within goshawk PACs where fuel loads may exceed this average level. Emphasize retention of wood in the largest size classes and in decay classes 1, 2, and 3. Consider the effects of follow-up prescribed fire in achieving desired down woody material retention levels (SNFPA 51.10).
7. To achieve the desired conditions for fuel loads, stand densities, and desired stream shading, dead and live trees removed would range between 3 to 30" dbh, beginning with the smallest diameter and retaining the largest trees. Treatments would include the removal of primarily understory, and some overstory trees, in order to reach the desired residual stand density and wildfire behavior.
8. Basal areas greater than 150 ft^2 and fuel loads in excess of 15 tons per acre would be prescribed where needed to maintain desired stream shading.
9. Jeffrey/ponderosa and sugar pine would be favored for retention, as well as desired riparian species, such as aspen and willow.
10. Large snag (> 15" dbh) would be maintained within PACs at densities > 3/acre and down woody material levels > 15 tons/acre where possible.

2.2.4 Access Travel Management Design Features

Recreation

1. User conflicts would be reduced or minimized on trails through the use of informational signage, including trail signs with allowed uses.

Scenic

1. Irregularly spaced tree branches and slash would be distributed over the surface of decommissioned or restored roads and trails, and areas adjacent to these travel routes.

Botany

1. Botany surveys will be completed for TES plant species and noxious weeds for all of the portions of the ATM that have not had previous surveys conducted or where previous surveys have expired. If any sensitive plants or noxious weeds are found, additional design features and mitigations would be added to the project design to avoid effects.

2.3 Monitoring

The Monitoring Plan is provided in Appendix C. The Plan describes the monitoring that would be required for the High Meadow Restoration Project. The purpose of project monitoring is to track the implementation of the design features found in Section 2.2 of the EA and the prescribed BMPs (Appendix A), and in some cases, to measure their short-term effectiveness at protecting resources. The monitoring includes:

- **Implementation monitoring** consists of inspections of project treatment areas, roads, stream crossing, landings, etc. to ensure that all management practices and design features are implemented as prescribed, including those designed to prevent sediment delivery and protect water quality (e.g., erosion control measures, riparian buffers, waterbars, critical dips).
- **Effectiveness monitoring** consists of inspections of the project to evaluate the effectiveness of the prescribed design features and management practices at meeting their objectives. It includes evaluating the effectiveness of management practices designed to prevent sediment delivery and protect water quality (e.g., erosion control measure, riparian buffers, waterbars, and critical dips).

Required Monitoring

For all aspects of the High Meadow Restoration Project the Best Management Practice Evaluation Program (BMPEP) protocols developed by the USFS and the CA State Water Resources Control Board (USDA FS, 2002) will be followed to provide qualitative information about BMP implementation and effectiveness. The R-5 BMPEP On-Site Evaluation form will be used to rate the effectiveness of the BMPs.

The monitoring will address the key components of the High Meadow Project and associated resource areas:

Ecosystem Restoration Component:

- Design implementation inspection and reporting
- Soil and Water BMP monitoring
- Vegetation monitoring
- Invasive Weeds
- Heritage resource monitoring
- Soil moisture monitoring
- BMP and design feature implementation for vegetation management actions

ATM Component:

- Storm Water Pollution Prevention Program (SWPPP)
- Vegetation monitoring
- Construction and Reconstruction
- Drainage
- Upper Cold Creek Trail Use

2.4 Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in Table 6 is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 6. Summary of Effects of Alternatives

	Alternative 1 (Proposed Action)	**Alternative 2 (No Action)**	**Alternative 3 Retain Existing Cold Creek Trail with Re-routes**
Scenic and Visual Resources	Eliminates highly valued scenic experiences (trail is close to Cold Creek and aspen) along existing Cold Creek trail. Increases recreational opportunities and provides regular maintenance by adding approx. 8.8 miles of classified trail to the official trail system. Short-term modification of view along trail adjacent to High Meadow from dead tree removal and meadow restoration work, recovering in the long term to meet Retention VQO.	There would be no change to existing recreational or scenic resources or experiences. Current unmanaged use patterns would persist, leading to environmental effects (soil erosion). VQO would continue to be met.	Retains highly valued scenic experiences along Cold Creek trail, increases recreational opportunities, and provides regular maintenance and improved trail design along existing Cold Creek trail by adding it to the official trail system, thus reducing soil erosion. VQO impacts are the same as Alternative 1.
Wildlife and Aquatics	No impacts to Threatened and Endangered Species, or TRPA species of interest. There would be an increase of approx. 7 acres of wet meadow habitat and 3 acres of riparian habitat. Treated stands would have a reduced risk of wildfire.	No direct impacts to wildlife or aquatic species; approx. 35 acres of wet meadow habitat and 7 acres of riparian habitat would continue to degrade. The risk of wildfire in untreated stands would increase the risk of damage to wildlife and aquatic habitat (including a PAC) if a fire occurred.	Same as Alternative 1.

	Alternative 1 (Proposed Action)	**Alternative 2 (No Action)**	**Alternative 3 Retain Existing Cold Creek Trail with Re-routes**
Watershed and Soils	Short-term sedimentation from channel disturbance possible; long-term reduction as channel stabilizes and deposition increases, thereby reducing sediment transport; decommissioning of existing Cold Creek trail will reduce localized point sources of sedimentation. There is a reduction in the potential damage to soil and watershed values from future wildfires.	Cold Creek and High Meadow persist in a degraded state, channel straightening and bank erosion continues. Current use patterns and sedimentation problems would persist because trails are not scheduled for nor would they receive regular maintenance. The risk of extreme wildfire behavior in untreated stands would increase the risk of damage to soils and watershed values if a fire occurred.	Very similar effects as Alternative 1, except a reduction in disturbance from new trail construction (approximately 1 mile less).
Streams and Meadows	Short-term disturbance with long-term improvements in meadow health, riparian conditions, and stream-floodplain connectivity. Approximately 8,700 feet of restored and healthy stream channel and 77 acres of meadow with increased vigor from reduced conifer encroachment.	Current degraded conditions would persist (6,580 feet of stream channel), with continued gradual drying up of approx. 70 acres of meadow due to conifer encroachment and incised stream channel.	Same as Alternative 1.
Fuels Management and Vegetation	Reduces long-term risk of catastrophic fire by removing dead trees; sustains health and vigor of aspen stands and trees; improves health and vigor of remaining live conifer trees. 278 acres treated to 10 tons/acre of fuel to minimize wildfire potential. Approximately 25 acres of aspen stands with increased vigor from reduced conifer competition	Fuel loading would increase in the next 10-20 years up to approx. 50 tons/acre as dead trees fall; aspens would lose vigor as conifers encroach and overtop aspens. The possibility of extreme fire behavior remains high if a wildfire occurs.	Same as Alternative 1.
Heritage Resources	No effect on known resources.	No effect on known resources.	No effect on known resources.

	Alternative 1 (Proposed Action)	**Alternative 2 (No Action)**	**Alternative 3 Retain Existing Cold Creek Trail with Re-routes**
Botanical Resources	No effect on known resources.	No effect on known resources.	No effect on known resources.

Table 7. Mileage of Classified and Unclassified Roads and Trails by Alternative

	Classified			**Unclassified**		
	Alt 1	**Alt 2**	**Alt 3**	**Alt 1**	**Alt 2**	**Alt 3**
Road	5.5*/6.2	6.2	5.5*/6.2	0	6.4	0
Trail	8.8	0	8.7	0	2.8	0

* mileage if easements are updated

3.0 ENVIRONMENTAL CONSEQUENCES

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 also presents the scientific and analytical basis for comparison of alternatives presented in the chart above. This section discusses in separate sections the potential effects of establishing permanent land management direction (programmatic changes to forest plan direction) and the potential effects associated with the project-level implementation of the ATM and the ecological restoration activities (meadow and stream restoration, and aspen and fuels management).

The following are the past, present, and foreseeable future actions that have affected or may affect resources in the High Meadow project area. Past and present activities have already altered sensitive plant occurrences and their habitats. Current management direction is designed to eliminate or reduce possible negative cumulative effects by protecting known sensitive plants species from direct and indirect effects.

Past

- Prior to 2003, when the LTBMU acquired ownership, the High Meadow project area was privately owned and was used for summer grazing by cattle. Effects of these actions include:
  - Damaged meadow soil structure and defoliated vegetation.
  - In riparian habitat, stream banks are eroded and native vegetation replaced with non-native species.
  - Conversion of wet meadows to drier lands.
  - Diversion of creek flow and construction of dispersion channels to support grazing caused channel incision, loss of creek and floodplain geomorphic function, and

lowering of shallow groundwater with concomitant changes in vegetation communities.

- Effects of past logging projects generally include:
  - Clear cutting in the mid to late 1800s removed old growth timber stands and reduced forest structure. In combination with fire suppression since the early 1900s, this has resulted in stands of white or red fir and lodgepole lacking understory structure and plant diversity and reduced dominance of Jeffrey pine trees.
  - Moderate duration of reduction in habitat quality for species that depend on closed canopy or old growth conditions and high forest structure.
  - Long-term benefits include habitat protection from reduced risk of catastrophic wildfire in dense stands prone to competition and die-off, and a greater potential for development of old growth conditions with less dense stands.
  - Short-term increases in light penetration to the forest floor, increased herbaceous layer, and decreased tree density benefit species that depend on early-mid seral open forest conditions.
  - Potential long-term habitat is enhanced for old growth species due to reduced tree densities, which reduces competition between trees for resources. This allows trees to eventually grow larger, which reduces the chance of large scale future die-offs.
- As part of required mitigation to offset effects to late seral/old growth forest, Heavenly Mountain Resort enhanced LTBMU forest habitat immediately north of High Meadow by thinning young conifer stands to improve development of late seral stage forest habitat.

Present

- The High Meadow project area is currently used as a recreation site, offering hiking, biking and fishing.

Foreseeable Future

- The High Meadow restoration project is scheduled to occur in 2009–2011.
- The Forest Service has proposed the "Aspen Community Restoration" project, of which an estimated 50 acres are located along the current Upper Cold Creek trail. Treatments will include: conifer removal to reduce or eliminate conifer encroachment through hand treatments and underburning.
- South Shore Healthy Forest and Fuels Reduction – There are approximately 614 acres of treatments planned within one mile of ATM treatments. Directly adjacent to the trailhead for High Meadows there are approximately 112 acres of mechanical treatments planned for implementation in 2010 or 2011.

3.1 Establishment of Management Direction

The establishment of permanent land management direction for the project area would not have any direct environmental effects; however, it is reasonable to foresee future actions that

would be likely as the Forest Service implements this direction. These reasonably foreseeable actions could lead to potential indirect or cumulative effects. These actions include the ecological restoration actions and the ATM actions included in this EA. There are no other reasonably foreseeable specific projects in the next 5 to 10 years as the actions in this Proposed Action are comprehensively addressing current needs. Therefore, the indirect and cumulative effects associated with the programmatic establishment of management direction are documented in the effects analyses for the ATM and ecological restoration discussions below. As for the no-action alternative, the 1,790 acres of acquired land would not be placed under management guidance of the LRMP as amended. No long-term management direction for the Cold Creek watershed would be employed to improve environmental and recreational conditions. No professional management would be afforded to the acquired land. Absent this long-term management area designation, unmanaged land use is likely to continue to occur; user challenges and erosion on non-maintained trails would persist; and High Meadow would continue to deteriorate losing environmental, vegetation and wildlife diversity, and recreation opportunities.

This section discloses the possible effects of the proposed ecological restoration actions and the ATM actions. No other reasonably foreseeable future actions have been identified by the Forest Service within the analysis area.

3.2 Hydrology and Soils

3.2.1 Existing Conditions

Hydrology

The project area is within Cold Creek drainage, which drains approximately 12.4 square miles from the crest of the Carson Range at Freel Peak before discharging into Trout Creek below Pioneer Trail. The main stream of Cold Creek flows to the north in the upper watershed through High Meadow and then westward dropping more than 1,400 feet through a steep canyon. The stream through this reach is underlain by coarse (boulder) glacier moraine deposits, then granitic bedrock below 6,800 feet elevation. The Upper Cold Creek trail is located along this stream. Cold Creek finally enters a flat meadow setting below Pioneer Trail where it joins Trout Creek in valley alluvium (Swanson 2007). These conditions indicate that the channel system is relatively stable at its base. From the north end of High Meadow to Trout Creek, the Cold Creek channel is steep (3 to 20 %) with a cobble boulder base and well armored banks and is a stable channel.

The four tributary channels that flow into High Meadow, however, have exhibited incisement as a result of historic use. Though they have relatively stable bottoms, the channels exhibit lateral bank erosion and straightening (loss of sinuosity) as a result of past land use, notably grazing, headwater and in-channel diversions, and roads within the upper portions of the watershed and within the meadow itself. Over the last 65 years, the channel length has been reduced by 750 feet (Swanson 2007). Diversion ditches within the High Meadow area total approximately 13 miles whereas the natural stream system channels approximate only 3.5 mile (Swanson 2007). This is roughly a 4-to-1 ratio of man-made channels to natural channels, which has substantial effects on area hydrology. The channels in the four tributary streams of Cold Creek within High Meadow are Mainstem, West Fork, East Fork, and North

Fork (Swanson 2007). These channels have incised to the extent that they can fully contain bankfull flows without overflowing onto the flood plain. With full channel containment of these flows, incised/straightened channels continue to form. In an undisturbed, non-eroded condition, the flows through the meadow would be within highly sinuous channels allowing flows to overtop the channel banks onto the floodplain. In a healthy channel-and-meadow relationship, the overflow onto the flood plain recharges the groundwater, promotes more extensive riparian-dependent species, and allows the entire meadow to store and release more water throughout the entire year, helping to sustain downstream flows. Flow diversion systems, as well as past practices such as grazing, have disrupted these natural features resulting in fluvial and channel morphological degradation.

Water Quality

LTBMU has conducted water quality monitoring at two stations on Cold Creek from March 2003 through September 2007. An upper monitoring station (43-21) is located just below the High Meadow Complex, and a lower station (43-22) is on the western forest service property line approximately 100 yards upstream of the reservoir near Pioneer Trail. Though the placement of these monitoring stations has precluded discussions specific to the upper watershed sediment loading (High Meadow and above), they do provide some insight to Cold Creek sedimentation from the Meadow complex through the lower Cold Creek channel. See Table 8 for a summary of the water quality data. The full data set is available in the project record (Project Record Document I). An analysis was conducted to correlate maximum estimated discharge with maximum suspended sediment. This analysis indicates higher sediment loading at the upper monitoring site, suggesting that the degraded channel conditions in the meadow complex may be contributing to this condition, and that the sediment may become deposited in Cold Creek before it reaches the lower monitoring site.

Table 8. Summary Statistics for Water Quality Data Collected on Cold Creek from March 2003 through September 2007

43-21	**Q** cfs	**Sp. Cond.** µS/cm	**Turbidity** NTU	**Sus. Sed.** mg/L	**no_2/no_3** mg/L	**Total PO_4** mg/L	**SRP/PO_4** mg/L	**TKN** mg/L	**Total N**
Max	48.42	36.00	17.70	20.60	0.078	0.066	0.016	0.402	0.427
Min	1.43	5.40	0.07	0.27	0.001	0.019	0.003	0.056	0.001
Mean	10.12	16.06	1.78	3.79	0.014	0.028	0.008	0.153	0.164
Median	5.53	12.70	1.08	2.60	0.009	0.027	0.008	0.142	0.150
43/22									
Max	64.55	60.00	22.50	34.90	0.086	0.065	0.014	1.007	1.016
Min	4.36	3.80	0.08	0.40	0.001	0.013	0.003	0.059	0.068
Mean	16.31	26.52	3.07	5.85	0.021	0.030	0.008	0.176	0.197
Median	10.26	20.90	1.73	4.14	0.015	0.028	0.008	0.146	0.159

Definitions: Q = flow; Sp.Cond. = specific conductivity; Sus. Sed. = Suspended Sediment; NO2/NO3 = nitrate/nitrite; total PO4 = total phosphate; SRP soluble reactive phosphorous; TKN = Total Kjeldahl Nitrogen, Total N = Total Nitrogen

Additionally, an analysis of Total Nitrogen indicates that the average annual means exceeded the state standard (of 0 .19 mg/l) three out five years at the lower site (the FS boundary) and

one year at the upper site (the edge of High Meadows) between 2003 and 2007 (Table 9). The average annual means for the years exceeding the standards ranged between .19 and .27 mg/l. Because of this exceedence of state standards for Total Nitrogen, Cold Creek has been listed as an impaired water body under section 303(d) of the Clean Water Act. However, because watershed restoration actions are currently proposed in this document, Cold Creek is listed under Category 4B – addressed by actions other than TMDLs.

Table 9. Average Annual Means of Total Nitrogen for Water Quality Data Collect on Cold Creek for Years 2003–2007. Exceedences are in bold.

	Annual Mean	
	Total N	
	43-21	**43-22**
2003	0.183	**0.201**
2004	0.166	**0.226**
2005	**0.196**	**0.273**
2006	0.143	0.150
2007	0.134	0.139

Meadows

A review of aerial photographs of the meadow complex spanning 1940 to 2005 (photos on file at LTBMU) indicates substantive changes have occurred. The extent of diversion ditches and roads continually increased over time, and lodgepole pine has significantly encroached into the meadow. Stream channels in the Mainstem Cold Creek, West Fork, East Fork, and North Fork have straightened, losing sinuosity and leaving abandoned meander scars of original channels. Stream channels have incised and thereby lowered the groundwater table, drying up portions of the meadow environment, further accelerating pine encroachment and loss of native meadow vegetation. Figure 6 illustrates the changes in channel morphology and loss of roughly 750 feet of meandering channel. The High Meadow Complex has been divided into five project subareas for descriptive purposes: Lower Meadow, Middle Meadow, Upper Meadow, East Meadow, and Bear Glade.

Lower Meadow: The Lower Meadow area encompasses 29 acres of subalpine meadow and limited forested uplands of predominately lodgepole pine. The dominant feature of this area is the large (17 acre), low slope (0.01) meadow environment and the Mainstem of Cold Creek, which flows within an incised, 2,000-foot-long meandering channel.

Lodgepole pine stands have invaded the eastern and western boundaries of Lower Meadow and are encroaching on the middle portion of the meadow. The invasion may be due to disturbed (mineralized) soil conditions, lowering of shallow groundwater levels due to incision of the mainstem channel, and lack of fire. The lack of the thinning influence of fire has increased the density of the mixed conifer forest, leading to an increase in uptake of water from the soil profile, and hence less water availability to provide streamflow. The western portion of Lower Meadow also contains several flow diversion channels/ditches that were constructed to support past grazing operations (discussed in following sections). Some

of these channels occur within the meadow and some are present in surrounding lodgepole invasion areas.

Middle Meadow: The Middle Meadow comprises approximately 49 acres and includes meadow areas, forested uplands, and former open meadow environments recently invaded by lodgepole pine. The current meadow area totals approximately 15 acres

Upper Meadow: The Upper Meadow comprises 31 acres of meadow, forested uplands, and lodgepole invaded floodplain environment that likely once supported a meadow ecosystem (particularly in the middle-western portion; 11 of these acres include steep (0.4 slope) open meadow spanning the eastern half of the area. Approximately 3,000 linear feet of perennial stream channel cross Upper Meadow, including the Mainstem and West Fork channels in the western half and East Fork channel to the northeast.

East Meadow: The East Meadow area encompasses 40 acres of diverse landscape including varied meadow environments, forested uplands, and dense lodgepole invasion stands. The meadow area is approximately 12 acres and includes a larger flat lobe-shaped meadow along the east and northern portion of the area, and a smaller, narrow meadow along the southwest portion of the area; recent lodgepole pine invasion has nearly eliminated this smaller meadow environment. Channel incision lowered shallow groundwater levels in the middle region and this appears to have contributed to extensive lodgepole pine invasion across the area. Sod to stabilize newly constructed stream channels will be harvested from the East Meadow area. Approximately 2.23 acres of sod will be needed for the stream restoration project. A much larger area has been identified to allow for selective sod harvest to ensure it is composed of native species and free of weeds. (Appendix B – Scoping Summary Report).

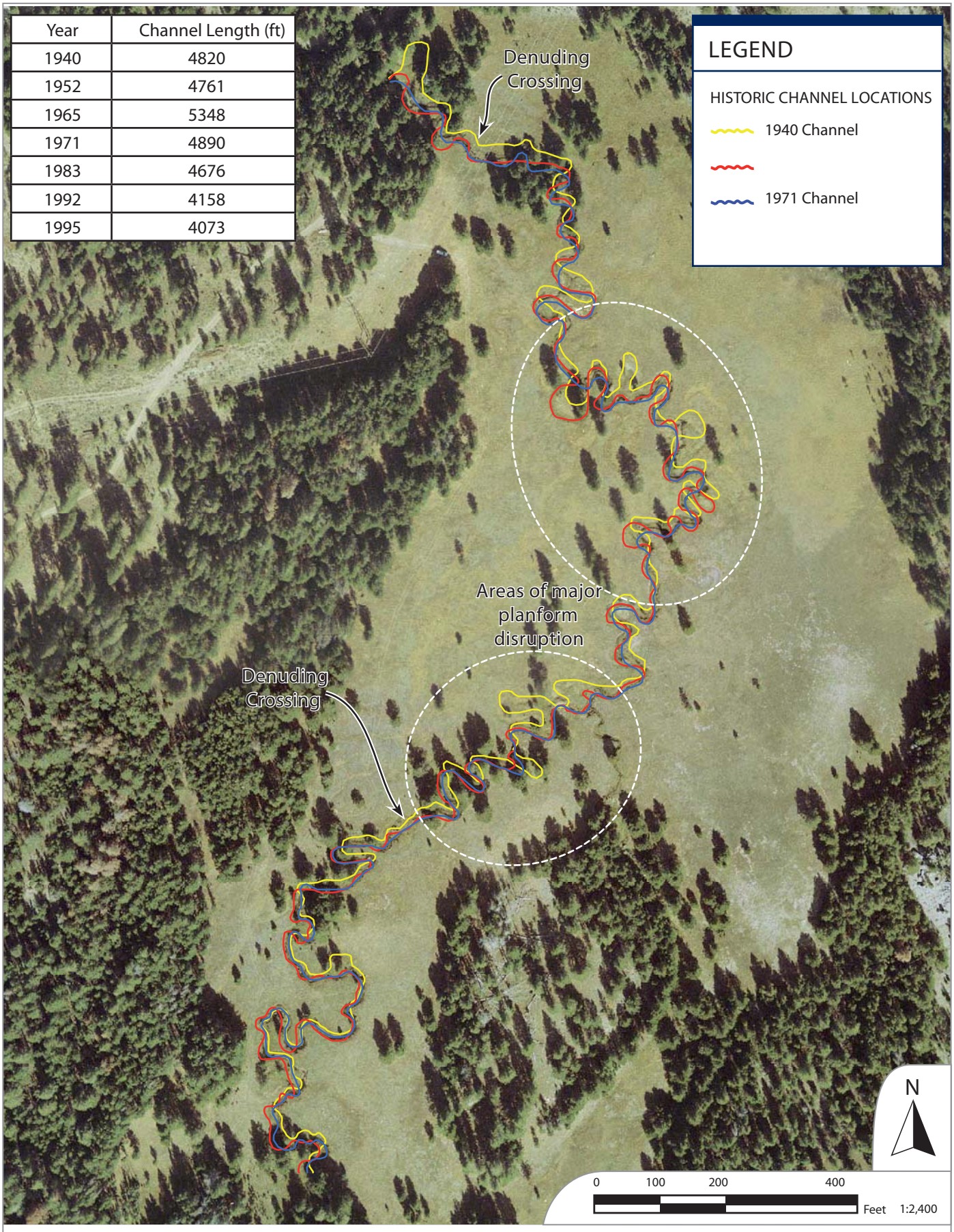
Bear Glade: The Bear Glade area encompasses approximately 36 acres, with approximately 3 acres of open meadow area and approximately 2,300 feet of West Fork and Mainstem perennial stream

Cold Creek Trail and Road System

The existing Cold Creek trail is approximately 2 miles long and closely parallels Cold Creek through much of the project area. There are approximately seven sites along the trail which are sources of erosion/sedimentation. These sites primarily relate to trail crossing of live water and ephemeral drainages and to sections of the trail that are overly steep (10 to 20%) and are on exposed decomposed granite rock. Trail widths vary for 18 to 36 inches and the adjacent land ranges from excellent groundcover to barren soil/rock surfaces. The trail, at its closest, is within 20 feet of Cold Creek and has good groundcover and erosion filter vegetation and debris in place to effectively filter and trap sediment that is mobilized off of the trail itself.

Soils

The High Meadow Complex is comprised of soils that have been derived from the deposition of alluvium transported by glacial activity, landslides, debris slides, and water (Swanson 2007). The soils are generally loamy in texture and are well-drained. There are three major soil units in the project area (Swanson 2007). The most prevalent soil unit is *Lo* (loamy alluvial), with lesser amount of *Ms* (Meeks very stony loamy coarse sands) and *Tb* (Tahoma



SWANSON HYDROLOGY+ GEOMORPHOLOGY
500 Seabright Ave, Suite 202 Santa Cruz, CA 95062
PH 831.427.0288 FX 831.427.0472

FIGURE 6: Changes in Historic Channel Locations Over Time
High Meadow Restoration Project

very stony sandy loam), which are coarser in texture. Soil pits within the meadow environment reveal a varied depositional environment, as layers of peat (high in organic matter) are layered with coarse sediments. The soils within and adjacent to the meadow area range in water holding capacity from well drained to excessively drained. This indicates the characteristic of frequent perennial springs and seeps throughout the upper watershed and increased occurrence following climatic events and spring snow melt.

Below the High Meadow Complex (along the Cold Creek), the soils are typical of mountain uplands, with substantial amounts of granitic bedrock outcrops and/or large granitic boulders interspersed along steeper slopes than the meadow areas. The soils are shallower than the meadow soils and are well-drained. These steepened slopes covered with the granitically derived soils also provide the opportunity to transport eroded soils into the Cold Creek channel, resulting in sedimentation throughout the drainage system and potentially into Lake Tahoe. These soils are prone to sheet erosion if groundcover or other impediments to surface flow do not slow down the water and trap any mobilized sediment. Portions of existing trails and roads have not been designed to proper standards, and this has led to areas of sedimentation.

3.2.2 Alternative 1 Effects

Direct and Indirect Effects

Trail work in this alternative calls for construction of roughly 2.2 miles of the new upper Cold Creek trail and restoration to near-natural conditions approximately 1.2 miles of the existing trail. This would result in a decrease in eroded soil leaving the trail surface, and potentially being delivered as sediment to Cold Creek and tributaries along the newly constructed trail. A Watershed Erosion Prediction Project (WEPP) analysis was conducted based on GIS information to help estimate the relative difference in the amount of sedimentation associated with the existing Cold Creek trail surface (USDA Forest Service 2008). The amount of sedimentation leaving the road and trail surface is estimated to be reduced by approximately 78% under this alternative as compared to the existing condition. The amount of sedimentation predicted to leave the buffer and enter the stream is reduced by approximately 16% as compared to the existing condition. With adjusted easements, the amount of sediment leaving the road surface would be slightly reduced as 0.7 more miles of road would be restored. The results indicate that only a very small amount of eroded sediment leaving the trail side buffer will continue to be a potential source of sediment to Cold Creek and adjacent tributaries along the existing trail. The large majority of the sediment is expected to be trapped by the high amount of vegetation and soil litter that exists on the sideslopes and along the SEZ (ICF Jones & Stokes 2008). In addition, approximately 5 miles of unclassified road surface would be converted to non-motorized trails, and 2 miles of road surface would be restored. These actions would reduce the amount of existing and potential erosion by reducing user impacts (motorized to non-motorized) and restoring natural drainage patterns and characteristics. Proposed trail treatments of removing and restoring 1.2 miles of the existing trail and constructing 2.2 miles of trails to design specifications up slope from the existing trail along Cold Creek would reduce erosion and potential sedimentation of Cold Creek over the long term.

There is a potential for a short-term increase in erosion and sedimentation with the onset of trail and road construction and restoration actions. Work would occur on a phased basis, allowing remediation of each prior year's effects prior to initiating subsequent yearly work. Stabilizing the various Cold Creek channels and restoring natural bankfull channel morphology would restore flood plain function and filter runoff. Restoring the creek function would initiate the natural geomorphic stability and lower flood plain processes that allow for meadow sustenance and colonization of riparian areas with vegetation and forest structure to provide habitat to sustain desired species. The restoration and revegetation of unclassified roads, trails, and diversion channels/ditches would further enhance removal of undesired fine sediment from surface water flows. These efforts, combined with prescribed underburning and other treatments for removal of lodgepole pine, would reverse lodgepole invasion and encroachment and would improve hydrologic conditions to sustain and expand wet meadow environments. The creek reconstruction and removal of flow diversion channels/ditches would restore hydrologic conditions and raise water table levels to support riparian development and more diverse vegetation communities. The restored conditions would expand aquatic habitat, stabilize riparian zones, increase diversity of riparian and meadow vegetation communities, and improve habitat overall.

Proposed treatments in the meadow complex would improve channel sinuosity, provide armoring for constructed channels, decrease channel slope, and put flood flows back onto the meadow flood plain. This would reduce the erosive energy of flowing water precluding continued lateral erosion of banks and would enable deposition of transported sediment on the meadow surface. While there is a possibility of short term increases in turbidity (≤3 NTU for <48 hours) during channel construction, BMPs will be employed to mitigate these effects. Treatments are expected to result in a net reduction in sediment delivery and turbidity and overall improvement in water quality.

Meadow/channel restoration, lodgepole pine removal/prescribed underburning, road/channel decommissioning, water diversion closure and decommissioning, trail relocation/construction, boulder weir installation, and stream channel decommissioning and reconstruction would result in overall beneficial effects for the Cold Creek drainage. Quarry sites (sources of material for channel reconfiguration) and sod harvesting areas (for revegetating newly created channel banks) would be stabilized employing design features and BMPs, and negative effects would become neutralized to acceptable levels with regard to water quality and vegetative effects within 5 years of project completion. Average annual flows would utilize meadow flood plain areas, thereby reducing runoff/scour energy and depositing transported sediments. With increased channel sinuosity and reduced slopes (reduced sediment transport energy); in-channel flows are not expected to erode sod armored stream banks laterally or continue to incise armored channel bottoms. Restoring wetland and floodplain function would result in a natural erosion and sedimentation process yielding stable banks, diverse riparian habitat, healthy substrate/aquatic habitat, and cover. Groundwater levels throughout the meadow would stabilize and 're-wet' historic meadow areas. Natural geomorphic/fluvial processes would be achieved that allow for colonization of native vegetative communities and form the basis for naturally sustained wildlife habitat. Management of dispersed recreation is expected to improve through ATM designation of the system, road and trail decommissioning, and construction of new trails in proper locations. Prescribed fire application is expected to enhance meadow conditions and vegetation

community development. Nutrients released by prescribed underburning, though short lived, would stimulate vegetation growth and improve vegetative habitat diversity and quality. Prescribed fire in conjunction with other treatments for removal of lodgepole pine would reverse lodgepole invasion/encroachment and improve hydrologic conditions to sustain expanded wet meadow environments.

Adding the trail to the Forest Service ATM system would afford the opportunity for scheduled maintenance and coordinated use, further affording reduced erosion and potential sedimentation over time. Trail reconstruction, application of BMPs and design features, and system designation are expected to result in a net reduction in erosion/sediment delivery and an overall improvement in water quality.

Water quality may have short-term increases in sediment production as a result of trail construction and channel restoration actions that disturb the soil surface and the temporary road development for channel and lodgepole pine treatment access. However, BMPs are designed to minimize disturbance and reduce sediment transport so that these effects are minimized. The long-term effect of these disturbance actions, tempered with the removal/restoration of unstable roads and trails, correcting an erosive channel configuration, and implementing design features and BMPs during treatments, are expected to improve water quality in the Cold Creek. These long-term effects including the likely reduction of Total Nitrogen to below water quality standards.

Cumulative Effects

The watershed boundary for potential cumulative effects is the Cold Creek watershed within which proposed trail and meadow restoration actions would occur. As noted earlier, historic activities associated with land use and resource extraction had significant impacts in terms of cumulative watershed impacts. These impacts have accrued since the early 1800s and persisted through 2003 when the Forest Service acquired the lands within the project area. The proposed project involving management designation for the watershed lands and meadow and trail restoration is expected to result in a reversal of the cumulative effects accrued to date, not in addition to those effects. Trail construction and restoration activities can be considered minor actions being of limited linear extent and complexity. Lodgepole pine treatments are expected to reduce the threat of catastrophic wildfire, which would accelerate instability and erosion production. Project design features and BMPs are expected to offset all but short-term effects on environmental quality with regard to meadow restoration actions. Proposed treatments and management area designations are expected to result in a net reduction in erosion/sediment delivery and overall improvement in water quality. In addition to the documented past actions within the Cold Creek watershed, the "Aspen Community Restoration" project is likely to occur. There would be no cumulative impact from this project. There would be no soil disturbance associated with the hand cutting of the trees. Small burn piles would be placed outside of the SEZ. The heavy duff and vegetative cover would remain in place between the small burned areas and the streams, effectively trapping any sediment that may move off of the burned site. A Cumulative Watershed Effects (CWE) assessment using the Equivalent Roaded Area (ERA) method was performed for the High Meadow restoration Project area. ERA is a unit used to estimate the impacts of various treatments or land use in a watershed and relate it back to the Threshold of

Concern (TOC) as defined by the Bailey's (1974) land capability classification system. A summary of the CWE analysis of the proposed project is discussed below. This summary is based upon the CWE analysis (USDA Forest Service, 2008).

CWE Results: The Cold Creek watershed is not currently over the TOC from past activities and does not go over or near the TOC due to the proposed project activities. The increase in Risk Ratio (RR) during the period of analysis is relatively small, and ranges from approximately 28% to 32%. A risk ratio above 100% is an indicator of a need for further analysis for potential cumulative watershed effects.

The proposed action alternatives would result in some increased disturbance in the affected watersheds. The application of BMPs would minimize onsite impacts associated with the proposed project activities, while road maintenance and stream crossing improvements would reduce delivery of sediment to streams in the project area. The proposed treatments were designed to minimize potential negative impacts to soil and water quality within the project area, while recognizing the existing watershed conditions due to lasting impacts of past management actions, existing road densities, and stream crossings. Based on the results of the CWE analysis, with implementation of BMPs and design features (including Resource Conservation Area [RCA] designations and prescriptions), the risk of negative cumulative effects to soil and water resources within the project area is low and beneficial uses of the Lake Tahoe Basin would be maintained. The analysis concluded that there is no loss of aquatic or riparian habitat and therefore there is no cumulative contribution to the loss of suitable habitat for aquatic and riparian dependent species within High Meadow analysis area.

The proposed action includes trail upgrades and restoration designed to improve water quality in the Lake Tahoe Basin over the long term. It is expected that trail work may cause slight short-term increases in sediment production as a result of activities associated with trail construction, upgrades, and restoration. However, because design measures and BMPs are incorporated to avoid or minimize construction related effects, the cumulative short-term effects would be less than significant. Trail contributions to the ERA methodology used in assessing cumulative watershed effects would be negligible and would not reflect the increased sediment influx to streams associated with poorly located, misused, or poorly maintained trails because ERA does not account for location of effects within a watershed. Similarly, the ERA/CWE values do not capture the benefits of trail improvements reflected in trail rehabilitation projects because the ERA only accounts for amount of disturbance not location.

3.2.3 Alternative 2—No Action

Direct and Indirect Effects

There would be no direct ecological effects by taking no action. Indirect effects include the continuation of conditions for hydrologic function of the meadow system to remain poor for the foreseeable future. Lodgepole pine encroachment and loss of meadow area would continue, and it is very likely that the meadow would continue to shrink and eventually transform into a mixed conifer system with streams running through it with limited streamside riparian areas. These are indirect and negative effects to the High Meadow area.

Negative impacts to water quality (i.e. sedimentation and elevated Total Nitrogen) would continue due to hydrologic conditions of non-dispersal of flood flows over the meadow flood plain to filter sediment, and continued high velocity flows in straightened channels promoting in-channel lateral cutting and continued straightening of the channel system. The meadow groundwater level would continue to drop to the depth of incised channels, thereby continuing to de-water the meadow and allowing for conifer encroachment. Roads and trails would continue to erode and deliver soil to stream systems increasing sedimentation availability to Lake Tahoe.

The 1,790 acres of land acquired in 2003 would not be incorporated into the LTBMU LRMP Management Areas and would attain no long-term management emphasis/direction as a result. This lack of long-term management direction would continue to defer action on deteriorating environmental conditions.

Cumulative Effects

There would be negative cumulative effects due to the lack of any action. The Aspen Community Restoration project would have no cumulative effect (see above). Cumulative Effects due to the perpetuation of past actions in the form of expanding erosion and sedimentation will continue to accrue and potentially impact the water quality in Lake Tahoe.

3.2.4 Alternative 3 Effects

The direct, indirect and cumulative effects are nearly identical to those for Alternative 1. The only difference is that there is a slight reduction in potential for sedimentation by eliminating approximately two miles of new trail construction as proposed in Alternative 1. According to the sedimentation modeling results (WEPP model), the estimated amount of sedimentation leaving the road and trail surfaces is estimated to be reduced by approximately 80% under this alternative as compared to the existing condition. Most of the sedimentation is predicted to be effectively trapped by the streamside buffer of groundcover, with less than half of the sedimentation predicted to leave the buffer as compared to the existing condition. With adjusted easements, the amount of sediment leaving the road surface would be slightly reduced as 0.7 more miles of road would be restored. Proposed trail treatments of removing and restoring roughly 0.75 mile of the existing Cold Creek trail and re-routing roughly 1.2 miles of the trail to design specifications would reduce erosion and potential sedimentation of Cold Creek. Trail treatments and system designation are expected to result in a net reduction in erosion/sediment delivery and an overall improvement in water quality. These actions would result in a reduction in the amount of soil currently leaving the trail surface and potentially being delivered as sediment to Cold Creek and tributaries along the re-routed and residual existing trail. Adding the trails to the Forest Service ATM system would afford the opportunity for scheduled maintenance and coordinated use further affording reduced erosion and potential sedimentation over time.

3.3 Recreation

3.3.1 Overview

This section presents the existing conditions and then discusses the effects. Both sections first address the Cold Creek trail and then the remainder of the ATM and ecological restoration activities, since the Cold Creek trail proposal was the focus of public comments. Effects are specified in more detail below and can be summarized as having an negative effect on the quality of their recreation experiences. Neither alternative addresses user conflicts but rather shifts these conflicts from one location to another.

The proposed multiple project activities (fuels treatments, thinning, meadow restoration, remaining ATM work) in the High Meadow Complex would have some minor short-term effects on recreation users; however, the overall long-term effects remain positive. The road and trail re-routes and restoration would have a short- and long-term positive effect. The fire and fuels management projects would also have some temporary and short effects; however, their overall benefits are clearly positive. The meadow restoration project would have a short-term negative effect and a long-term positive effect.

3.3.2 Existing Conditions—Cold Creek Trail

Recreation in the project area consists of dispersed recreation opportunities that probably started in the mid 1900s. The dispersed recreation principally includes hiking, backpacking, mountain biking, bird watching, fall foliage viewing, and wildlife viewing. The Upper Cold Creek trail is particularly valued for its fall color displays as the aspen trees turn colors. A trail network begins at the lower end of the watershed near Pioneer Trail and provides access up the steep terrain to the High Meadow Complex and upper portions of the Cold Creek Watershed. Portions of the trail network utilize old roadways associated with historical logging and grazing operations. These roadways are commonly in a dilapidated condition, particularly where off-road vehicles (now illegal in the watershed) further disturbed soils and increased erosion. Existing roadways in the vicinity of the High Meadow Complex are shown in Figure 4a.

The Tahoe Rim trail network circles a portion of the upper watershed near Star Lake below Freel Peak then follows the main ridgeline along the eastern boundary of the watershed. This rim trail network connects to trails south and north of the watershed and is a common destination for hikers and mountain bikers passing through the High Meadow Complex area from Pioneer Trail. Forest Service records indicate that approximately 6,000 visitors access the Cold Creek Watershed during a typical summer, and approximately 3,500 of those visitors pass through or in the vicinity of the High Meadow Complex. Current summer management policies allow hiking, mountain biking, and equestrian use in the High Meadow area. No camping, campfires, or Off-Highway Vehicle (OHV) uses are allowed. Winter management policies allow cross-country/snowshoe access; however, no Over Snow Vehicle (OSV) use is authorized.

The existing Cold Creek trail is approximately 2 miles in length, from the “ford” crossing at the lower end to the point where it arrives at High Meadow at the upper end. Along the

lower end of the trail, it passes through mixed conifer forest, dominated by Red Fir and Jeffrey pines, with occasional hardwoods along the streamside environment zone (SEZ), including alders and infrequent aspen clumps. The trail is well-shaded, and the trail bed itself is approximately 24 inches wide. The trail usually is within 50 to 100 feet of Cold Creek, and at times approaches within 20 feet, offering the traveler a range of visual and sensory experiences associated with rushing waters and more tranquil and quiet forest settings. The trail gradient is generally gentle (5–10%) as it gains elevation, with occasional steeper "pitches" of 10–20% as it climbs up the side slopes. These steeper sections are generally less than 200 feet long, while the more gentle sections are commonly several hundred feet in length. After about 0.67 mile, the trail crosses the Right-of-Way (ROW) for the power transmission line. The ROW is a linear feature that was disturbed by heavy equipment during the installation of the power line where the conifer and hardwood vegetation is younger and shorter than below the ROW in the older mixed conifer stands. It is at and above this point that the trail offers more visual variety and open views of the adjacent upslope forested areas. The young aspen stands associated with the ROW disturbance mix with older aspens along the Cold Creek SEZ to provide pleasing fall colors in more concentration than below this area. This trail parallels the boundary between the SEZ and the adjacent and open mixed conifer forests, dominated by Jeffrey pine and open slopes. There are more open areas of decomposed granite, granite boulders, and patches of shrubs. The proximity of the trail and the more open structure offer occasional pleasing sights and sounds of Cold Creek, which is dominated by boulders and downed logs. See Figures 7 and 8 for examples of the scenery along the trail during the fall period.

Figure 7. Young and colorful aspen with adjacent open Jeffrey pine stands adjacent to trail. This photo is taken approximately three quarters of the way from the bottom of the Upper Cold Creek trail.

Figure 8. A view of distant mountain peaks framed by aspen. Taken from the trail approximately half of the way between the bottom and top.

Towards the upper quarter of the trail, the trail climbs upslope and away from the creek rapidly, and then flattens out as it approaches the High Meadow area. The trail traverses through more open Jeffrey and lodgepole pine stands with little direct access to Cold Creek.

The Cold Creek trail likely began as a livestock path, especially in the upper portions near High Meadow. Like many early era trails, it has become established without the use of formal trail design and construction standards. Historically, as High Meadow, Star Lake, and the nearby high mountain peaks became known to local users, hikers gradually established a volunteer-constructed route between the Pioneer Trail and High Meadow. This existing trail location is not a designated trail by the Forest Service and does not receive regular maintenance. This route closely followed Cold Creek connecting the South Shore area with the High Meadow Area. During the late 1900s, mountain biking evolved as a new way to explore backcountry roads and trails, and this use has increased use of Cold Creek trail. Equestrian use does occur on the trail; however, use is limited. Its close proximity to the South Shore area allows a convenient and easy access for both hikers and mountain bikers.

Trail use information is limited to data collected by trail counters during the peak use season in 2008. Two trail counters were placed on the Cold Creek trail, one along the lower section at the stream crossing found in the Northwest corner of Section 12. A second trail counter was located on the Cold Creek trail above the stream crossing to monitor use traveling towards the High Meadow Area. Use counts were taken on the lower trail section between July 30, 2008, and August 5, 2008, where 3,139 users were counted, and between August 5, 2008 and August 12, 2008, where 2,175 users were counted. This level of use is considered high use. The upper section use counts for the same time periods were 256 and 231 users, respectively; this is considered low to moderate use. The mix between hikers and mountain bikers is estimated to be approximately equal; however, hikers typically travel round trip, while mountain bikers travel one way on the Cold Creek trail.

3.3.3 Alternative 1 Effects—Cold Creek Trail

Direct and Indirect Effects

This action relocates the Cold Creek trail away from the Cold Creek ecosystems and into the open Jeffrey pine and red fir ecosystems. The current trail would be decommissioned, and the existing trail pad would be restored to near-natural conditions that would be considered unsuitable for forest users. This would have a detrimental effect on the quality of visitor experiences by eliminating those attributes which visitors now enjoy along Cold Creek. These include the loss of the sights and sounds of Cold Creek itself, its cooler environment, its summer and fall colors, the vegetative diversity it offers, and the wildlife it attracts. There would be minor effects due to noise during construction of the new trail; however, this would be temporary. Trail use along the existing trail would remain open while the new trail is being constructed. There may be a perceived benefit by users as they see their trail opportunities "expanded" by the new trail location if they still use the existing trail, even though it is restored.

The addition of the new trail to the trail system is likely to increase use to the High Meadow area and to other destination areas, such as Star Lake, although the amount of increase is not known. The trail would be placed on formal trail maps. It is likely that current users of the

existing trail would continue to use the old trail location as they seek the visual scenery that is not offered by the new trail location. The trail was created by users and has been maintained over the years by users. The popularity of the existing trail would likely continue to draw users, given the highly valued scenery and close proximity of the trail to nearby residences. The continued use of the trail would likely lead to continued small areas of erosion where the trail crosses ephemeral or intermittent stream channels that confluence with Cold Creek.

Cumulative Effects

The relocation of the Upper Cold Creek trail would eliminate the direct views that users may have of the small openings and associated localized burn piles. This is because the new trail would be located further upslope than the current location, and views into the Cold Creek streamside zone and aspen stands would be associated with more distant "overlook" scenes. The effects of the thinning in aspen stands would be very short-term as well, as vegetation and young aspen sprouts will grow rapidly, effectively screening the localized burn piles. Piles are expected to be burned in 2012, and apsen stand recovery would take place in 1 to 3 years after initial treatment. .Aspen stand treatments are expected to increase aspen regeneration and spatial extent of aspen stands along Cold Creek.

3.3.4 Alternative 2 Effects

Direct and Indirect Effects

There would be no change to the current condition. Users would still enjoy the current recreational uses and experiences; however, the trail would not receive any regular maintenance in order to help ensure user safety and proper trail design to minimize environmental effects. User conflicts, typically between hikers and mountain bikers, would continue. There would be no indirect effects to recreational uses or experiences.

Cumulative Effects

Cumulative effects would be slightly greater than Alternative 1. The Cold Creek Trail would continue to provide users with very direct and highly valued visual experiences of the aspen along Cold Creek. The Aspen Community Restoration project would increase aspen regeneration and spatial extent along the creek, much of which would be visible from the trail. There would be visible signs of burning along the trail, however these visual effects would be short-term and and the recovery of vegetation (within 1 to 3 years) would rapidly soften the visual impact. Over the long term, the visual quality experience would improve, as the young aspen sprouts would add a new element of variety, as aspen stands would reflect a diversity of tree sizes and this experience would be more sustainable over time.

3.3.5 Alternative 3 Effects—Cold Creek Trail

Direct and Indirect Effects

This alternative is responsive to the public's concerns that there would be a negative impact on the visual experience from the relocation of the trail (Alternative 1). By retaining much of the current location of the Cold Creek trail (with re-routes to mitigate erosion concerns), the trail would continue to offer hikers and mountain bikers the experiences they currently enjoy, such as views of a mixed conifer-aspen forest with vibrant fall colors, close-up views of a

rushing mountain stream, and a shaded and pleasing trail that invites users of all ages that is in close proximity to the nearby community.

This alternative does not address user conflicts; however it implements an information and education program which is focused on trail courtesy and safety. This includes on-the-ground signing to inform all users about commonly accepted trail right-of-way conduct. It also includes a monitoring program to evaluate the degree of safety conflict between users and to decide whether further management actions are needed. This monitoring program is described in Appendix C. Trail re-routes would be completed without interfering with existing use.

In summary, this alternative retains the historic location of this trail along Cold Creek and all the attributes mentioned above. At the same time, the proposed re-routes fully addresses the soil erosion and trail grade issues associated with the existing route without interfering with the existing recreational opportunities and experiences. It continues to invite users of all ages from the nearby communities to enjoy these attributes while retaining its distinction from other trails commonly found within the Lake Tahoe Basin.

The Cold Creek trail would be formally added to the trail system and would be eligible for regular maintenance to support user access and experiences. There is likelihood that the trail would experience an increase in use because of its publication on trail maps, although the amount of any possible increase is unknown. An increase in use would reduce the serene and isolated experience that some users seek, and it may also cause an increase in user conflicts..

Cumulative Effects

Cumulative effects would be slightly greater than Alternative 1. The Cold Creek Trail would continue to provide users with very direct and highly valued visual experiences of the aspen along Cold Creek. The Aspen Community Restoration project would increase aspen regeneration and spatial extent along the creek, much of which would be visible from the trail. There would be visible signs of burning along the trail, however these visual effects would be short-term and and the recovery of vegetation (within 1 to 3 years) would rapidly soften the visual impact. Over the long term, the visual quality experience would improve, as the young aspen sprouts would add a new element of variety, as aspen stands would reflect a diversity of tree sizes and this experience would be more sustainable over time.

3.3.6 Existing Conditions—High Meadow Complex (ATM and restoration activities)

This subsection addresses the environmental conditions and potential effects of the road, trail, fuels management, and meadow restoration projects on the recreationists who visit this complex. The reader should refer to the existing conditions under water and hydrology and fire and fuels management respectively for detailed descriptions of each.

Visitor use in the High Meadow Complex serves two distinct user groups. The first group has the High Meadow Complex as their destination. These users hike or bike (or occasionally ride horses) to High Meadow as their destination, stop, and then return. The

second group has Star Lake or the Tahoe Rim trail as their destination. This group is also likely to make a short stop then proceed on to their destination point. Many visitors who arrive in the High Meadow area would take some time to reflect on its beauty. Whether the visitor has the meadow complex as their destination or whether they are traveling on towards Star Lake or the Tahoe Rim trail, there is a sense of arrival when entering the meadow.

The existing transportation system is a web of unclassified roads and trails that have evolved over time without planning. It does not meet Forest Service design criteria, nor does it serve to meet current access, recreation, or administrative needs. This system has created erosion issues, disturbs the SEZ, generates water quality problems, disturbs wildlife, and interferes with natural hydrologic processes. Most of these user created routes were established during an era in which vehicles could drive into this area. The once-private lands are now National Forest lands, and the current management limits road and trail public use to dispersed non-motorized recreation. Vehicle access is limited to Administrative use.

Forest Road 12N21 provides the only vehicle access into the High Meadow Complex. It has a steep, erosive section that does not meet road design and construction standards. Approximately 7 miles of existing, unclassified roads have no current or foreseeable need as a road.

The Star Lake trail is in need of re-route and new construction to provide a loop with the Tahoe Rim trail from Monument Pass to Star Lake. See Figure 4a for the locations of these routes.

3.3.7 Alternative 1 Effects—ATM and Ecological Restoration Activities

Direct and Indirect Effects

Visitors to the High Meadow area would experience a short-term degradation of the visual character of the area. The highest probability for negative reactions from users would likely occur when they see substantial disturbances in a natural appearing meadow, especially the disturbances in the Lower Meadow (Mainstem and lower East Fork and North Fork) segments where natural vegetative screening is sparse. No visual effects would occur from meadow restoration activities along the middle and upper sections of High Meadow due to the existing vegetative screening.

There would be some temporary disturbance to the visitor during the treatment of fuels and thinning in conifer stands surrounding the meadow, primarily through increased presence of equipment, work crews, construction noise, prescribed underburning, and environmental changes. By allowing the trail route to remain open to Star Lake/High Meadow and the Tahoe Rim trails, these temporary effects would be minimal. At the same time, some visitors would appreciate the presence of fuels management and the environmental benefits to these overcrowded forest stands.

Visitors may see the increased vehicle traffic during project implementation (trucks, equipment transport, construction equipment, etc), and this would have a temporary negative impact on the solitude of their journey. Nevertheless, this noise would be sporadic and most of these noise effects would be mitigated by limiting work activities to weekdays when

recreation use levels are lower than on weekends. Re-route of the steep portion of Road 12N21 would cause some temporary disruption during construction. Users traveling this route would be inconvenienced by dust, noise, and possible temporary delays.

Table 4 (page 15) summarizes the amount of classified roads and trails that would be available to the public for recreational experiences. Note that there would no longer be any "unclassified" roads or trails, as all existing trails and roads would be either be classified as system trails and roads or decommissioned or restored.

The treatment of fuels and thinning of conifer and aspen stands would have a positive effect as they would allow the area surrounding the meadow to accelerate the re-establishment of conifer vegetation that would blend in with the surrounding mixed conifer vegetation. The overall effects to the recreation users from the ATM activities would be positive. Trail users would have a clear, well managed and maintained route from the High Meadow Complex to the Tahoe Rim trail and Star Lake. The existing web of confusing routes would be eliminated and would be replaced with a single route which is destination-oriented. Restoration of the unnecessary existing roads and trails would return these areas to a near natural appearing environment. This would enhance the quality of their recreation experiences.

Meadow disturbances would heal within five years and casual visitors would see a natural, well healed sub-alpine meadow along with the associated recreational experiences and solitude associated with the High Meadow area.

Cumulative Effects

The cumulative effects would be beneficial in the long term by improving the forest structure, reducing fuel loading, and creating a more open, natural appearing forest. There would be no negative cumulative effects,.

3.3.8 Alternative 2 Effects

There are no direct, indirect, or cumulative effects to recreation for Alternative 2.

3.3.9 Alternative 3 Effects

Direct, indirect, and cumulative effects would be the same as Alternative 1 with the exception of the proposed re-routes on the existing Upper Cold Creek trail in lieu of construction of a new trail location. These effects were previously discussed in section 3.3.5.

3.4 Scenery

3.4.1 Overview of Potential Effects

The potential effects to visual resources would be substantially minimized through the preparation of a Project Implementation Plan, as required by the project design measures. This plan would mitigate some of the visual effects through a well-planned schedule and timing of project activities. Some of the more important mitigation details are discussed in the direct effects section of Alternative 1.

In the short term (3-5 years), the Visual Quality Objective (VQO) of Retention would be reduced to Maximum Modification or Partial Retention within the foreground areas of the meadow restoration and the fuels treatment and thinning components of this project. Partial Retention would be achieved in the middle ground and background in the short term. Retention is achieved for all other components. In the long term (over 5 years), the VQO of Retention is achieved for all project components.

3.4.2 Existing Conditions

The Forest Plan has designated the project area to be managed on an interim basis to achieve a VQO of Retention. The High Meadow trail, the Star Lake segment, and the Tahoe Rim trail have been selected as the viewing areas for this analysis. When viewed from either the High Meadow trail, Star Lake/High Meadow segments, or the Tahoe Rim trail, the visual setting is distinctive.

Within these areas, the visual quality objective is currently being achieved and the existing visual condition ranges between Partial Retention and Preservation. The Upper Cold Creek area, including the meadow areas and adjacent conifer stands, are natural appearing and relatively undisturbed. The open High Meadow Complex is a dominant visual feature in the landscape and is a key viewing point when viewed from the foreground, middle ground, and background viewing areas. Conifer stands in this area are gradually encroaching into the meadow areas and these changes are noticeable only to those who are long time visitors to this area. The meadows of the High Meadow Complex are typically lush and green and until recently have been surrounded by heavily-forested stands of mixed conifers, primarily lodgepole pines with mixed white and red fir. Since 2005, these conifer stands have suffered heavy mortality due to insects.

The dying conifer stands are highly visible for visitors who travel the Star Lake/High Meadow trail segment and for those on the Tahoe Rim trail (see Figure 9). Most of the meadow area in the foreground is screened from view by the dense conifer vegetation along the trail, which is a mixture of both live and dead trees.

Figure 9. 2008 Aerial view of the High Meadow area, showing extensive death of conifer trees (from insect activity) surrounding the meadow, as well as the existing electrical line utility corridor.

3.4.3 Alternative 1 Effects

Direct and Indirect Effects

The expected direct effects to the visual resource are based on the assumption that the design features are fully implemented. The direct effects to the visual resources are expected to be temporary and minor for the Cold Creek trail re-route, construction, and decommissioning. While effects would be noticeable, these environmental changes would maintain the existing visual quality or improve it by restoring many areas to their near natural conditions. Implementation of this portion of the project would maintain the VQO of Retention.

Over the short term, the meadow restoration project would substantially alter the existing visual quality by reducing it to Modification where it is viewed in the foreground. This is most likely at the bottom end of the meadow where Forest Road 12N21 intersects with the High Meadow trail. The meandering channel relocations would be restored to their historic locations and eventually (3-5 years) would be natural appearing. The immediate meadow and soil disturbances, however, would appear unnatural until natural healing has occurred. Implementation of BMPs would greatly accelerate this healing process. Nevertheless, during and immediately after project implementation, the alteration of the meadow would result in

these management activities dominating the landscape. A few visitors who venture from the viewing areas into the unseen areas would see a visual condition of Maximum Modification.

When viewed as middle ground or background, the meadow project would borrow from naturally established forms, lines, color, and textures so that it would be natural appearing. The meandering channel relocations would be visually consistent with the surrounding landscapes. When viewed from the Tahoe Rim trail (background) or the Star Lake or High Meadow trail (middle ground), the meadow modifications would be noticeable, but would not dominate the landscape. Through implementation of the project design features, views from the middle ground and background would borrow from the surrounding visual characteristics so that the project modifications would naturally blend with the adjacent undisturbed areas. This activity would result in achieving a VQO of Partial Retention in the short term and Retention in the long term.

The conifer stand improvement project would have a direct impact on the visual qualities of the treated areas in the foreground. Most of these effects would be most visible in Units 1, 4, 6, 8, and 9, which are closest to the trail system where topography and natural screening limits views to very short distances. Views into Units 2, 3, 5, and 7 are extremely limited due to topography and natural screening. These effects would be short term, especially during the implementation phases where equipment, fallen trees, landings, slash piles, and related activities would clearly dominate the foreground areas. It would give the appearance of a small logging operation. The managed appearance and the changed visual qualities would remain most evident through the prescribed underburning phase. While there would be smoke and tree scorching during the prescribed underburning phase, these effects would be temporary and minimal.

Upon completion of treatment, the long-term visual qualities would meet a Retention VQO and give the appearance of a natural-appearing forest, which would begin to resemble the historic forest and meadow conditions that once existed (). Early succession plant species would be much more prominent and would add significant visual variety to the landscape character. A restored and enlarged meadow complex would be more evident, and the distinctive quality of High Meadow would be a more significant visual feature in the landscape. In the long term, the VQO of Retention would be achieved, as disturbed meadow areas and channel banks are expected to revegetate within 5 years. In the long term (20+ years), all of the project components (road and trail re-route and construction, road and trail decommissioning, meadow restoration, and fuel treatments and thinning, including the use of prescribed fire) would meet the VQO of Retention. High Meadow would restore itself to a natural, pristine appearing sub-alpine meadow. The visual impacts from the management activities in the treated conifer and aspen stands would soften over time and views would eventually resemble historic conditions, leading to a cumulative appearance of being managed for a VQO of Retention.

Cumulative Effects

Cumulative effects are discussed in Section 3.3.3.

3.4.4 Alternative 2 Effects

Direct and Indirect Effects

There would be no direct effects for Alternative 2. There may be indirect effects in the event of a wildfire during the dry season in the area because the extreme fuel loading that exists would burn extremely hot and lead to severe damage to adjacent healthy conifer stands. A catastrophic fire would greatly degrade the existing visual experience. Conifers would likely continue to gradually encroach into the High Meadow Complex and ultimately reduce its size, character, and distinctive visual qualities.

Cumulative Effects

Cumulative effects are discussed in Section 3.3.4.

3.4.5 Alternative 3 Effects

The direct and indirect would be the same as Alternative 1. Cumulative effects are discussed in Section 3.3.5.

3.5 Wildlife and Aquatic Species

3.5.1 Introduction

This section discloses, in separate sections, the existing conditions and the potential effects of the High Meadow project on (1) species and their habitats listed as endangered, threatened, candidate, or proposed (under the federal Endangered Species Act of 1973 as amended (ESA) and species designated as sensitive by the Regional Forester in Region 5 (Biological Evaluation); (2) habitats designated for management indicator species (MIS) for the Lake Tahoe Basin Management Unit (MIS report); and (3) wildlife and fisheries threshold standards as designated by the Tahoe Regional Planning Agency (TRPA report). This discussion is based on the Biological Assessments (BA) and Biological Evaluations (BE) (Project Record Documents C and J). This section also addresses impacts in riparian habitat as it relates to potentially-affected species. Additional information on riparian area management can be found in the "Watershed and Soils" and "Riparian Area Management" sections.

The BE provides a process through which potential effects of the proposed action on sensitive species are evaluated and considered during the planning and review process. The analysis in the BE is completed to determine whether the proposed action would result in a trend toward the sensitive species becoming federally listed.

LTBMU conducted a fish population survey at High Meadow in October 2006. Brook trout *(Salvelinus fontinalis*) was the only species identified throughout the survey. The population per kilometer was estimated at 1,010 individuals. Average fish size was 14.14 cm. These results suggest a limiting factor on overall fish growth, and this factor is believed to be limited food resources. Because salmonids feed on both benthic macroinvertebrates and terrestrial insects found in the drift, sufficient habitat must be available for these groups. The existing banks of the stream channels are very low in willows, alders, and other diverse

vegetation that historically has provided habitat for terrestrial insect input (*allochthonous*), resulting in a limited amount of food and the high densities of brook trout in poor condition. This species will not be addressed further in this document, however a discussion of general habitat quality and quantity for aquatic-dependent species is included in this section, as well as in "Watershed and Soils".

3.5.2 Threatened, Endangered, and Sensitive Species

Species Addressed

The current list (updated January 29, 2009; http://sacramento.fws.gov/es/spp_list.htm) of federally threatened, endangered, proposed, and candidate species for the Lake Tahoe Basin obtained from the USFWS on May 13, 2009 was addressed in the project Biological Analysis (BA) as required pursuant to Section 7 of the Endangered Species Act. The current list of USDA Forest Service sensitive species, based on the Pacific Southwest Region's list of 1998, as amended, was addressed in the project Biological Evaluation (BE). Additional analyses of impacts to suitable habitats for LTBMU Management Indicator Species and to Tahoe Regional Planning Agency (TRPA) special interest species are available as part of the project record.

No critical habitat for federally-listed threatened or endangered species is designated within the Lake Tahoe Basin. No federally-listed endangered or proposed species were identified by the USFWS within the analysis area. The project is located outside the current and historical range of two of the three federally-listed threatened species, delta smelt (*Hypomesus transpacificus*) and Central Valley steelhead (*Oncorhynchus mykiss*), identified by the USFWS and outside the current range of the third, Lahontan cutthroat trout (LCT; *Oncorhynchus clarki henshawi*). Suitable habitat for LCT does not exist in the analysis area due to natural fish barriers and the presence of introduced, non-native recreational fish species. The project is also located outside the current and historical range of one of the three federally-listed candidate species, Yosemite toad (*Bufo canorus*), identified by the USFWS and outside the current range of the other two species, Sierra Nevada yellow-legged frog (SNYLF; *Rana muscosa*) and Pacific fisher (*Martes pennanti*). Suitable habitat for SNYLF does not exist in the analysis area due to the presence of introduced, non-native recreational fish species. Habitat for fisher exists in the analysis area, but is of insufficient quality and quantity to be suitable for the species. As no federally-listed threatened, endangered, proposed, and candidate species occur or have suitable habitat within the analysis area formal consultation with the USFWS for the project was not required or conducted.

Potentially affected species were determined through an evaluation of whether each threatened, endangered, or sensitive (TES) species was either (1) known to occur in the project action area, or (2) the project area contained suitable habitat (for foraging, nesting or resting) within the current range of the species. The following table summarizes species considered in the effects analysis for the High Meadow project as part of the BA and BE.

Table 10. Threatened, Endangered, and Sensitive Species for the Lake Tahoe Basin Management Unit and Effect Determinations for Project Level Analysis for the Proposed High Meadows Project

Species	Special Status	Known to Occur in the Project Area	Suitable Habitat in the Project Area	*Determination
Birds				
Bald Eagle (*Haliaeetus leucocephalus*)	Forest Sensitive Species	N	N	NA
American Peregrine Falcon (*Falco peregrinus anatum*)	Forest Sensitive Species	N	Y	MANL
California Spotted Owl (*Strix occidentalis occidentalis*)	Forest Sensitive Species	N	Y	MANL
Northern Goshawk (*Accipiter gentiles*)	Forest Sensitive Species	Y	Y	MANL
Willow Flycatcher (*Empidonax traillii adastus*)	Forest Sensitive Species	N	Y	MANL
Great Gray Owl (*Strix nebulosa*)	Forest Sensitive Species	N	Y	MANL
Mammals				
Sierra Nevada red fox (*Vulpes vulpes necator*)	Forest Sensitive Species	N	Y	MANL
American marten (*Martes americana*)	Forest Sensitive Species	N	Y	MANL
Pacific fisher (*Martes pennanti*)	Forest Candidate Species	N	N	NA
California wolverine (*Gulo gulo luteus*)	Forest Sensitive Species	N	N	NE
Townsend's big-eared bat (*Corynorhinus townsendii*)	Forest Sensitive Species	Y	Y	MANL
Amphibians				
Mountain yellow-legged frog (*Rana muscosa*)	Forest Sensitive Species	N	N	NA
Northern leopard frog (*Rana pipiens*)	Forest Sensitive Species	N	N	NE
Yosemite toad (*Bufo canorus*)	Candidate for Federal listing	N	N	NA
Fish				
Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*)	Federally Threatened	N	N	NA
Lahontan Lake tui chub (*Gila bicolor pectinifer)*	Forest Sensitive Species	N	N	NE
Delta Smelt (*Hypomesus transpacificus*)	Federally Threatened	N	N	NA
Central Valley Steelhead (*Oncorhynchus mykiss)*	Federally Threatened	N	N	NA

Species	Special Status	Known to Occur in the Project Area	Suitable Habitat in the Project Area	*Determination
Invertebrates				
Great Basin rams-horn *(Helisoma newberryi newberryi)*	Forest Sensitive Species	N	N	NE

*Federally Listed Species

NA - Will not affect the species or its designated critical habitat.

NLAA - May Affect Not Likely to Adversely Affect the species or its designated critical habitat.

LAA - May affect and is likely to adversely affect the [name of species] or its designated critical habitat

Sensitive Species

NE – Will not affect the species.

MANL – May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability. Also includes beneficial effects to species.

MALT - May affect individuals, and is likely to result in a trend toward Federal listing or loss of viability.

No Effect

There will be no effect to the following species and they will not be addressed further in the analysis of effects because they are not known to occur in the project area and/or do not have suitable habitat in or within 0.5 mile of the project area.

- Delta Smelt and Central Valley Steelhead: The LTBMU is outside the current and historical range of the threatened Delta smelt and the Central Valley steelhead.
- Lahontan Cutthroat Trout: Lahontan cutthroat trout do not occur and suitable habitat does not exist in or adjacent to the project area.
- Yosemite Toad: The project area is located outside the current and historical range of Yosemite toad.
- Sierra Nevada Yellow-Legged Frog: Sierra Nevada yellow-legged frogs do not occur and suitable habitat does not exist in or adjacent to the project area.
- Pacific Fisher: Fishers do not occur and suitable habitat does not exist in or adjacent to the project area.
- Bald Eagle: Bald eagles do not occur and suitable habitat does not exist in or adjacent to the project area.
- Wolverine: Wolverines do not occur and suitable habitat does not exist in or adjacent to the project area.
- Northern Leopard Frog: Northern leopard frogs do not occur in the Lake Tahoe basin and suitable habitat does not exist in or adjacent to the project area.
- Lahontan Lake Tui Chub: Lahontan lake tui chub do not occur as this species occupies lakes rather than streams and suitable habitat does not exist in or adjacent to the project area.

- Great Basin Rams-Horn: Great Basin rams-horn do not occur and suitable habitat does not exist in or adjacent to the project area.

General Habitat

Vegetation structure in conifer-dominated forests within and adjacent to the project action area is dominated by California Wildlife Habitat Relationship system (CWHR) tree size class 4 (11–24 inches dbh), and by sparse (10–24%) to moderate (40–59%) overstory canopy cover. A major concern in the High Meadow area is fire fuel loading and the recent surge in conifer forest mortality due to pine bark beetle infestation in lodgepole pine and disease in white fir. Die-off in forests surrounding the meadow areas of High Meadow has accelerated over the past 3 years as drought conditions in 2007 and a lack of fire over the past 80 years has exacerbated forest canopy reductions, deterioration in overall conifer stand health, and susceptibility to habitat-destroying catastrophic wildfire. Table 11 shows the acres of habitat within the project area (potentially directly affected by the High Meadow project) and the acres of habitat in and within 0.5 mile of the project area. It is important to note that these stands were classified before the widespread mortality, and most of the areas now have greatly reduced tree stocking levels and do not provide the habitat characteristics that they once did.

Table 11. Potentially Affected CWHR Habitat Types in and within 0.5 Mile of the High Meadow Project Area

CWHR Habitat Type	CWHR Size (diameter at breast height [dbh])	CWHR Density (canopy closure)	CWHR acres in and within 0.5 mile of the project area
Jeffrey Pine	11–24"	40–59%	113.6
Jeffrey Pine	11–24"	25–39%	66
Jeffrey Pine	11–24"	10–24%	4.5
Lodgepole Pine	6–11"	10–24%	29.6
Lodgepole Pine	11–24"	60–100%	4
Lodgepole Pine	11–24"	40–59%	253.5
Lodgepole Pine	11–24"	25–39%	316.3
Aspen	1–6"	40–59%	4.5
Aspen	6–11"	40–59%	32.9
Wet Meadow	NA	NA	72.9

Alternatives 1 and 3 Effects

Direct, Indirect, and Cumulative Effects

The analysis area for the High Meadow project includes the project area and a 0.5 mile radius around the project area boundary. The 0.5 mile radius was used because of the TRPA limited operating period (LOP) within 0.5 mile of active goshawk nests. The analysis area includes locations that would be directly affected by the proposed project, such as new channel

construction, tree removal, access roads, and staging areas, as well as areas where indirect impacts from these actions could occur on affected species.

Direct effects are defined as physical injury or death, and the effects of activity-related disturbance upon reproduction, behavior, and movement. Direct effects are impacts that occur at the same time and place as the proposed action. Indirect effects result from vegetation management affecting the quantity, quality, and distribution of habitats and that occur at a later time or at a distance from the proposed action. For the High Meadow project, the cumulative effects analysis was bounded in space by a one mile radius around the project area. This area is large enough to encompass the territory size of the wildlife species of concern that occur in the project area (e.g., northern goshawk).

As shown in Table 12, the difference in the Cold Creek trail would lead to a reduction of 0.2 acre in Jeffrey pine stands, 0.3 acre in lodgepole pine stands, and 0.2 acre in mixed conifer stands. Total reductions in habitat would be less than 1 acre. A full discussion of these effects is contained in Project Document C.

Table 12. Effects of the Access and Travel Management Plan Component of Alternatives 1 and 3 on Major Vegetation Types within the Project Area

CWHR Habitat Type	CWHR Size (dbh)	CWHR Density (canopy closure)	Alternative 1 Change in Acreage for ATM Actions*	Alternative 3 Change in Acreage for ATM Actions*
Aspen	2	M	0.2	0.2 acres
Jeffrey pine	4	M	-0.2	-0.2
Jeffrey pine	4	P	-0.4	-0.2
Lodgepole pine	4	M	0.1	0.1
Lodgepole pine	4	P	1.3	1
Red fir	4	M	0.6	0.6
Red fir	4	P	1.6	1.6
Sierra mixed conifer	4	M	-0.3	-0.1
Sierra mixed conifer	4	P	0.4	0.4

*

\+ = potentially restore acreage

\- = new disturbance

Notes:

Habitat types not in this table retain the values as in Table 3.

Based on a road width of 14 feet and a trail width of 6 feet.

Table 13 summarizes the recommended determinations for threatened, endangered, and sensitive species that may be impacted by the High Meadow project. The detailed analysis that supports these recommendations is found in Project Record Document C, available at the LTBMU Forest Supervisor's Office.

Table 13. Effects Determinations for Forest Service Sensitive Species for Project Level Analysis for the Proposed High Meadow Project

Species	Special Status	Determination
Birds		
American Peregrine Falcon (*Falco peregrinus anatum*)	Forest Sensitive Species	MANL
California Spotted Owl (*Strix occidentalis occidentalis*)	Forest Sensitive Species	MANL
Northern Goshawk (*Accipiter gentiles*)	Forest Sensitive Species	MANL
Willow Flycatcher (*Empidonax traillii adastus*)	Forest Sensitive Species	MANL
Great Gray Owl (*Strix nebulosa*)	Forest Sensitive Species	MANL
Mammals		
Sierra Nevada red fox (*Vulpes vulpes necator*)	Forest Sensitive Species	MANL
American marten (*Martes americana*)	Forest Sensitive Species	MANL
Townsend's big-eared bat (*Corynorhinus townsendii*)	Forest Sensitive Species	MANL
MANL – May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability. Also includes beneficial effects to species. Note: This table does not include species not affected by this project, as previously discussed.		

Alternative 2 Effects

Direct and Indirect Effects

There would be no direct effects. This alternative would avoid short term impacts to wildlife and aquatic species, but would forgo the opportunity to enhance habitat quality and quantity and to reduce the risk of stand-replacing fire. Continued mortality of conifers due to beetle infestation and disease is anticipated. While this would provide snag and dead/down log recruitment for the future, in the long-term, as the trees continue to experience excessive mortality and fuels build to levels outside of historic ranges, the risk of extreme fire behavior increases, thereby increasing the risk of severe impacts to remaining wildlife and aquatic habitat if a wildfire occurs.

Cumulative Effects

There would be no cumulative effects beyond those described for the direct and indirect effects.

Alternative 3 Effects

Direct, Indirect, and Cumulative Effects
The impacts from Alternative 3 on both habitat and impacts to species of interest are identical to those from Alternative 1 with the exception of very slight changes to the acres of forest vegetation due to slight changes in the proposed treatment of the Upper Cold Creek trail.

3.5.3 Management Indicator Species

Management indicator species (MIS) for the LTBMU are identified in the 2007 Sierra Nevada Forests Management Indicator Species (SNF MIS) Amendment (USDA Forest Service 2007). The habitats and ecosystem components and associated MIS analyzed for the project were selected from this list of MIS. The MIS whose habitat would be either directly or indirectly affected by the High Meadow project are carried forward in this analysis, which will evaluate the direct, indirect, and cumulative effects of the proposed action and alternatives on the habitat of these MIS. The MIS selected for analysis are:

- Aquatic macroinvertebrates (lacustrine/riverine habitat)
- Yellow warbler (riparian habitat)
- Pacific treefrog (wet meadow habitat)
- Mountain quail (early and mid-seral stage coniferous forest)
- Hairy woodpecker (snags in coniferous forests)

See Project Document C for a full discussion of all MIS habitat and associated species.

Lacustrine/Riverine Habitat (Aquatic Macroinvertebrates)

Habitat/Species Relationship
No lacustrine habitat is found in the project area. However, a total of 6,580 linear feet of perennial stream riparian habitat is in the project area. Cold Creek is fed by snowpack, snowmelt runoff, and from subsurface storage and spring flow discharge. Deep units of glacial till and underlying glacio/fluvial deposits store a significant volume of groundwater, which supports relatively high baseflows in Cold Creek. Minimum creek flows occur in late summer and early fall. Lack of current floodplain connectivity, overbank flow characteristics, and historic riparian vegetation functions have created a system lacking sedimentation deposition.

There are 169 acres of coniferous riparian habitat, 5 acres of deciduous/coniferous riparian habitat, and 36 acres of deciduous riparian habitat in the project area. This habitat provides variable amounts of shade along the four streams (Mainstem, East Fork, North Fork, and West Fork) that comprise Cold Creek. There is very little riparian vegetation in the meadow. Due to channel incision and 100 years of grazing activities, the willows in the meadow have been considerably reduced.

Alternatives 1 and 3 Effects

This section introduces data on the effects for all habitat types described above. Additional effects, if any, are discussed under each habitat type subheading.

Direct and Indirect Effects
The following changes to MIS habitat acres (or miles) are anticipated as a result of the High Meadows Project:

Table 14. Summary of anticipated changes in acres (or linear feet) of habitat within the High Meadows Project area due to direct or indirect impacts from alternative 1 and 3 and alternative 2 (no action).

MIS Habitat Type	Pre-project MIS Habitat – Acres or linear feet	Post-project MIS Habitat Acres or linear feet – Alts 1 and 3	Change in MIS Habitat Acres – Alt. 2 (No Action)
Riverine Habitat	6,580 feet	8,700 feet	0 feet
Riparian Habitat (deciduous)	36 acres	39 acres	0 acres
Wet Meadow Habitat	69.6 acres	77.2 acres	0 acres
Coniferous Forest, early seral	27.0 acres	0 acres	0 acres
Coniferous Forest, mid seral	1753.3 acres	1475.3 acres (minus 278 lodgepole)	0 acres
Coniferous Forest, late seral, open canopy	3.9 acres	3.9 acres	0 acres
Coniferous Forest, late seral, closed canopy	0 acres	0 acres	0 acres
Snags in green forest	130 acres	130 acres	0 acres
Snags in burned forest	0 acres	0 acres	0 acres

The restoration component of the project will increase the length of the stream channel by 2,200 linear feet and create shallower channels with less streamflow capacity. As a result, meadow surfaces will be restored to active floodplain areas and flood more often – an average of 33 days per year compared to less than one day under the existing conditions.

Over time, the increased presence of saturated soils and more sunlight will stimulate a healthier wet meadow habitat.

Restoration of geomorphic processes will create new sites for riparian vegetation through sediment deposition and change in flood inundation, timing, duration, and magnitude. Potential short term increases in sediment inputs to stream channels may occur during project implementation and have short term impacts downstream up to 100 meters from the project boundary. BMPs will be used during project implementation to mitigate for such impacts, hence short term sediment inputs are expected to be minimal. Restoration of the creek functions will allow the project area habitat to be self-sustaining.

Stream shading will increase along the portions of Cold Creek that flow through High Meadows. Native riparian vegetation (e.g., willows) will be planted along the restored creek channels to promote self-sustaining, stream bank and floodplain surface stability, stream shading, and food for macro-invertebrates. In the long term, three additional acres of riparian vegetation are expected in the meadow. It is expected that some of these plants will grow along a majority of the creeks' banks while others will colonize locations at variable distances from the creek (i.e., where sediment was deposited).

Cumulative Effects

Overall changes in flow due to cumulative effects of the proposed project and past and present actions will include reduction in size of peak flows, reduction in flow velocity, and overall more natural patterns of water flow. Sedimentation processes will likely improve via floodplain absorption, which promotes sediment storage and deposition. Overall changes in stream shading due to cumulative effects will be beneficial and likely measurable over the long-term.

Alternative 2 Effects

Overall Effects

This alternative will likely result in the continued persistence of little to no riparian vegetation along Cold Creek, and will likely result in further conifer encroachment of floodplains and riparian zones.

Summary of Aquatic Macroinvertebrates Status and Trend at the Bioregional Scale

The data collected at the bioregional scale indicate that the metrics for macroinvertebrates are stable. Changes in flow, sedimentation, and water surface shading as a result of the proposed project are positive and beneficial to aquatic macroinvertebrates, however, they are not likely to impact a substantial amount of existing riverine and lacustrine habitat within the Sierra Nevada. Therefore, the effects of the High Meadows Project will not alter the existing stable trend in the habitat for aquatic macroinvertebrates across the Sierra Nevada bioregion.

Riparian Habitat (Yellow warbler)

Habitat/Species Relationship
The yellow warbler was selected as the MIS for riparian habitat in the Sierra Nevada. This species is usually found in riparian deciduous habitats in summer (cottonwoods, willows, alders, and other small trees and shrubs typical of low, open-canopy riparian woodland) (CDFG 2005). It also breeds in montane shrubbery in open conifer forests. During migration, it visits woodland, forest, and shrub habitats.

Alternative 1 Effects

Direct and Indirect Effects
There would be an increase in the total acreage of riparian habitat along Cold Creek and in High Meadow (in the High Meadow restoration component project area) by approximately 3 acres. This increase would be due in part to revegetation along the newly created channels, as well as to riparian vegetation colonizing locations along and at variable distances from the creek. The expected increases in channel-floodplain connectivity should increase water availability and sediment storage on the floodplain, which would encourage further vegetation growth and recruitment.

The deciduous canopy cover of the 3 acres of increased riparian habitat and the existing 4 acres of riparian vegetation should increase due to increased channel floodplain connectivity and enhanced resource availability (water and nutrients). In the short term, total canopy cover would be low until riparian-dependent vegetation matures. In the long term, the project is expected to produce riparian vegetation with a variety of canopy covers from low in areas with newly established plants to areas of moderate and dense cover.

Cumulative Effects
Overall changes in deciduous riparian habitat due to cumulative effects of the proposed project and other past, present, and foreseeable future projects would be positive, creating at least 3 additional acres of riparian habitat. In addition, 4 acres of existing riparian habitat are likely to be enhanced (e.g., increased canopy cover). However, these positive effects would not alter the existing trend in the habitat at the bioregional scale.

Alternative 2 Effects
Alternative 2 would forgo the potential to enhance wet meadow and riparian habitat quality and quantity within the project area. Conifers would continue to encroach into the meadow, further reducing riparian vegetation. If this trend continues, this habitat type would be reduced and would reduce the population of yellow warbler.

Alternative 3 Effects
The direct, indirect, and cumulative effects would be the same as Alternative 1.

Summary of Yellow Warbler Status and Trend at the Bioregional Scale
The anticipated increase of 3 acres of riparian vegetation and the increase in deciduous canopy closure within the existing riparian vegetation (31 acres) out of 29,000 acres of riparian habitat on NFS lands in the Sierra Nevada, while an important contribution to wildlife and habitat integrity within High Meadow, would not alter the existing stable trend

in the habitat, nor would it lead to a change in the distribution of yellow warblers across the Sierra Nevada bioregion.

Wet Meadow Habitat (Pacific tree frog)

Habitat/Species Relationship

The Pacific tree frog was selected as an MIS for wet meadow habitat in the Sierra Nevada. This broadly distributed species requires standing water for breeding; tadpoles require standing water for periods long enough to complete aquatic development, which can be as long as 3 or more months at high elevations in the Sierra Nevada (CDFG 2005).

Within the entire project area, there are approximately 52 acres of wet meadow habitat. Within the High Meadow restoration component project area, there are 44 acres of wet meadow habitat. Since 1940, approximately 40 acres of meadow have been converted to forest due to lodgepole pine invasion. It is unknown how much of this 40 acres was wet meadow. Past land uses (e.g., grazing, fire suppression) in the meadow have compromised the meadow's ecological function. The meadow lacks wetland hydrology and vegetation cover due to depressed groundwater levels, a lack of overbank flow onto the meadow surface, and depleted soil moisture.

Alternative 1 Effects

Direct and Indirect Effects

Approximately 7.6 acres of wet meadow habitat would be created as a result of the proposed project. Restoration of connectivity between the floodplain and water table would restore and maintain the geomorphic and biological function of the wet meadow habitat. Conifer thinning and undergrowth underburning would restore former meadow areas that have been lost to lodgepole invasion. The access and travel management portion of the project would correct many erosion problems, SEZ disturbance, and water quality problems caused by the existing road and trail system. Roads that cross the southern and extreme northern portion of the wet meadow habitat would be decommissioned. This would enable additional recovery of approximately 0.25 acres of wet meadow habitat.

The restoration component of the project would increase the length of the stream channel by 2,200 linear feet and create shallower channels with less streamflow capacity. As a result, meadow surfaces would be restored to active floodplain areas and flood more often—an average of 33 days per year compared to less than 1 day under the existing conditions. Over time, the increased presence of saturated soils and more sunlight would stimulate a healthier wet meadow habitat.

Stream crossings for the access and travel management portion of the project would be designed to facilitate natural hydrologic processes and geomorphic function. They would not create barriers to aquatic dependent species.

Cumulative Effects

The spatial scale of cumulative effects includes wet meadows adjacent to or within 0.25 mile of the project area. Past activities in the project area that contributed to current conditions are primarily grazing and the associated diversion of creek flows and construction of dispersion

channels to support grazing. These actions caused channel incision, loss of creek and floodplain geomorphic function, and lowering of shallow groundwater with concomitant changes in vegetation communities (i.e., conversion of wet meadows to drier lands). These past actions have contributed to the loss of an unknown number of acres of wet meadow habitat. In addition to conifer invasion of the meadow habitat, these past practices are still affecting the wet meadow habitat in the project area, which is the reason for the channel restoration component of the project.

The High Meadow project would have beneficial effects on wet meadow habitat. Post-project, the High Meadow project would potentially create 7.6 acres of wet meadow habitat. Any future projects are unlikely to adversely affect the number of acres of wet meadow habitat, being either neutral or beneficial. Overall changes in wet meadow habitat due to cumulative effects of the proposed project and other past, present, and foreseeable future projects would be positive, potentially creating 7.6 acres of habitat.

Alternative 2 Effects
There would be no direct effects. Indirect effects include forgoing the potential to enhance wet meadow habitat quality and quantity within the project area. Conifers would continue to encroach into the meadow, further reducing wet meadow habitat. There would be no cumulative effects.

Alternative 3 Effects
The direct, indirect, and cumulative effects would be the same as Alternative 1.

Summary of Pacific Tree Frog Status and Trend at the Bioregional Scale
Increases in wet meadow habitat as a result of the proposed action, while positive and potentially beneficial to Pacific tree frogs at the scale of the project and possibly the Lake Tahoe basin (potentially creating 7.6 acres of wet meadow habitat), would not alter the existing stable trend for wet meadow habitat. Therefore, the effects of the High Meadow project would not alter the existing stable trend in the habitat for Pacific tree frog across the Sierra Nevada bioregion.

Early and Mid Seral Coniferous Forest Habitat (Mountain quail)

Habitat/Species Relationship
The mountain quail was selected as the MIS for early and mid seral coniferous forest habitat in the Sierra Nevada. The mountain quail is found particularly on steep slopes; in open, brushy stands of conifer and deciduous forest and woodland; and in chaparral.

Currently 27 acres of early seral coniferous forest and 1,753 acres of mid seral coniferous forest occur within the project area. None of the early seral coniferous forest occurs within areas planned for tree removal and/or underburning. Approximately 278 acres of mid seral coniferous forest occurs within the nine stands planned for hand and mechanical thinning of conifer as part of the restoration component of the High Meadow project.

Understory shrub cover within this habitat type is low. Shrub cover data is available from two sites for the Multi-Species Inventory and Monitoring (MSIM) project that took place in

2002–2005. The MSIM project had two sites near High Meadow. Average shrub cover at one site was 5.44% and 4.25% at the other site.

Alternative 1 Effects

Direct and Indirect Effects

The restoration component of the project would not affect the early seral coniferous forest in the project area. The ATM project activities would result in a total increase of 7.4 acres of habitat through road decommissioning, trail re-routes, new trail construction, and road to non-motorized trail conversion. This could lead to the development of early seral forest type as the road beds become revegetated. Over time, the early seral stage would transition to mid seral coniferous forest. Therefore, in the long term, the proposed action would result in a net gain of both early and mid seral coniferous forest of 7.4 acres.

Mechanical and hand thinning, along with underburning, would affect 278 acres of mid seral coniferous forest. Post project, the number of acres of mid seral coniferous forest could be reduced by 278 acres. Due to beetle-caused mortality and disease, trees in these stands would eventually fall anyway. Therefore, although project actions would further reduce canopy closure and vegetation structure, the project effects are not substantial.

Early seral coniferous forest would not be affected by the restoration component of the project. As the decommissioned roads become revegetated, it is possible that this forest type could develop on the former road beds. Mid seral coniferous forests may be reduced in 278 acres as a result of mechanical and hand thinning. In some locations, the habitat would revert to its pre-1940 condition of meadow. Conifers would be removed from approximately 20 acres of aspen stands, sustaining this vegetative type and avoiding conversion to conifer stands. Removal of encroaching conifers may reduce tree size class in the short term. In the long term, aspen tree size is likely to increase in some stands due to decreased competition from conifers.

Canopy closure in early seral coniferous forest would not be affected by either the restoration or ATM component of the project. Canopy closure in mid seral coniferous forest would be reduced due to mechanical and hand thinning of 278 acres. Because of beetle-caused mortality and disease, these stands are no longer likely to provide 25–39% and 40–59% canopy closure. Although project actions would further reduce canopy closure and vegetation structure, these project changes are not considered significant because dead and dying trees contribute to canopy cover only for a short while. Conifers would be removed from approximately 20 acres of aspen stands. Over time, these stands would mature and contribute to canopy closure.

Since no project activities would occur in early seral coniferous forest, no changes in understory shrub canopy closure are anticipated. There may be a short-term reduction in shrub cover in mid seral coniferous forest habitat due to hand thinning and mechanical operations and underburning within this forest type. The tree thinning is likely to allow more light to penetrate to the forest floor and to increase ground water levels where this habitat occurs adjacent to the meadow habitat. These changes could benefit understory shrub development and might result in an increase above pre-project conditions.

Cumulative Effects

Cumulative effects of the proposed action along with other past, present, and foreseeable future projects in the High Meadow project area that may affect mid seral coniferous forest are expected to result in a net loss of this habitat type (seral stage) and to increase the representation of old growth forest in its place. This transformation is largely through thinning, so that the remaining stands have greater available resources to support growth to mature, late seral forest. Cumulative effects of projects within High Meadow are anticipated to result in a net loss of early and mid seral coniferous habitat in the long-term to the benefit of other more under-represented habitat types. The Aspen Community Restoration project would remove conifers from approximately 50 acres of aspen stands. Over time, these stands would mature and contribute to canopy closure. The cumulative effect is to remove more early and mid seral coniferous habitat and replace it with aspen.

Alternative 2 Effects

There would be no direct effects. Indirect effects would result in continued conifer invasion of meadow habitat, a continued lack of integrity of aspen stands that are dominated by coniferous forest, and continued over-representation of mid seral coniferous forest at the landscape scale within the project area and elsewhere throughout the Lake Tahoe basin. There would be no cumulative effects.

Alternative 3 Effects

The direct, indirect, and cumulative effects would be the same as Alternative 1.

Summary of Mountain Quail Status and Trend at the Bioregional Scale

The changes in tree size class, tree canopy closure, and understory shrub cover within 278 acres of mid seral coniferous habitat in the proposed project may assist in future conversion of the forest away from mid seral dominated coniferous forest and towards a more balanced mixture of seral stages, but it would not likely alter the existing stable trend in the habitat at the Sierra Nevada scale.

Snags in Green Forest Ecosystem Component (Hairy woodpecker)

Habitat/Species Relationship

The hairy woodpecker was selected as the MIS for the ecosystem component of snags in green forests. Medium (dbh between 15 to 30 inches) and large (dbh greater than 30 inches) snags are most important. The hairy woodpecker uses stands of large, mature trees and snags of sparse to intermediate density; cover is also provided by tree cavities. Many of the areas proposed for tree removal have suffered extreme morality from recent insect activity, and are marginal green forests because only scattered individuals or small clumps of live trees commonly now exist.

Alternative 1 Effects

Direct and Indirect Effects to Habitat

Proposed actions are anticipated to reduce snag densities within approximately 278 acres of lodgepole pine scheduled for hand and mechanical thinning. Because much of the 278 acres is dead and dying due to beetle infestation and disease, large numbers of existing and developing snags would be removed. However, project design features specify the retention

of three of the largest snags (greater than 15 inches dbh) per acre. The snags would be clumped and distributed irregularly across the treatment units. In the long term (20+ years) snags would increase their proportional representation across the landscape.

Cumulative Effects
There would be no cumulative effects.

Alternative 2 Effects
There would be no direct effects. Indirect effects include the development of very high snag levels; however, the snags would likely not be in green forest because continued beetle-caused mortality is expected to result in homogenous stands of dead trees. There would be no cumulative effects.

Alternative 3 Effects
The direct, indirect, and cumulative effects would be the same as Alternative 1.

Summary of Hairy Woodpecker Status and Trend at the Bioregional Scale
The hairy woodpecker has been monitored in the Sierra Nevada at various sample locations by avian point counts and breeding bird survey protocols. These data indicate that the hairy woodpecker continues to be present at these sample sites and that the distribution of hairy woodpecker populations in the Sierra Nevada is stable. The changes in medium and large-sized snags per acre on 278 acres in the High Meadow project area would not alter the existing trend in the ecosystem component, nor would it lead to a change in the distribution of hairy woodpecker across the Sierra Nevada bioregion.

3.5.4 Tahoe Regional Planning Agency Species and Habitat Analysis

Background

In order to help maintain and protect natural resources in the Lake Tahoe basin, the Tahoe Regional Planning Compact formed the TRPA Regional Plan, which created and adopted environmental threshold carrying capacities. Excerpts from the Regional Plan are in italics

Effect Summary

No TRPA Special Interest Species (SIS), fish, or wildlife habitats of significance would be adversely affected by the proposed High Meadow project. Because the project's purpose is to restore the meadow system and reduce impacts and protect resources while providing for current and future recreation needs, the habitat for several SIS would be enhanced by the project. Any sighting of SIS or nest locations of these species would be reported to a Forest Service or TRPA biologist. These nest locations would be protected in accordance with the Sierra Nevada Forest Plan Amendment (2000) and the Environmental Threshold Carrying Capacities for the Lake Tahoe Region guidelines (TRPA 1982). LOPs that apply to TRPA Special Interest Species that occur in the project include an LOP of February 15 to September 15 applied within 0.5 miles of any active nest for goshawks. Project actions and design features that protect species and avoid impacts are fully described in Project Record Document C.

Six species were considered for potential impacts from the project. The two TRPA Special Interest Species that might be affected are the northern goshawk and mule deer. Four species were determined to not be potentially affected (osprey, bald eagle, golden eagle, and the peregrine falcon. Waterfowl were also determined not to be affected. The following section summarizes the consistency of the project's impacts with relevant thresholds and the nature of potential effects to species of interest.

W-1: Threshold Standard for Wildlife[2]

Table 15. Standard Threshold for Wildlife (Special Interest Species)

Species	Population Sites[2]	Disturbance Zone (mi.)	Potential to Impact Threshold Standard? Y/N
Northern goshawk (*Accipite gentiles*)	12	0.50	Y
Mule deer (*Odocoileus hemionus*)	Critical fawning habitat	Meadows—Critical fawning habitat is mapped	Y

Northern Goshawk: The potential effects of the project on the northern goshawk are addressed in the BA and BE (Project Record Document C).

Mule Deer: Although no critical fawning habitat is mapped in the project area, the proposed project could affect mule deer by occasionally flushing individuals during project implementation. It is unknown to what extent the project area is used for fawning. The project area is likely marginal fawning habitat due to its high elevation, reduced riparian shrub cover, and relatively high levels of recreational use. Project activities that occur in spring and early summer (e.g., hand thinning) could temporarily displace does and their fawns from areas of direct actions as well as from nearby locations. There is sufficient suitable fawning habitat in surrounding areas that would not be disturbed during project implementation, which any displaced deer could move into and use. Long-term project impacts to habitat include the development of 40 acres of wet meadow habitat and three acres of riparian habitat.

W-2: Habitats of Special Significance

The Wildlife Threshold Standard W-2 states: "A non-degradation standard shall apply to significant wildlife habitat consisting of deciduous trees, wetlands, and meadows while providing for opportunities to increase the acreage of such riparian associations."

The SC-2 (Soil Conservation) Threshold Standard Indicator states that to preserve existing natural functioning Stream Environment Zones (SEZs) in their natural hydrological condition, restore all disturbed SEZ in undeveloped, unsubdivided lands and restore 25% of

[2] Under TRPA Code of Ordinances, Chapter 78-Wildlife Resources, the project biologist(s) must prepare appropriate documentation with specific recommendations for avoiding significant adverse impacts to the special interest, threatened, endangered or rare species (78.3.C).

the SEZ lands that have been identified as disturbed, developed, or subdivided to attain a 5% total increase in the naturally functioning SEZ land (TRPA 1996, 2002). The Threshold Standard can be met by avoiding negative effects to meadows, deciduous trees, and wetlands; if these features are already disturbed or developed in the project, look for restoration opportunities.

Is the proposed project in an SEZ (Y/N)? Yes. The project is within an SEZ. Restoration of the geomorphic and hydrologic processes of High Meadow and Cold Creek are expected to increase the potential for the meadow to store water and sediment and allow it to function as a wet meadow ecosystem. Project actions would restore the connection between floodplain channel and water table and would maintain or restore geomorphic and biological characteristics of meadows, fens, and streams. Lodgepole pine removal would enhance meadow function. It would also help to restore suppressed aspen by removing encroaching conifers that compete for resources (e.g., water and light). A non-degradation designation is expected and the project meets the W-2 Threshold Standard because the project is intended to restore Cold Creek and High Meadow and reduce impacts from recreational use (e.g., stream crossings would be designed to facilitate natural hydrologic processes, geomorphic function, and not create barriers to aquatic dependent species).

F-1 Lake Habitat

Does the proposed project have the potential to degrade fish habitat, substrate conditions (Y/N)? No. Although the project ultimately drains into Lake Tahoe, it is more than 5 miles upstream of the lake.

F-2 Stream Habitat

Will the proposed project impact stream habitat quality (Y/N)? Yes. Effects would be mitigated through project design features and BMPs described above. An analysis of short-term effects versus long-term benefits is presented in the High Meadow project BA and BE (Project Record Documents C and J), MIS Report (Project Record Document C), and this EA. Long-term benefits include a substantial improvement in stream habitat within High Meadow through restoration of natural geomorphic processes.

F-3 In-stream Flow

Does the proposed project include new construction or maintenance of a water diversion (Y/N)? No.

Is there potential to affect instream flows (Y/N)? Yes, temporarily during stream channel reconstruction. Approximately 8,700 linear feet of new channels and associated floodplain terrace on the Mainstem, East Fork, and North Fork of Cold Creek within High Meadow would be constructed. Any fish would be relocated to unaffected water.

F-4 Lahontan Cutthroat Trout

Are fish species present/suspected (Y/N)? No. Lahontan Cutthroat Trout do not occupy the project area; however, brook trout are present.

Is there an adjacent Lahontan cutthroat trout population which could be affected by the project (Y/N)? No.

3.6 Vegetation

3.6.1 Existing Conditions

This section discusses the coniferous forest vegetation of the project area. The potential effects to vegetation in the meadows are discussed in the Botany and Wildlife sections.

The forests in the immediate vicinity of High Meadow are dominated by lodgepole pine. Further away from the meadow, on steeper and drier sites, mixed conifer stands dominate, with Jeffrey and lodgepole pines and red and white fir. Lodgepole pine forest typically forms dense, pure stands of trees with a minimal understory shrub stratum. The herbaceous grass layer is often present and is moderately dense at times, particularly in wet areas along portions of the opposing banks of Cold Creek that are more open with fewer trees. Lodgepole pine is the dominant species in this forest community. Occasional understory shrubs include Sierra gooseberry (*Ribes roezlii*), squaw currant (*Ribes cereum*), and western blueberry (*Vaccinium uliginosum* ssp. *occidentale*). Understory herbaceous species include tufted hairgrass, slenderbeak sedge (*Carex athrostachya*), American trailplant (*Adenocaulon bicolor*), and Arrowleaf groundsel (*Senecio triangularis*).

There are scattered aspen communities along Cold Creek and south of the meadow. These communities are currently being encroached upon by conifers.

Areas in the watershed upslope from the High Meadow Complex also contain red fir (*Abies magnifica*) forests; however, these stands are not proposed for any treatment. They are, however, currently at risk of damage from wildfire due to the heavy fuel loading and fuel ladders that exist below them in the lodgepole stands that have been decimated from insect attack and mortality. There are approximately 280 acres in eight separate stands surrounding High Meadow where recent insect (bark beetle) infestations have been active. The lodgepole stands that are proposed for treatment have suffered extreme mortality within the last 5 years, and mortality is estimated at over 80% of the trees. There are scattered small groups or individual conifers that have survived the infestations of bark beetles. There are also dry bedrock areas and moraine slopes underlain by sandy granitic soils where sagebrush (*Artemisia tridentata*), Jeffrey pine (*Pinus jeffreyi*), and other shrubs, forbs, and grasses occur. These areas would not be affected by any of the proposed activities.

3.6.2 Alternative 1 Effects

Direct Effects

The construction of the new trail alignment and the changes in road alignments under the ATM portion of the proposed action would have minimal effects on terrestrial vegetation because the trail and road location would generally avoid substantial conifer tree removal and would only lead to removal of minor amounts of understory plants and brush. The decommissioning of the existing Cold Creek trail would have no effect on vegetation. The removal of dead or dying conifers in the proposed treatment units would not directly affect existing live vegetation. In stands where live conifer trees are thinned out to improve stand and individual tree health, there would be a reduction in tree density and canopy cover; however, the stands would remain near full site occupancy.

Indirect Effects

There would be beneficial effects to live conifer vegetation from the thinning. The remaining trees would improve in overall health and vigor due to the availability of increased sunlight, moisture, and nutrients. Their diameter growth would increase, as would the amount of live foliage on the tree. In the long-term, stand structure would likely be two-storied or multi-storied, as young vegetation would be initiated after the prescribed underburn (see below). This more diverse stand structure is likely to have beneficial effects on wildlife as well.

The eight treated stands would be treated with a prescribed underburn after the removal of the dead trees. This prescribed underburn would encourage a new flush of young vegetation and conifers. Within the first 20 years of the underburn, the sites would be dominated by pioneer brush and grasses. The underburned areas would also be seeded by conifer seeds from the adjacent mixed conifer stands and young conifers would become established. It is likely that lodgepole pine would dominate the species mix, as lodgepole pine depends upon site disturbance (and fire) to spread its seed and for germination. Over the long term, the lodgepole stands would re-emerge, with a scattering of other conifer species, such as red and white fir and Jeffrey pine. Lodgepole pine typically can re-establish itself in very high densities. If these stands do not receive disturbance at regular intervals (such as prescribed fires at intervals that mimic the historic fire regime), then these stands would develop into overly dense forests that would once again be prone to mortality from insects or drought.

Cumulative Effects

The Aspen Community Restoration project is expected to impact very minor amounts of vegetation along Cold Creek, as scattered individual trees are felled in patches of aspen. The short-term effect would be an immediate "flush" of young aspen sprouts and other vegetation due to the increased availability of light and nutrients. The vegetative canopy would recover in 3 to 5 years, and would be dominated by small trees and shrubs. There would be no other cumulative effects beyond those described in the direct and indirect effects. ,.

3.6.3 Alternative 2 Effects

Direct and Indirect Effects

There would be no direct effects on the coniferous vegetation in the project area. If no action is taken to remove the dead and dying conifers, these trees would eventually fall and create a very high fuel loading on the forest floor, with high amounts of fine material and large logs. In the event of a wildfire (particularly in the summer season), fire behavior under these fuels conditions could be catastrophic and would threaten the adjacent conifer stands. See "Fire and Fuels Management" section for further information. This fuel condition would be equivalent to a fuel model SB4 as described in the document *Standard fire behavior fuel models: a comprehensive set for use with Rothermel's surface fire spread model* (Project Record Document M). Under this fuel model, flame lengths and rate of spread of fire is very high, due to the heavy and compacted downed trees. The definition of SB4 characteristics includes the existence of much of the foliage and fine material that is still attached to the trees. Fine fuel loading can be as high as 7 to 12 tons per acre. Larger fuel loading can be as high as 50 tons per acre. The dead and dying trees have lost much or all of their foliage;

however, the amount of fine fuels (small branches, needles) still remains on the forest floor and would contribute to possible extreme fire behavior.

The lodgepole-aspen mix would continue as the encroaching lodgepole trees become taller and larger. Eventually, these trees would over-top the aspens, leading to a loss of aspen canopy and overall tree vigor. There would be an overall reduction in species and stand diversity as these aspen stands begin to "blend" with the adjacent conifer stands.

Cumulative Effects

The cumulative effects would be those associated with the Aspen Community Restoration Project (see discussion under Alternative 1).

3.6.4 Alternative 3

Direct and Indirect Effects

There would be no substantive differences in effects between Alternative 1 and Alternative 3. The re-routes sections of the existing Upper Cold Creek trail would impact vegetation in the same manner as constructing a new trail alignment. Removal of brush and low-lying vegetation would generally occur.

Cumulative Effects

The cumulative effects would be the same as Alternative 1.

3.7 Fire and Fuels Management

3.7.1 Existing Conditions

The project area is within the Upper Cold Creek subwatershed and is dominated by mixed conifer stands of vegetation that are typically very densely stocked and are approximately 90 to 130 years old. This area was heavily harvested during the Comstock era (Swanson 2007) and has become reforested through natural processes over many decades. Fire has been excluded from the ecosystem, and the lack of thinning by fire has led these conifer stands to become extremely dense. The recent and on-going drought, in concert with very dense stand conditions, has created conifer stands that are in a generally weakened condition and are susceptible to mortality from infestations of bark beetles. The conifer stands surrounding High Meadow have extremely high levels of dead trees (primarily lodgepole pine) due to bark beetles. These stands now have extremely high fuel loadings, and in the event of a wildfire, are likely to burn under extreme conditions and would threaten adjacent, healthier stands that provide important wildlife habitat.

The Forest Service, along with the Bureau of Land Management and other stakeholders, has developed a metric that estimates the level of departure from natural conditions as a result of fire management. The metric (Fire Regime Condition Class, described in detail at www.frcc.gov) is based on the number of fires that may have been missed in an area due to fire suppression. Fire regime condition class mapping in the Tahoe Basin has been undertaken by fire ecologist Hugh Safford. This mapping indicates that the forests of the High Meadow area are in Condition Class 2 or 3 and are degraded and overdue for fire if the

influence of this process is to approximate that which occurred in the past. The lack of natural thinning by frequent and generally low-intensity fire has led to a buildup of downed material and very dense vegetation, both of which can lead to intense burning conditions. The extensive mortality of the lodgepole pines also adds to this heavy fuel loading. Over the next 10 to 20 years, these dead trees would fall over and fuel loadings on the ground may exceed 50 tons per acre. This heavy fuel loading, in conjunction with the jack-strawed configuration of the downed trees, would make suppression actions and control of any fire in these stands very difficult. It is likely that fire under these conditions would burn very intensely and would threaten adjacent conifer stands and the important wildlife and watershed attributes they provide.

3.7.2 Alternative 1 Effects

Direct and Indirect Effects

The removal of the dead and dying conifers (primarily lodgepole pine) and the subsequent prescribed underburn in the nine proposed treatment stands would have beneficial effects on the fuel loading immediately after treatment. The removal of dead and dying trees and subsequent underburning would reduce the potential for catastrophic wildfire behavior in the event that a fire occurs in the area. This would increase the potential for future fires that would be lower in intensity and that would have less detrimental effects on conifer stands that are adjacent to the treated stands.

The underburn in the aspen stands where encroaching lodgepole trees are removed would also be beneficial. The canopy of the remaining aspens would be opened up, allowing more sunlight to reach the forest floor. The underburn would encourage sprouting of aspen shoots from roots. The increase in sunlight and available moisture and nutrients would encourage a new generation of aspen stems. This would allow for a multi-layered stand to develop which would increase diversity of stand structure (e.g. different diameters and heights of trees).

Cumulative Effects

The Aspen Community Restoration project would occur along Cold Creek, however there would not be any cumulative effects from this project, as the very small size of the openings to be created would not cause any substantive reduction in fuel characteristics or potential fire behavior. There would be no other cumulative effects beyond the direct and indirect effects already discussed.

3.7.3 Alternative 2 Effects

Overview

The only proposed activities that would have any effects on existing fuel loading conditions and long-term fire behavior would be the falling and removal of dead or dying conifer trees in the stands surrounding High Meadow, the removal of encroaching lodgepole trees in aspen stands, and the subsequent prescribed fire in the 9 treatment stands. There are nine stands proposed for treatment of dead and dying trees totaling approximately 277 acres

Direct and Indirect Effects

If no action is taken to remove the dead and dying conifers, these trees would eventually fall and create a very high fuel loading on the forest floor, with high amounts of fine material and large logs. The adjacent stands, which also have very high densities of trees, would continue to be at risk from insect mortality due to low tree vigor, or from wildfire due to high fuel loadings as fine fuels continue to accumulate and dead trees fall. Based on the existing mortality, the projected fuel model is conservatively estimated to be Fuel Model 12 (based on *Anderson, Hal E. 1982. Aids to determining fuel models for estimating fire behavior* – Project Record Document L). The potential fire behavior associated with Fuel Model 12 contrasts sharply with a Fuel Model 8, which reflects a desired fuel loading in the mixed conifer forest of 10 to 15 tons of fuel per acre, with generally low intensity fire.

In the event of a wildfire (particularly in the summer season), fire behavior under these fuels conditions could be catastrophic and would threaten the adjacent conifer stands. This fuel condition would be equivalent to a Fuel Model 12. Under this fuel model, flame lengths and rate of spread of fire are very high due to the heavy and compacted downed trees. The definition of Fuel Model 12 includes the existence of heavy downed and dead trees that can exhibit, under wildfire conditions, rapidly spreading fires with high intensities capable of generating firebrands that can cause spotting. Fuel loading of material less than 3 inches in diameter can be as high as 35 tons per acre, which exceeds the desired fuel loadings of approximately 10 tons per acre. The dead and dying trees have lost much or all of their foliage; however, the amount of fine fuels (small branches, needles) still remaining on the forest floor would contribute to possible extreme fire behavior.

The continuation of the effects of past actions would have a continued detrimental effect on the fuel loadings in the stands' conditions and would continue to increase the risk of damage from wildfire.

Cumulative Effects

There would be no cumulative effects.

3.7.4 Alternative 3 Effects

The effects of this alternative are the same as for Alternative 1. . The Aspen Community Restoration project would occur along Cold Creek, however there would not be any cumulative effects from this project, as the very small size of the openings to be created would not cause any substantive reduction in fuel characteristics or potential fire behavior. The elimination of the proposed new trail alignment in lieu of re-routes on the existing Cold Creek trail would make no difference to any direct, indirect, or cumulative effects.

3.9 Riparian Area Management

3.9.1 Existing Conditions

Riparian area management is also discussed in the "Wildlife and Aquatics" section and the "Watershed and Soils" section. These sections discuss relevant species and habitat characteristics that are associated with management of riparian areas. Under a broad definition, the entire High Meadow Complex could be considered a riparian area in that it exhibits characteristics common to a riparian area, e.g. fens, sedge, and rush vegetative cover and periodically saturated loamy alluvial soils. The characteristic riparian areas within the SEZ adjacent to perennial and intermittent stream are generally in fair to poor condition. The areas adjacent to stream systems lack the woody vegetation structure common to other stream systems in the basin, e.g., Trout Creek and the Truckee River, which include aspen, willow and alder. The woody vegetation structure in other streams provides habitat for wildlife and shade/food supply for aquatic species. Since the elimination of livestock grazing in 2003, some limited evidence of re-emergence of streamside vegetation has been noted, as shown in Figure 10. Note the areas of barren soil devoid of any riparian vegetation just beyond the channel banks. Such re-vegetation of the SEZ riparian area is infrequent and not indicative of a stable/healthy riparian system. Of the existing 3.5 mile of natural tributary channel, woody vegetative re-establishment is uncommon.

Figure 10. Stream channel in Middle Meadow displays evidence of willow emergence following grazing closure as well as unstable channel banks, formation of point bars, and lateral scour of banks.

Bear Glade, in the High Meadow Complex area, has a prominent east-northeast-trending alignment along its southern boundary marked by a distinct slope break and a line of prolific springs and groundwater seeps. Aspen trees have prospered in this area along with a diversity of hydrophyllic plant species. The alignment establishes a sharp ecotone boundary over short distances, separating sage and Jeffrey pine dominant forest above from aspen, sedge, and willow dominant wetland vegetation below, including fen development locally across a broad sloping area below the spring. Soils in the glade areas downslope from the alignment are saturated year-round, and willows and small aspen shoots are beginning to recover in these areas. These vegetative conditions in areas of wet meadow and areas of high water availability indicate the potential for improved riparian habitat.

Direct and Indirect Effects

Direct effects of channel reconstruction, re-watering channels, road rehabilitation and lodgepole pine access and removal will potentially result in short term stunting of riparian recovery. The saturation of meadow soils with diversion and the re-sprouting of streamside woody vegetation following elimination of grazing are indicative of riparian response potentials in the High Meadow area. Indirect effects of the project treatments are expected to delay riparian vegetation re-establishment during construction and in some cases disrupt existing vegetation. The proposed channel construction and removal/restoration of diversions will re-elevate the ground water to re-wet drying meadow areas. These treatments, coupled with planting native riparian woody vegetation stock along the new channels, are expected to result in a vigorous streamside riparian system within the SEZ in a short period of time. Stabilization of riparian vegetation in concert with erosion reduction is expected to result in viable streamside vegetative communities essential to terrestrial and aquatic ecosystems.

Cumulative Effects

The cumulative effects of past grazing abuse of riparian vegetation and diversion of water will be reversed, not aggravated by the proposed actions. Treatments to remove old roads throughout the High Meadow Complex will also increase infiltration and encourage re-wetting of meadow soils. The net effects of proposed actions are expected to result in viable streamside riparian networks of woody vegetation, stable stream banks, and good habitat for terrestrial and aquatic species. In addition to the documented past actions within the Cold Creek watershed, the "Aspen Community Restoration" project is likely to occur. There would be no cumulative impact from this project. There would be no impacts to riparian vegetation associated with the hand cutting of the trees. Small burn piles would be placed outside of the SEZ. The heavy duff and vegetative cover would remain in place between the small burned areas and the streams, effectively trapping any sediment that may move off of the burned site, avoiding any potential effects to downstream riparian vegetation.

3.10 Botanical Resources

3.10.1 Existing Conditions

The most recent species list for the LTBMU was obtained from the U. S. Fish and Wildlife Service on September 10, 2008, which had been updated on January 31, 2008. The LTBMU does not currently support any plant species listed as threatened or endangered under the ESA; however, Tahoe yellow cress (*Rorippa subumbellata*), a candidate species for listing, does occur on lands administered by the LTBMU but is not in the vicinity of the proposed project.

Botanical surveys conducted in the proposed project areas focus on species with potential habitat; however, surveys are floristic in nature and attempts are made to identify all plants encountered in the field. Many species have specific habitat preferences (such as wet meadows, fens, granite scree), and botanists search for these as well as their constituent species. Surveys were conducted in October 2004, August 2005, and July and August 2006.

Botanical surveys were completed for the restoration portion of the project but not for the ATM portion of the project. The survey conducted in 2003 has expired because botanical surveys are only good for 5 years. That portion of the project would need to be re-surveyed prior to project implementation. The routes surveyed in 2005 must be resurveyed in 2011. Table 16 summarizes the length of ATM features (e.g., existing road, reroute) that must be surveyed prior to project implementation (i.e., no survey), which features have expired surveys and need to be resurveyed, and which features have surveys that are still valid.

Table 16. Summary of Botanical Surveys for ATM Portion of Project

ATM Feature	Survey Status	Length (feet)
Existing road	2005– survey expires 2011	3157
Existing road	No Survey	5884
Power line access wide trail/reroute	2005– survey expires 2011	2568
Road decommissioning	2003 – survey expired	2910
Road decommissioning	No survey	8644
Reroute	2005– survey expires 2011	393
Reroute	No survey	484
Trail decommissioning	2005– survey expires 2011	1974
Trail Conversion/reroute option C	No survey	663
Trail reroute	No survey	11270

There is a single occurrence of *Bruchia bolanderi* within the project area. In addition, there is potential for the following sensitive plant species to be discovered during surveys pre-project implementation: Galena Creek rock cress (*Arabis rigidissima* var. *demota*), upswept moonwort (*Botrychium ascendens*), scalloped moonwort (*Botrychium crenulatum*), slender

moonwort (*Botrychium lineare*; *Botrychium lunaria*), Mingan moonwort (*Botrychium minganense*), western goblin (*Botrychium montanum*), subalpine fireweed (*Epilobium howellii*), starved daisy (*Erigeron miser*), Torrey's or Donner Pass buckwheat (*Eriogonum umbellatum* var. *torreyanum*), Blandow's bog-moss (*Helodium blandowii*), short-leaved hulsea (*Hulsea brevifolia*), Kellogg's lewisia (*Lewisia kelloggii* ssp. *hutchisonii*; *Lewisia kelloggii* ssp. *kelloggii*), three-ranked hump-moss (*Meesia triquetra*), broad-nerved hump-moss (*Meesia uliginosa*), and veined water lichen (*Peltigera hydrothyria*).

Two populations of *Botrychium simplex* were identified within the project boundary; although this species is not a Forest Service sensitive species, it is uncommon in the Lake Tahoe basin and therefore is addressed in the design criteria and in this document. No impacts to these populations would occur because project design features would prevent any impacts (i.e., flagged and avoided).

One noxious weed, cheatgrass (*Bromus tectorum*), was observed in the project area and could be a threat to known sensitive plant species or their habitats if the High Meadow project is implemented. This occurrence is currently not threatening any known sensitive plants or potential habitat. All noxious or nonnative plants are further discussed in the project's Noxious Weed Risk Assessment (Project Record Document K).

3.10.2 Alternatives 1 Effects

Direct and Indirect Effects

The likelihood of effects to species of concern from the ATM activities is low. Based on the description of the proposed action and the evaluation contained in the Biological Evaluation (Project Record Document J), the following determinations are recommended:

There would be no effect to the following species:

- Branched collybia (*Dendrocollybia racemosa*),
- Tahoe draba (*Draba asterophora* var. *asterophora*),
- Cup Lake draba (*Draba asterophora* var. *macrocarpa*),
- Long-petaled lewisia (*Lewisia longipetala*), and
- Tahoe yellow cress (*Rorippa subumbellata*).

This determination is based on the absence of suitable habitat within the project area and the absence of individuals known or expected to occur.

May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for:

- Kellogg's lewisia (*Lewisia kelloggii* ssp. *hutchisonii*; *Lewisia kelloggii* ssp. *kelloggii*).

These species may be affected during project implementation if undetected individuals or populations are present. If any of these species are detected during pre-project implementation surveys, then they would be flagged and avoided.

May benefit species habitat or may affect individuals but is not likely to result in a trend toward Federal listing or loss of viability for:

- Galena Creek rock cress,
- upswept moonwort,
- scalloped moonwort,
- slender moonwort (*Botrychium lineare; Botrychium lunaria*),
- Mingan moonwort,
- western goblin,
- subalpine fireweed,
- Blandow's bog-moss,
- three-ranked hump-moss,
- broad-nerved hump-moss, and
- veined water lichen.

Indirect effects of the proposed project include improved and expanded habitat for these species due to changes in vegetation composition, increased water availability, and increased wet meadow and riparian communities. These species may be affected during project implementation if undetected individuals or populations are present. If any of these species are detected before or during project implementation, they would be flagged and avoided.

May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for:

- Bolander's candle moss (*Bruchia bolanderi*)

The known population of Bolander's candle moss would be protected by project design criteria, which require that the population be flagged and avoided with a buffer of up to 100 feet. This species may be affected during project implementation if undetected individuals or populations are present. If additional locations of this species are detected before or during project implementation, then they would also be flagged and avoided. Indirect effects to the project area Bolander's candle moss population are expected to be neutral. It is unknown how the population would respond. While it might be outcompeted due to improved hydrologic conditions, additional habitat might develop from overbank flow.

Cumulative Effects

Based on the results of botanical surveys, design features that would protect future discovered populations, and the improved management of allowed uses in the area (e.g. no motorized use), there would be a low potential for cumulative effects to botanical species of concern. Species that are dependent upon wet meadow habitat are likely to increase in occurrence as the stream and meadow conditions and associated riparian habitat improves.

3.10.3 Alternative 2 Effects

Direct and Indirect Effects

There would be no direct environmental effects if no action were taken; however, it is likely that indirect effects would include a continued degradation of the habitat for species that are dependent upon riparian or wet meadow conditions. The continued encroachment of lodgepole pine and the drying of the meadow due to channel incisement would reduce the riparian and wet meadow environment. In addition, taking no action increases the risk of future wildfires burning under extreme conditions, which have the most damaging effects to soil conditions and the species that depend on that habitat.

Cumulative Effects

There would be no cumulative effects.

3.10.4 Alternative 3 Effects

The effects are very similar to Alternative 1. There would be slightly less potential to disturb the habitat or populations of species of concern because there is less new ground disturbance associated with the upper Cold Creek trail. The scope of this potential effect is not known at this time due to lack of surveys; however, the likelihood of effects are low based upon required project design measures and the limited existence of known populations and/or habitat identified by past surveys.

3.11 Heritage Resources

3.11.1 Existing Conditions

The LTBMU completed its heritage inventory of the High Meadow project area in October 2006. A total of six historic properties were formally recorded, though no prehistoric sites have been identified; site forms were completed and filed for each of the recorded properties. The recorded properties include:

- A road system (FS site number 05-19-862);
- The remains of three small historic structures (FS site numbers 05-19-1123, 1124, and 1127), and a barbed-wire fence line or corral (FS site number 05-19-1125); and
- A hydraulic diversion channel system (FS site number 05-19-1126).

To date, the area of potential effects (APE) for the proposed new trail location or the existing trail (where trail improvements may be implemented) has not been evaluated for potential effects. In addition, there are approximately 100 acres of mixed conifer stands surrounding the meadow that have not been evaluated. Project design features would protect any new resources found during project implementation.

The road system consists of the main High Meadow access road as well as several roads surrounding the meadow complex project area (see Recreation Uses below for additional information on roads). The road system site, also known as the High Meadow Road complex, has been formally evaluated by the LTBMU Heritage Department and was found

not eligible for listing in the National Register of Historic Places. (Project Record G). The California State Historic Preservation Office (SHPO) concurred with this determination on January 19, 2007. National Register evaluations would not be necessary for the three collapsed historic structures as they would be flagged and avoided by the proposed actions of the High Meadow restoration project, and therefore would not be affected

A formal NRHP evaluation of the diversionary channel system site, or High Meadow Diversionary Ditch complex, was formally evaluated by the LTBMU. The diversionary channel system was found not eligible for listing on the NRHP. The SHPO concurred with this determination on November 19, 2007 (Project Record Document F).

Direct, Indirect, and Cumulative Effects

The High Meadow road system has been determined to not be eligible for inclusion on the NRHP; therefore, there are no direct, indirect, or cumulative effects from the project or any alternatives on this resource.

The remaining identified sites (fenceline, historic cabin locations, and the diversionary channel system) would all be avoided during project implementation by flagging these sites in advance of project implementation. There would be no direct, indirect, or cumulative effects to these resources.

None of the alternatives will have an effect on districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places because none are present in the project area.

3.12 Air Quality

3.12.1 Existing Condition

The project area is within the Lake Tahoe Air Basin. This basin has very good air quality and is in attainment for all designated state and federal standards for ambient air quality with the exception of PM10. The Lake Tahoe Air Basin is in nonattainment for the state standard for PM10. PM10 emissions are commonly associated with the following sources:

- motor vehicles,
- wood burning stoves and fireplaces,
- dust from construction, landfills, and agriculture,
- wildfires and brush/waste burning,
- industrial sources, and
- windblown dust from open lands

3.12.2 Alternative 1 Effects

Direct and Indirect Effects

The ecosystem restoration activities and the ATM activities are most likely to affect air quality by generating short-term and minor amounts of construction vehicle exhaust and fugitive dust, and smoke from prescribed underburning. The design features presented in Section 2.2 of this document would protect temporary roads from the transport of fugitive dust. Smoke emissions would be minimized by implementation of the Smoke Management Plan, which is a part of the Prescribed Burn Plan. Long-term benefits would occur because restoration actions restore vegetative structure on temporary access paths, aspen release sites, stream banks, and floodplains, which also stabilize the soils and reduce the potential for airborne transport of fugitive dust. There would be a reduced potential for catastrophic fire with the removal of dead trees. Wildfires are a key source of PM10 pollutants.

Cumulative Effects

There would be no cumulative effects from the past, present, and reasonably foreseeable projects.

3.12.3 Alternative 2 Effects

There would be no direct environmental effects to air quality from this alternative. There may be long-term indirect effects. In the event of a wildfire, the emissions of PM10 may be much higher than if this material was removed or underburned under controlled and favorable burning conditions.

3.12.4 Alternative 3 Effects

The effects would be the same as Alternative 1, with the exception of a slight reduction in short-term dust because the proposed new trail would not be constructed.

4.0 CONSULTATION AND COORDINATION

The Forest Service consulted the following individuals; federal, state, and local agencies; tribes; and non-Forest Service persons during the development of this EA:

4.1 ID Team Members

IDT Leaders: Matt Dickinson, Garrett Villanueva and Stephanie Heller
Barak Shemai Fisheries Biologist
Julie Roth, Wildlife
Shay Zanetti, Wildlife
Mark Johnson, Fire and Fuels
John Washington, Fire and Fuels
Rita Mustatia, Vegetation
Shana Gross, Sensitive Plants
Daniel Cressy, Landscape

Bob Becker, Recreation
Michael Weichman, Heritage

4.2 Federal, State, and Local Agencies

Rick Robinson, California Tahoe Conservancy

Joe Pepi, California Tahoe Conservancy

Mary Huggins, California Department of Forestry

Andrea Stanley, Lahontan Regional Water Quality Control Board

Vada Camacho, California Department of Fish and Game

4.3 Tribes

Darrel Cruz, Washoe Tribe of NV and Ca

Marie Barry, Washoe Tribe of NV and CA

Jennifer Johnson, Washoe Tribe of NV and CA

APPENDICES

Appendix A – Best Management Practices

Appendix B – Scoping Summary Report

Appendix C – Monitoring Plan

Appendix D – Channel Restoration Plans

Figures: A-1 – Proposed Location of new stream channel
A-2 – Specific activities associated with channel restoration – Year 1
A-3 – Specific activities associated with channel restoration – Year 2

Appendix E – Trail and Road Management Table

Appendix F – Response to Comments on May 2009 Environmental Assessment

Appendix A
Best Management Practices

Appendix A – High Meadow Restoration Environmental Assessment & LTBMU BMP Monitoring Results (2007)

Summary of Best Management Practices (BMP) for the LTBMU High Meadow Ecosystem Restoration Project (modified to reflect specific project activities)

NOTE: Any references to timber sale contracts/contractors are applicable to other contracted services (i.e. service contracts) to ensure proper application of BMPs.

Best Management Practice	Description
PSW Region BMP 1-5: Limiting the Operating Period of Timber Sale Activities	The timing of harvest or fuels/vegetation operations, including operating areas and erosion prevention and control, are dictated by the TSC provisions requiring an operating plan and schedule. Outside the normal operating season and during wet periods of prolonged precipitation, a wet weather operations agreement must be submitted. Limited operating periods have been in the project design measures. .
PSW Region BMP 1-8: Streamside Management Zone Designation	Roads, skid trails, landings and other timber harvesting or fuels/vegetation facilities will be kept at a prescribed distance from designated stream courses. Riparian Conservation Areas (RCAs) will be designated on the contract a map, however specific guidelines for these areas were not developed any different than the general treatment area due to the need to treat the hazards present along the entire length of these travel routes. Instead, Stream Environment Zones (SEZs) , and their associated protection measures will be designated on the contract map, and will be marked on the ground prior to operations. Ground based equipment is prohibited within SEZs, except in areas where the existing system road or trail crosses the SEZ already. Where harvest or fuels/vegetation activity is allowed, unit specific design features will dictate the type and location of the activity.
PSW Region BMP 1-10: Tractor Skidding Design	The careful control of skidding patterns serves to avoid onsite and downstream channel instability, build-up of destructive runoff flows, and erosion in sensitive watershed areas such as meadows and SEZs. To the extent practicable, where slopes exist above 10%, material will be skidded along slope contours, or at an angle to the slope, to avoid creating ruts in the soil oriented downhill.

PSW Region BMP 1-11: Suspended Log Yarding in Timber Harvesting	End-lining in SEZs will require skidding at an angle to the stream channel, avoiding lining material out of these areas perpendicular to the channel. End-lining on steep areas (>30% slope) will require hand raking grooves created by end-lining (need determined by a watershed specialist), and providing ground cover over disturbed areas to avoid concentrating flow downhill.
PSW Region BMP 1-12: Log Landing Location	Where available, existing landings will be used. Where new landings will be required for operations, landing locations must be agreed to by the contract administrator). An acceptable landing will be evaluated according to a set of criteria that includes the following: the excavated size of landings should not exceed that needed for safe and efficient skidding and loading operations; to the extent feasible, landing locations that involve the least amount of excavation, erosion potential, and least number of trees needing to be removed will be selected; and where feasible, landings will be located away from headwater swales, in areas that will allow skidding without crossing stream channels or causing direct deposit of soil and debris to the stream.
PSW Region BMP 1-13: Erosion Prevention & Control Measures During Timber Sale Operations	Ground based equipment will not be operated when ground conditions are such that excessive damage will result. Erosion control work that is identified in the project design features and this BMP list shall be completed within 15 days of completion of skidding operations relating to each landing, or within 15 days of the contract administrator's designation of erosion prevention measures. Erosion control work shall be completed by the grading deadline (i.e. Oct. 15 or another date identified in a grading extension). Erosion control measures will be kept current, which means daily, if precipitation is likely, or at least weekly, when precipitation is predicted.
PSW Region BMP 1-16: Log Landing Erosion Prevention and Control	All landings will be ditched and outsloped for proper drainage, and may be required to be ripped or subsoiled with provisions for revegetation to permit the drainage and dispersal of water, as determined by a watershed specialist.
PSW Region BMP 1-17: Erosion Control on Skid Trails	Drainage dips will be installed on haul routes and main skid trails located on system roads and trails at an average spacing of 150 linear ft. Drainages will be located to fit the landscape and prevent discharge of sediment to surface waters wherever possible.
PSW Region BMP 1-18: Meadow Protection During Timber Harvesting	Ground based equipment will be prohibited from meadows within the project area without approval from the Forest Service, except where the existing system road or trail crosses the meadow, in which case metal landing mats will be placed over the meadow surface to protect the soil. Exceptions to this BMP are allowed for the purpose of implementing the stream channel and meadow restoration work, with activities within the meadow and streamcourse environment approved in advance by the Forest Service.

PSW Region BMP 1-19: Streamcourse Protection (Implementation and Enforcement)	Ground based equipment will be prohibited from stream courses within the project area, except where the existing system road or trail crosses the stream, in which case specific design features have been developed for each stream. Exceptions to this BMP are allowed for the purpose of implementing the stream channel and meadow restoration work, with activities within the meadow and streamcourse environment approved in advance by the Forest Service. Any damage to stream courses, including banks and channels, must be repaired to the extent practicable. Equipment use in designated SEZs will be limited or excluded, as detailed in the unit specific design features.
PSW Region BMP 1-20: Erosion Control Structure Maintenance	During the period of the TSC, the purchaser will provide maintenance of soil erosion structures constructed by purchaser until they become stabilized, but not for more than 1 year after their construction. If the purchaser fails to do seasonal maintenance work, the Forest Service may assume the responsibility and charge the purchaser accordingly.
PSW Region BMP 1-22: Slash Treatment in Sensitive Areas	Units which require ground cover be provided after operations, such as those with slopes >30% and those identified using the EHR methodology as requiring additional ground cover to maintain or the improve the EHR, must meet effective ground cover goals established for each area.
PSW Region BMP 1-24: Non-recurring “C” Provisions that can be used for water quality protection	Non-recurring special “C” provisions or service contract clauses,, such as directionally felling of timber away from stream channels or cross slope, will be developed as needed for certain units to ensure that adequate erosion control occurs as part of the sale contract.
PSW Region BMP 1-25: Modification of Timber Sale Contract	It may be necessary to modify a TSC due to new concerns about the potential affects of land disturbance on a water resource. Where the project is determined to unacceptably affect watershed values, the appropriate Line Officer will take corrective actions, which may include contract modification.
PSW Region BMP 2-1: General Guidelines for the Location and Design of Roads	To locate and design roads with minimal resource damage the contractor and Forest Service will agree to new temporary road locations and approved use of existing non-system roads prior to implementation.

PSW Region BMP 2-12: Servicing and Refueling Equipment	To prevent pollutants such as fuels, lubricants, and other harmful materials from being discharged into watercourses or other natural channels, unless otherwise agreed upon by the hydrologist, service and re-fueling areas shall be located outside of SEZs. If fuel storage capacities meet or exceed those stated in TSC provisions, project Spill Prevention, Containment, and Counter Measures (SPCC) plans are required. Operators are required to remove service residues, waste oil, and other materials from National Forest land and be prepared to take responsive actions in case of a hazardous substance spill, according to the SPCC plan.

PSW Region BMP 2-22: Maintenance of Roads	Provide the basic maintenance required to protect the system road and to ensure that damage to adjacent land and resources is prevented. At a minimum, maintenance must protect drainage facilities and runoff patterns. Additional maintenance includes surfacing and resurfacing, outsloping, clearing debris, etc.
PSW Region BMP 2-24: Traffic Control during Wet Periods	Hauling on native surface roads will be restricted to the dry season when roads are stable. Wet areas crossed by skid trails (i.e. system roads or trails treated with this project) will be covered with metal landing mats to protect the road surface and reduce soil loss. Exceptions to this BMP are allowed for the purpose of implementing the stream channel and meadow restoration work, with activities within the meadow and streamcourse environment approved in advance by the Forest Service.
PSW Region BMP 2-25: Snow Removal Controls to Avoid Resource Damage	Removal of snow shall be consistent with TSC provisions and the wet weather/ winter operations agreement. The contractor is responsible for snow removal that will protect roads and adjacent resources. Rocking or other special surfacing may be necessary before the operator is allowed to use the roads.
PSW Region BMP 2-26: Decommission of roads	Eexisting non-system road will be obliterated or decommissioned following any use for implementation of the project. . The decommissioning may include grading, subsoiling, providing ground cover, and revegetation.
PSW Region BMP 5-2: Slope Limitations for Mechanical Equipment Operations	Ground based equipment will not be operated on slopes greater than 30% to reduce gully and sheet erosion and associated sediment production.
PSW Region BMP 5-3: Tractor Operation Limitation in Wetlands and Meadows	Ground based equipment will not operate in SEZs (with the exception of existing crossings along system roads and trails), but rather will end-line material out of the SEZ when fuel loads warrant removal. Exceptions to this BMP are allowed for the purpose of implementing the stream channel and meadow restoration work, with activities within the meadow and streamcourse environment approved in advance by the Forest Service.

PSW Region BMP 5-6: Soil Moisture Limitations for Tractor Operation	Soils will only be operated on with ground based equipment when soil moisture conditions are such that compaction, gullying, and/or rutting will be minimal, or when snow conditions are at depth and temperatures are suitable for over-the-snow operations. Winter logging will be allowed as long as wet weather/winter operating guidelines are agreed to prior to operations.
PSW Region BMP 6-2: Consideration of Water Quality in Formulating Fire Prescriptions	To ensure water quality protection while achieving management objectives through the use of prescribed fires (i.e. pile burning), prescription elements will include, but not be limited to, factors such as fire weather, slope, aspect, soil moisture, and fuel moisture. The prescription will include at the watershed and subwatershed level the optimum and maximum burn block size, aggregated burned area, and acceptable disturbance for the riparian/SEZ.

Protection of Water Quality from Prescribed Burning Effects	Hand piling and burning of slash will be located beyond 50 ft of any stream channel or standing water to the extent practicable.
PSW Region BMP 7-4: Forest and Hazardous Substance Spill Prevention Control	Equipment operators shall have tools and materials necessary to clean up small and large spills on site at all times. Necessary tools and materials will vary depending on volume of hazardous materials on site. Mitigation of spills is described in the LTBMU spill plan.
PSW Region BMP 7-7: Management by Closure to Use	Thinning units (hand and mechanical) will be closed to public use during the time equipment is operating in the unit.

USDA Forest Service Lake Tahoe Basin Management Unit Best Management Practices Evaluation Program Summary June 2007

I. Introduction

Each year, the Lake Tahoe Basin Management Unit (LTBMU) completes evaluations for the Best Management Practices Evaluation Program (BMPEP), as part of the Pacific Southwest Region's effort to evaluate the implementation and effectiveness of BMPs created for protecting soil and water resources associated with timber, engineering, recreation, grazing, and revegetation activities.
The objectives of the Forest Service (USFS) BMPEP for the LTBMU are to: 1) fulfill USFS monitoring commitments to the State Water Resources Control Board (SWRCB), as described in the SWRCB/USFS Management Agency Agreement and *Water Quality Management for National Forest System Lands in California (USDA Forest Service, 2000)*; 2) assess and document the efficacy of the USFS water quality management program, specifically the implementation and effectiveness of BMPs; and 3) facilitate adaptive management by identifying program shortcomings and recommending improvements. Additional details on the BMPs, protocols, and site selection can be found in *Investigating Water Quality in the Pacific Southwest Region, Best Management Practices Evaluation Program (BMPEP) User's Guide (USDA Forest Service, 2002)* and *Water Quality Management for National Forest System Lands in California (USDA Forest Service, 2000).*

II. Methodology

Onsite evaluations are used to assess both BMP implementation and effectiveness. Implementation evaluations determine the extent to which planned, prescribed and/or required water quality protection measures were actually put in place on project sites. Effectiveness evaluations gage the extent to which the practices met their water quality protection objectives. For sites with poor implementation or effectiveness scores, observers are asked to identify the reasons and suggest corrective actions. For those sites with poor effectiveness, evaluators estimate the degree, duration and magnitude of any existing or potential impacts to water quality, based on published Region 5 guidelines. This type of "hillslope monitoring" uses indirect measures to evaluate BMP effectiveness; poor scores represent potential, rather than actual, impairment of beneficial uses by a given activity.

For BMP implementation, evaluators' answer a variety of specific questions intended to determine whether the project was executed on the ground, as planned and described in project documents. A range of possible scores are allocated to each question, depending on its relative importance and the degree to which a particular requirement is met (e.g., whether the project exceeds, meets, departs immaterially, or departs substantially from requirements). Scores for all implementation questions are then summed and compared to a pre-determined threshold to conclude whether a given suite of BMPs were implemented. BMP effectiveness is determined through evaluation of indirect measures of water quality protection, including observations (e.g., evidence of sediment delivery to channels) and quantitative

measurements (e.g., amount of ground cover, percent of stream shade). A scoring system similar to that used for BMP implementation is used to determine BMP effectiveness.

IIa. Sampling Design

BMPEP protocols are applied to both randomly and non-randomly selected project sites. The number of random evaluations to be completed each year is assigned to the National Forests by the Regional Office based on: 1) the relative importance of the BMP in protecting water quality in the Region; and 2) those management activities most common on the individual Forest. The USFS Region 5 target for the LTBMU for BMPEP is typically between 40 and 45 evaluations for 29 different types of BMPs, approximately half of which apply to timber projects. Forests can supplement these randomly selected sites with additional sites based on local monitoring needs, such as those prescribed in an environmental document. The combination of random BMP evaluations and those specific to a given project provide valuable information about implementation and effectiveness of BMPS across the LTBMU. The assumption is that the random selection of BMPs evaluated will be representative of the implementation and effectiveness of BMPs forest-wide.

The list of BMPs evaluated with this Program that are associated with timber harvest activities include:

T01: Streamside management zones
T02: Skid trails
T03: Suspended yarding
T04: Landings
T05: Timber sale administration
T06: Special erosion control and revegetation
T07: Meadow protection
E08: Road surface and slope protection
E09: Stream crossings
E10: Road decommissioning
E11: Control of sidecast material
E12: Servicing and re-fueling
E13: In-channel construction practices
E14: Temporary roads
E15: Rip rap composition
E16: Water source development
E17: Snow removal
E18: Pioneer road construction
E19: Restoration of borrow pits and quarries
E20: Management of roads during wet periods
F25: Prescribed fire
V28: Vegetation manipulation
V29: Revegetation of surface disturbed areas

Below are results from the BMPEP program taken over the last five years (see table below). Results show that 88% of BMPs in the LTBMU are implemented and effective. Also, important to note, is that BMPs for skid trails, landings, and special erosion control have shown a past success of greater than 95%. With the use of project level implementation monitoring, these BMPs may prove the most success of being implemented and effective.

LTBMU BMPEP IMPLEMENTATION EFFECTIVENESS					
YEARS 2002-2007					
SELECTION METHOD R01 (RANDOM)					
BMP FORM	IE (%)	NIE (%)	INE (%)	NINE (%)	# EVALUATIONS
T01	85.7	0.0	14.3	0.0	7
T02	100.0	0.0	0.0	0.0	5
T04	95.0	5.0	0.0	0.0	20
T05	87.5	12.5	0.0	0.0	8
T06	100.0	0.0	0.0	0.0	16
T07	66.7	0.0	0.0	33.3	3
E08	77.8	0.0	14.8	7.4	27
E09	86.2	3.4	6.9	3.4	29
E10	100.0	0.0	0.0	0.0	10
E11	85.0	5.0	10.0	0.0	20
E13	71.4	28.6	0.0	0.0	14
E15	100.0	0.0	0.0	0.0	5
E19	100.0	0.0	0.0	0.0	1
E20	76.9	0.0	23.1	0.0	13
178					
Average	**88.0**	**3.9**	**4.9**	**3.2**	
IE - IMPLEMENTED, EFFECTIVE					
NIE - NOT IMPLEMENTED, EFFECTIVE					
INE - IMPLEMENTED, NOT EFFECTIVE					
NINE - NOT IMPLEMENTED, NOT EFFECTIVE					

Appendix B
Scoping Summary Report

HIGH MEADOWS FOREST PLAN DESIGNATION; ECOSYSTEM RESTORATION; AND ACCESS TRAVEL MANAGEMENT PROJECT

Scoping Summary Report

Introduction

The U.S. Department of Agriculture (USDA) Forest Service/Lake Tahoe Basin Management Unit (LTBMU) sought input regarding a proposal to implement stream restoration, fuels reduction, access and travel management, and amend the Forest Land and Resource Management Plan located in the High Meadows area on National Forest System lands within the Lake Tahoe Basin. The plan includes: 1)Restoration of Cold Creek as it flows through High Meadow in order to increase the potential for the meadow to store water and sediment; 2) Removal of lodgepole pine from the meadow and surrounding area which is dead as a result of bark beetle; 3) establishment of a managed and maintained road and trail system that is integrated with forest ecology, minimizes impacts, and provides sustainable recreation access for multiple uses on public lands through restoration, re-routes, and new construction. An environmental assessment (EA) will be prepared and circulated for comment before a decision is made.

The scoping (request for comments) period began on March 7, 2008, and ended on April 7, 2008. Public scoping included a public meeting held on March 27, 2008 at the Lake Tahoe Basin Management Unit Forest Supervisor's Office in South Lake Tahoe, and 39 scoping letters mailed or hand delivered on March 10, 2008 to interested parties requesting, by April 7, 2008, comments for consideration in the High Meadows Projects EA. Additionally, public notices were placed in the *Tahoe Daily Tribune* on March 20, 2008 notifying readers of the public meeting and where to go for more information. Copies of these notices are on file (project record documents D1 – D20).

In response to the scoping request, formal input was received from the following organizations and individuals on the dates indicated.

- Alice Jones – March 20, 2008
- Jim Hildinger – March 21, 2008
- Liana Zambresky – March 22, 2008 and June 12, 2008
- Bud Voisinet – March 27, 2008

- David Hamilton (Tahoe Area Mountain Bike Association) – March 27, 2008
- Liv & Jim Seemann – March 27, 2008
- Gay Havens – March 27, 2008
- Allen Havens – March 27, 2008
- Julie Nelson – March 30, 2008
- Judy and Richard Kato – April 1, 2008 and June 16, 2008
- George Gusses – April 3, 2008
- Sally Loomis – April 3, 2008 and June 24, 2008
- Shirley Taylor – April 4, 2008
- Michele Kruger – April 7, 2008
- Gary Bell – April 7, 2008
- Becky Bell – April 7, 2008
- Andrea Stanley (Lahontan Regional Water Quality Control Board) – April 7, 2008
- Jennifer Quashnick (League to Save Lake Tahoe, Sierra Forest Legacy, Tahoe Area Sierra Club) – April 7, 2008
- Mark Kimbrough (Tahoe Rim Trail Association) – April 11, 2008
- J.B. Lekumberry – April 11, 2008
- Marjorie J. Springmeyer – April 20, 2008

Summary of Comments

Definitions

Comments related to National Forest System Lands were grouped into three groups: 1**. Non-Significant Issues**, 2. **Significant Issues considered but eliminated from detailed study**, and 3. **Significant Issues**. A Description of each group is outlined below. Responses reflect how comments were incorporated and addressed in the decision document.

- **Non-Significant Issues** do not meet the Purpose and Need for the project; are outside the scope of the proposed action; are already decided by law, regulation,

or Forest Plan; are not supported by scientific evidence; are addressed by project design features; or are addressed by additional information or clarification of the proposed action. Non-Significant issues also represent opinions and statements which do not present problems or alternatives.

- **Significant Issues considered but eliminated from detailed study** meet the Purpose and Need for the project but were considered in alternatives already studied and eliminated, or additional project design features were developed which reduced or eliminated the effects.

- **Significant Issues** meet the Purpose and Need for the project and are "significant" in the extent of the geographic distribution, the duration of effects, or the intensity of interest or resource conflict and therefore merit consideration for the development of an alternative to the proposed action.

Comments

Comments received are categorized based on their relevance to the Project (see definitions above) and organized based on issue areas, including issues surrounding implementation of trail construction, construction techniques for mountain bike use of trails, the comment period being too short, bicycle use on trails, and opening the area to snowmobiles. A number of supportive comments were received. One commenter objected to the project as a whole. The first group of comments are from representatives of several environmental groups and from the California Regional Water Quality Control Board, a regulatory agency.

Comments from League to Save Lake Tahoe, Sierra Forest Legacy, Tahoe Area Sierra Club

NSI-1. "The Conservation Community stands in strong support of ecosystem restoration on a watershed scale."

> *Forest Service Response: Comments that state a position for or against a specific alternative are appreciated as this gives the Forest Service a sense of the public's feeling and beliefs about a proposed course of action. Such information can only be used by the decision maker in arriving at a decision and not for improving the environmental analysis or documentation.*

NSI-2. "The Forest Service must clarify the tree size limits in all unit prescriptions and the associated purpose and objective of thinning each unit, and provide clear and consistent information throughout the planning document." Specific concerns: mechanical thinning in PACs only refer to BA and CC, no size limits; mechanical thinning in PACs and Aspen stands indicates "all" living conifers will be removed from aspen stands.

Forest Service Response: The High Meadows project is designed in accordance with the Sierra Nevada Forest Plan Amendment (SNFPA) guidelines (as amended in 2004), and proposes thinning to meet healthy forest and habitat restoration and protection objectives by reducing the spread of bark beetle, which is already causing a high degree of mortality within the project area. The Proposed Action is consistent with current SNFPA guidelines which allows for the removal of trees up to 30 inches dbh. The area proposed for thinning within the Northern Goshawk Protected Activity Center (PAC) is designed to meet PAC desired conditions to the extent feasible while also ensuring long-term persistence of suitable habitat within the PAC. The thinning prescription will be from below, beginning with the smallest diameter present and increasing in size for removal until the desired conditions for basal area and canopy closure are met. With the current condition of the stand, there would not be a need to remove trees greater than 20 inches dbh unless it's to facilitate openings for landings, temporary roads, or other logging operations.

Restoration of aspen stands within the project area may require the removal of larger (over 30 inches dbh) trees in order to meet aspen restoration conditions. The removal of all trees regardless of size is consistent with SNFPA (2004) guidelines for aspen restoration. Current management direction (SNFPA 2004; Standard and guideline #9) was intended to provide clear direction that activities, such as aspen management, are not subject to harvested tree size, basal area retention and/or residual canopy closure limitations that apply to fuel and/or density reduction treatments (as clarified in App. I of Shepperd et al 2006).

NSI-3. "disclose the existing canopy cover and projected canopy cover and explain how reductions in canopy cover are needed to meet project objectives"

Forest Service Response: High Meadows project is designed with the SNFPA guidelines for maintaining an overall average of 60 to 70 percent canopy cover within the PAC stands as a desired condition for areas where that condition exists. Although the portion of PAC in the mechanical stand may drop to 40%, the intent is to have other areas within the PAC that are at or above 70% so that the overall average can be met.

Canopy reduction is not an objective, but an outcome as a result of tree removal, due to bark beetle kill, for meeting project objectives as described in the project proposal.

NSI-4. snags are a critical component of forest ecosystems and at a minimum 4 snags/acre should be retained.

Forest Service Response: We recognize the importance of snags to forest ecosystems. The High Meadows project will retain snags at levels within the guidelines of our Forest Plan (SNFPA Record of Decision 2004).

NSI-5. "To protect stands of red fir in the project area, the Forest Service should identify and delineate these trees to ensure that impacts from the thinning and restoration efforts are mitigated."

> *Forest Service Response: The proposed actions related to thinning for the High Meadows Project are consistent with the guideline of our Forest Plan (SNFPA Record of Decision 2004).*

NSI-6. "Monitoring is a critical component of restoration efforts and can greatly increase the efficacy of these projects. Monitoring, both during the project and after, must be sufficient to ensure methods such as mechanical thinning do not negatively impact water quality and other environmental values during and after project implementation."

> *Forest Service Response: The ecosystem restoration actions that are part of this project will be monitored as part of the LTBMU's Adaptive Management Monitoring Program. A project specific monitoring plan will be developed for the Access and Travel Management Plan, the High Meadows Ecosystem Restoration and the lodgepole pine removal. Mechanical thinning areas that are within a SEZ will be assessed for suitability of this prescription based on the Heavenly SEZ demonstration project before implementation.*

NSI-7. "Where mechanical thinning is necessary to achieve project objectives, every measure must be taken to mitigate the impacts of the mechanical thinning, as well as to mitigate the impacts of the new 700 foot access road during implementation of the project."

> *Forest Service Response: Where mechanical thinning is necessary to achieve project objectives, project specific design features have been developed and will be implemented to reduce or eliminate impacts associated with this type of treatment. The temporary access road will be installed to specification for mechanical equipment and will include the use of the proper BMP's. The temporary road will be completely restored following project activities.*

NSI-8. "What is the schedule for the decommissioning and rehabilitation of roads modified or constructed for ecosystem restoration purposes?"

> *Forest Service Response: Decommissioning occurs on system roads and trails, restoration occurs on unclassified roads and trails. See section 1.3 of the EA for a more detailed explanation of decommissioning versus restoration. The ecosystem restoration project in High Meadows will utilize approximately 4.4 miles of existing roads and construct 10,000 feet of temporary access roads. Because this project is phased over multiple years temporary access roads will be removed at the end of each construction season with the appropriate BMPs implemented. Any existing roads utilized by the ecosystem restoration and*

identified for restoration will be treated upon completion of the restoration project.

NSI-9. Differences between the Heavenly Valley SEZ Demonstration Project and the High Meadows Project should be flagged before, during and after implementation to allow for more meaningful comparison of the outcomes of the projects.

Forest Service Response: The use of mechanical equipment in SEZs may be a desired option for some areas within the High Meadows Project area. Any use of mechanical equipment would be designed to be consistent with Riparian Conservation Objectives in the Forest Plan as amended by the SNFPA. The results from Heavenly Valley Creek will be available to use for High Meadows NEPA documentation and implementation if needed. A rating system has been designed to evaluate the sensitivity of treatment units within projects that either contain or are entirely SEZ. The results from the rating exercise for each SEZ treatment unit proposed for mechanical treatment within the High Meadows Project will be compared to the sensitivity rating for the Heavenly Creek SEZ Demonstration Project site (HSEZ) using the same criteria. If High Meadows units have an equal or higher rating than the HSEZ site, other means of removal such as end-lining, or hand thinning and removal would be used.

NSI-10. "The Forest Service must make a detailed assessment of the likely impacts of implementing this project on northern goshawk and its habitat. An adequate analysis should address, at a minimum, the following issues: The amount and intensity of harvest proposed in goshawk territories, the adverse impact of suitable nesting, foraging and post fledging habitat for each of the identified goshawk areas impacted by this project, the project should disclose plans to enter goshawk PACs and nest areas and explain the justification for such action in regard to meeting fuels and stand density objectives, evaluate goshawk density in the vicinity of the project and prepare an assessment of the potential for the project to adversely alter habitat and increase habitat and population gaps, consider one or more alternatives to the proposed project that limit the reduction of canopy closure and basal area to ensure that high quality nesting and foraging habitat is associated with specific territories."

Forest Service Response: The northern goshawk is currently a Forest Service Sensitive Species and effects from this project on northern goshawk and its habitat will be analyzed in a biological evaluation (BE) and determinations will be summarized in the environmental assessment. The BE is available in the project record.

NSI-11. "If the project will remove any trees in excess of 20 inches in diameter for any reason in the PACs, then the Forest Service should explain the basis for such logging and explain how removal of these trees has been minimized as much as possible. Further, we ask the Forest Service to identify the reasons that hand-thinning is not sufficient to accomplish objectives in PACs, and how the selected mechanical thinning methods achieve those objectives while protecting the PAC."

Forest Service Response: High Meadows project is designed in accordance with current SNFPA guidelines (as amended in 2004), with thinning to meet healthy forest and habitat restoration and protection objectives by reducing the spread of bark beetle which is already causing a high degree of mortality within the project area. The Proposed Action is consistent with current SNFPA guidelines which allows for the removal of trees up to 30 inches dbh. The thinning prescription will be from below, beginning with the smallest diameter present and increasing in size for removal until the desired conditions for basal area and canopy closure are met. With the current condition of the stand, there would not be a need to remove trees greater than 20 inches dbh unless it's to facilitate openings for landings, temporary roads, or other logging operations.

In addition, restoration of aspen stands within the project area may require the removal of larger (over 30 inches dbh) trees in order to meet aspen restoration conditions. The removal of all trees regardless of size for aspen restoration is consistent with SNFPA (2004) guidelines. Current management direction (SNFPA 2004; Standard and guideline #9) was intended to provide clear direction that activities, such as aspen management, are not subject to harvested tree size, basal area retention and/or residual canopy closure limitations that apply to fuel and/or density reduction treatments (as clarified in App. I of Shepperd et al 2006).

Hand thinning is not sufficient for accomplishing all objectives within PACs for the High Meadows project because of 1) the higher volume of activity fuels that may be left in the stand after hand thinning, and 2) the incomplete removal of conifer cover in aspen stands within the PAC that result from hand thinning. With hand thinning, all trees felled are left as fuel to be burned later whereas mechanical operations allow for a greater reduction of residual fuel loads by removing trees from the stand. Additionally, to meet the objectives of aspen stand restoration in the High Meadows project, mechanical thinning is desired as it allows for the more complete removal of encroaching conifer within aspen stands, hence allowing for more complete restoration and enhancement of the aspen stands. Therefore, proposed in aspen stands that occur within PACs only where aspen stands are accessible by mechanical means.

Depending on the size of both live and dead trees needing to be removed in order to meet project objectives, hand thinning may not be the preferred method. Hand thinning is usually limited to manual falling and/or removal of trees no larger than 14 inches.

NSI-12. "There appears to be a conflict within the Proposed Action document between the proposed action and design features for PACs on page 5 and page 11. Overall, the USFS is required to be very cautious about treating goshawk PACs, and should only do so if there is a clear fuels objective for treatment. We expect a detailed fuel model to support any proposed fuel treatment within the PAC."

Forest Service Response: We understand and share your concern for treatments within PACs. The High Meadows project proposes treatments within PACs to provide for the long-term persistence of healthy forest and suitable goshawk habitat within the PAC and to restore important habitat elements (e.g., aspen stands) that are located within the PAC. In order to meet the above-stated objectives, prescriptions were designed, consistent with SNFPA (2004) guidance, to 1) protect the forest and goshawk habitat within the PAC from future catastrophic die-off from pine-bark beetle infestation that has already eliminated nearby goshawk habitat, and 2) restore aspen stands, an important element of goshawk habitat, that are currently at risk of complete loss (i.e., type conversion) to coniferous forest.

As indicated above, restoration of aspen stands within the project area may require the removal of larger (over 30 inches dbh) trees in order to meet aspen restoration conditions. The removal of all trees regardless of size is consistent with SNFPA (2004) guidelines for aspen restoration. Current management direction (SNFPA 2004; Standard and guideline #9) was intended to provide clear direction that activities, such as aspen management, are not subject to harvested tree size, basal area retention and/or residual canopy closure limitations that apply to fuel and/or density reduction treatments (as clarified in App. I of Shepperd et al 2006).

NSI-13. The portion of the project occurring in and around PACs does not appear to be located in the Wildland-Urban interface and should follow SNFPA guidelines.

Forest Service Response: Proposed actions for the High Meadows project occurring both within and outside of PACs are consistent with current Forest Plan guidelines for appropriate land allocations.

NSI-14. "We urge the Forest Service to leave as many snags as possible in the goshawk PAC because snags are shown to be important to goshawk habitat. We urge the FS to analyze an alternative that maximizes snag retention in the goshawk PACs to the greatest extent possible without compromising overall landscape level fire behavior objectives."

Forest Service Response: The snag levels that are proposed for retention in the High Meadows project are a minimum. Where possible, and where post project fuels accumulations allow, more snags will be left. Minimum proposed snag retention levels for the High Meadows project are consistent with current Forest Plan guidelines.

NSI-15. "The FS should explain how productive the PAC is relative to other PACs in the Basin."

Forest Service Response: Proposed actions relating to PACs within the High Meadows project area have considered and are consistent with current Forest Plan guidelines relative to PAC productivity.

NSI-16. "We ask that the FS send us copies of the most recent goshawk survey forms for our biologist to review."

Forest Service Response: Results of goshawk survey results will be summarized, as appropriate, in the project biological evaluation, and will be used to inform project level analyses.

NSI-17. "The FS must resolve these conflicting descriptions and identify one unified prescription for PACs in the project area which meet the requirements for PACs. Further, the prescription for hand thinning in Northern Goshawk PACs must also incorporate these requirements."

Forest Service Response: The use of one unified prescription for PACs will not meet the project objectives of treatments within PACs. Please reference the project proposed actions, purpose and need within the project Environmental Assessment document for a description of project objectives related to goshawk PACs. All prescriptions proposed within PACs are consistent with current SNFPA guidelines.

NSI-18. "We further request that the FS provide detailed maps that identify unit locations and the types of treatment in relation to the identified Northern Goshawk PACs and other ecologically important features including CWHR type (especially CWHR 6, 5D, 5M, 4D, 4M)."

Forest Service Response: Vegetation prescription descriptions and locations will be identified for each treatment unit within the project Environmental Assessment document, for additional clarification. Prescriptions both in and outside of northern goshawk PACs will be detailed in prescription descriptions, as appropriate, but will not likely be detailed on project maps.

NSI-19. "The analysis of the project must discuss the preservation of one of the few remaining historic hiking trails in the Tahoe Basin (Cold Creek Trail)."

Forest Service Response: The proposed action is for the Cold Creek Trail to remain multi-use with upgrades for erosion control. The current proposal will be studied as we prepare the Environmental Assessment for this project.

NSI-20. Instead of re-routing the trail, construct a bridge at the top of Cold Creek in the vicinity of the current log bridge to move bicycles from the north side of the trail to the south side of the trail. Bicyclists could use the administrative access road to complete the

loop from Monument Pass to the Powerline Trail. This would eliminate having to move the trail and remove conflicts between bicyclists and hikers/equestrians.

> *Forest Service Response: A crossing in that area is a part of the proposed action. The trail is currently a multiple use trail and is proposed as such in the proposed action. The use of design and education strategies are proposed to reduce use conflict. Use of the road to access High Meadows does not meet the needs of mountain bicyclists in this area because the Cold Creek Trail is considered a destination for this user group.*

NSI-21. "The FS intends to mitigate the conflicts between users by the use of signage. Such signage needs to emphasize that bikers are required to yield to hikers on shared trails."

> *Forest Service Response: The yield triangle is not backed by any regulation and it was born from mountain bike groups proactively minimizing conflicts with other use groups. The Forest Service agrees that it is good practice for mountain bikes to yield to equestrians and hikers.*

NSI-22. "In the interest of safe passage of hikers and equestrians, a narrow trail that does not promote or facilitate faster bicycle speeds should be constructed."

> *Forest Service Response: The practice of reducing speed differentials between use groups to minimize use conflict is a technique the Forest Service will use on the proposed trail system. Trail narrowing and a combination of other techniques will be used to achieve desirable trail experiences for multiple user groups and to reduce use conflicts between different user groups.*

NSI-23. "The document must describe the existing, and potentially heightened conflicts between recreational uses and resource issues in a thoughtful manner, with respect for the very different recreational values that fall under the broad category of "non-motorized" recreation."

> *Forest Service Response: It is expected that implementation of the proposed trail plan would reduce the severity and occurrence of use conflicts by rerouting or upgrading trails with designs that reduce the potential for use conflicts. The Environmental Assessment will include sections which will disclose the impacts to recreational uses and resources.*

Comments from Lahontan

NSI-24. Lahontan must comply with the California Environmental Quality Act (CEQA) whenever permitting is required and would like to make sure that CEQA is not overlooked.

Forest Service Response: CEQA documentation will be completed as outlined in the Memorandum of Understanding (MOU) between the USFS and Lahontan.

NSI-25. "For the Water Board to grant an exemption to Basin Plan prohibition(s), the Water Board must also find: a) the Project is necessary for environmental protection, b) there is no reasonable alternative, including relocation, which avoids or reduces the extent of encroachment in the SEZ, and c) impacts are fully mitigated."

Forest Service Response: As outlined in the Memorandum of Understanding (MOU) between the USFS and Lahontan, the Environmental Assessment for this project will include the necessary information for the Water Board to make a determination to grant an exemption.

NSI-26. "Please provide Water Board staff with Project area maps that detail: the perimeter of the 100-year floodplain and SEZs, existing roads, trails, and stream crossings within the project area, roads and stream crossings proposed for equipment access to the project area (for all stream crossings, please indicate which are proposed for removal or improvement), the partial reroute of the main access road, roads proposed for conversion to non-motorized trails, roads proposed for decommissioning, proposed new trail construction, the location (s) of existing landings within and in proximity to the project area, the location (s) of existing landings proposed for use, the location (s) of proposed new landing construction, the location (s) of any other staging/stockpiling areas, proposed temporary road construction and stream crossings, the location where materials will be excavated (the North Fork fan) for use in constructing new channels (Quarry), and proposed access roads to the Quarry."

Forest Service Response: Forest Service staff will ensure that the appropriate maps are submitted with the Environmental Assessment and when applying for permits. Decommissioning occurs on system roads and trails, restoration occurs on unclassified roads and trails. See section 1.3 of the EA for a more detailed explanation of decommissioning versus restoration.

NSI-27. "Please explain if the temporary roads proposed for timber removal will be the same as, or different from, the temporary roads proposed for the stream restoration activities. Consider alternatives that include routing the proposed roads to avoid impacts to aquatic resources, including meadows, riparian area, etc."

Forest Service Response: Temporary roads proposed for timber removal will be different from the temporary roads proposed for the stream restoration. Generally, temporary roads for the stream restoration will be located within the meadow complex and will not access forested areas.

NSI-28. "Please locate landing (s) outside of SEZs, the 100-year floodplain, and riparian conservation areas."

Forest Service Response: Landings will not be located in SEZ, 100-year floodplain or riparian conservation areas.

NSI-29. "Please specify if the proposal is for one central biomass processing landing and the associated road network that will accommodate chip vans, or if there will be multiple such landings and the required road network."

Forest Service Response: Multiple landings will be required for this project on the average of approximately 1 per every 20 acres of mechanical treatment (113 acres of mechanical treatment total means approximately 5-6 landings) at an average of 1-2 acres apiece. Chip vans will not be used for this project as slash and other residual material will be left in the units.

NSI-30. Please detail how decommissioned and converted roads will be treated and how the proposed and existing roads and trails will be designed, improved and maintained so as to prevent sedimentation of neighboring streams.

Forest Service Response: Sedimentation will be reduced through a variety of techniques: designed stream crossings, increased drainage frequencies, reduced maintenance are a few. Restored roads and trails will be blocked, decompacted, mulched and camouflaged to restore natural hillslope hydrology and prevent sedimentation to surface waters. Decommissioning occurs on system roads and trails, restoration occurs on unclassified roads and trails. See section 1.3 of the EA for a more detailed explanation of decommissioning versus restoration.

NSI-31. "Please present a timeline for Project implementation and include the timing of access road improvements and rerouting. Consider improving the road system prior to use of these roads for this Project."

Forest Service Response: The road system used to access the project area will be improved prior to implementation of mechanical tree removal or ecosystem restoration activities. New roads will be completed before restoration to facilitate access while new roads are being implemented. Decommissioning occurs on system roads and trails, restoration occurs on unclassified roads and trails. See section 1.3 of the EA for a more detailed explanation of decommissioning versus restoration. Tree removal is proposed to begin by hand thinning in the spring of 2010, along with trail construction while ecosystem restoration is planned to begin in late summer 2010. Mechanical tree removal will likely not start until Fall 2010.

NSI-32. "Within the scoping document, the FS states that the ATM will correct "many" erosion, SEZ disturbance, and water quality problems resulting from the existing road and trail system. Please explain the reasoning and criteria used in determining which problem areas may not be acted upon within this Project."

Forest Service Response: Problem areas are prioritized by the potential to impact water quality. Not all SEZ disturbance would be eliminated because trails and roads must sometimes cross SEZs as linear features. These areas will be upgraded with BMPs to minimize impacts.

NSI-33. "Please detail the BMPs that will be implemented during timber operations."

Forest Service Response: A list of BMP's to be implemented during tree removal operations is provided as an appendix to the Environmental Assessment.

NSI-34. "Please address how impacts to the listed beneficial uses of Cold Creek and its tributaries will be avoided, minimized, or mitigated. Beneficial Uses include: Municipal and Domestic Supply, Ground Water Recharge, Water Contact Recreation, Non-contact Water Recreation, Commercial and Sportfishing, Cold Freshwater Habitat, Wildlife Habitat, Migration of Aquatic Species, and Spawning, Reproduction, and Development of Fish and Wildlife.

Forest Service Response: Impacts to these beneficial uses will be discussed in the Environmental Assessment.

NSI-35. "Please specify if there will be a limitation to the amount, or percent, of sod covering harvested from a given area. Also, please verify that areas selected for sod harvesting are appropriate and disclose the criteria used in making the determination."

Forest Service Response: Approximately, 2.23 acres of sod will be need for the stream restoration project. A much larger area has been identified to allow for selective sod harvest. Harvested sod shall consist of above ground and below ground plant materials including leaves, roots and the soil bound by the root mass. Soil mass of sod shall contain a uniform distribution of roots with a minimum 50% root mass by volume to a depth of six inches from the root crown. All sod must be composed of native species, be weed free, and be pre-approved by project botanist and hydrologist or engineer.

Non-Significant Issues

Planning and Implementation Considerations for Bicycles

Two comments (NSI-1 and NSI-2) emphasized the need to inform the public when trails or roads will be impacted from construction and suggested placing signs at trail/road junctions.

NSI-36. "During the construction phase of the trails/roads project, if there will be an anticipated closure I would recommend that the staff provide details to the public as much in advance as possible to prevent issues arising from the closure. This might include PSAs (Public Service Announcements) to the newspaper and postings at trailheads indicating the place and duration of closures and include

detour routes if available. Simply posting signage at the closures will not help." (David Hamilton)

Forest Service Response: Your comment was incorporated into the project design features for this project. PSAs will be done before trail closures, press releases to local newspapers will be sent, and postings at trailheads will indicate the timing and location of closures as well as alternate routes, if available. Restoration of trails will only occur after the new trail has been constructed in order to minimize the inconvenience to trail users. Decommissioning occurs on system roads and trails, restoration occurs on unclassified roads and trails. See section 1.3 of the EA for a more detailed explanation of decommissioning versus restoration.

NSI-37. "I noticed a sign plan is to be implemented. I believe this plan should not only include signage at trailheads, but also at trail/road junctions." (David Hamilton)

Forest Service Response: Signage will be posted at some trail intersections and trail/road intersections according to direction from the Forest Service Trails Handbook.

Construction Suggestions and Timing

These comments (NSI-3 through NSI-6) deal with suggested construction techniques and timing for mountain bike riders and trail users.

NSI-38. "For bike riders, I would anticipate that all new trail construction would have grades allowing riders to ride up as well as down." (David Hamilton)

Forest Service Response: Trails will be designed to Forest Service design standards which are generally "rideable" by mountain bikers in both directions.

NSI-39. "During the re-route and new trail construction I would recommend that the routes include more, longer traverses in areas where the terrain permits." (David Hamilton)

Forest Service Response: The Forest Service will design trails to serve the recreation needs within the confines of the resources. Simply put, trails will be designed to Forest Service Standards and on the highest capability lands. In practice the resources and landscape are the most critical factors to the design of a trail.

Comment Period is Too Short

One commenter felt the scoping period was too short.

NSI-40. "The opportunity for public input is way too short." (Jim Hildinger)

Forest Service Response: The scoping period started with a mailing on March 10, 2007 to potentially interested agencies and individuals. The project was listed on the Forest's Schedule of Proposed Actions on October 1, 2006. Contact information for the project manager was listed in order to give interested individuals a way to ask for more information. The proposed action was available on the forest's website on March 7, 2008. The Tahoe Daily Tribune ran a story on this project to advertise the public meeting on March 20, 2008. A public meeting was held on March 27, 2008 from 6-8 pm at the Forest Supervisor's Office. In addition to the scoping period, a 30-Day Comment period will be provided once the Environmental Assessment has been drafted. This 30-Day comment period will provide the public with the final opportunity to comment on this proposal before a decision is made.

Objection to the Project

One commenter objected to the overall project, stating that the money was better spent focused on other resources.

NSI-41. "It seems like a waste of money doing this project, when the 2 million dollars could be/ should be spent for fire efforts." (Bud Voisinet)

Forest Service Response: There are other projects being planned and implemented by the LTBMU that involve fuels reduction activities (Roundhill Fuels Reduction, South Shore Fuels Reduction, Lake Tahoe Underburn,etc.). These projects are concentrated near the Urban Interface and their objectives are quite different from those of this project.
One of the components of this project involves reducing the fuels around High Meadows. Bark Beetle have killed dense stands of Lodgepole pine around the meadow and increased the fuels in that area.
Another of the primary purposes of this project is to reduce erosion and sediments that enter Cold Creek and subsequently Lake Tahoe. To date, millions of dollars have been spent to help improve the clarity of Lake Tahoe. This project will help aid in that effort.

NSI-42. "I hope that the reasons, for changes to the Cold Creek Trail, are definitely going to improve the environmental condition of the area, because I for one like it the way it is." "It is disturbing to see "improvements" made to public areas that are expensive and not warranted or appreciated."

Forest Service Response: The reasons for proposed changes to the Cold Creek Trail are to establish a sustainable trail that meets current and future use needs. The current trail is located in close proximity to the creek with little drainages. The effect is that the trail is contributing to increased channel volumes,

sedimentation of surface waters, and trail tread erosion. Improvements to the trail will result in decreased future costs for trail maintenance and environmental restoration.

Support the Proposed Project or parts of the Proposed Project

Nine comments (NSI-3 through NSI-11) gave general support to the project, many particularly including the connection to the urban core. Offers of help were also included.

NSI-43. "We support the ban on the use of motorized vehicles in the High Meadow area." (Jennifer Quashnick)

Forest Service Response: Currently, High Meadows is designated as non-motorized. There are no plans to change this designation through this project.

NSI-44. "I think it is important to retain the historic hiking trail in the area." (Jim Hildinger)

Forest Service Response: The current proposal is for the Cold Creek Trail to remain multi-use with upgrades for erosion control. The current proposal will be studied as we prepare the Environmental Assessment for this project.

NSI-45. "…any design that keeps them (mountain bikers) from destroying the terrain with their insidious need to skid on steep slopes is worth doing." (Jim Hildinger)

Forest Service Response: The current proposal is to redesign the Cold Creek Trail and other trails in the area to minimize erosion. The current proposal will be studied as we prepare the Environmental Assessment for this project.

NSI-46. "We believe that bikers don't cause any more erosion than hikers and would like to see Cold Creek Trail remain a multi-use trail whether or not it is moved to another location." (Liv & Jim Seemann)

Forest Service Response: The current proposal is to redesign the Cold Creek Trail and other trails in the area to minimize erosion. The current proposal will be studied as we prepare the Environmental Assessment for this project.

NSI-47. "Do not allow camping in the meadow." (Shirley Taylor)

Forest Service Response: The High Meadows area is currently closed to overnight camping. Camping is only allowed within 300 feet of the Tahoe Rim Trail, but nowhere else within the project area.

NSI-48. We support the project, especially because it proposes a loop trail up to the Tahoe Rim Trail. (Mark Kimbrough)

Forest Service Response: The current proposal will increase the opportunities for hiking in the area by providing a loop trail from High Meadows to Monument Pass and to Star Lake.

Open the Area to Snowmobiles

NSI-49. "I believe this area should be open to snowmobiling." (Michele Kruger)

Forest Service Response: Current management of the High Meadows area is to provide for non-motorized public access. This project is intended to assign current management area direction to this property and not to change the management. Resource concerns in the area include sensitive wildlife species which nest during the same period when snowmobiles would be in the area.

Add More Trails

NSI-50. "…the area could use one or two other trails up to the TRT." "…a trail straight east out of High Meadows or one that goes toward Freel pass would be a new experience for users and make out and back loops for expanding the recreation in an area that is one of the most interesting and overlooked around the Lake." (George Gusses)

NSI-51. "Add a trail section from just NE of the NE corner of the private property to run generally SE to connect with the proposed new trail west of the Meadows. This would create a "Y" NW of the Meadows, which should 1) replace possible user created "cutting" through the same area, 2) encourage "looping" using the road as well as the single track from the ford to the meadows, and 3) reduce the quantity of user conflicts by diverting some traffic onto the road for at least one leg of the trip." (Mark Kimbrough)

Forest Service Response (NSI-50/51): The purpose of this project is to reduce effects of the unclassified road and trail system and protect resources while providing for current and future recreation needs. Expanding the trail system in this area is not being addressed at this time due to the maintenance costs associated with new trails.

Concern over impacts to Private Property

NSI-52. Will the water ditch from the Southeast corner of my property be impacted by this project? (J.B. Lekumberry)

Forest Service Response: The ditch in question is outside of the proposed meadow restoration area and would not be impacted by that portion of the project. Roads or trail restoration in that area would be done so as to not impact water flows from that ditch. Trails constructed in that area would be designed so that water flows to that ditch would also not be impacted.

Water Rights

NSI-53. Can you give me the History of the water rights (of Cold Creek)? (Marjorie Springmeyer)

Forest Service Response: There are no current water rights in the project area.

Significant Issues Considered for Alternative Development

Many Commenters (SI-1 through SI-10) expressed concern over mountain bike use of the Cold Creek Trail. Two commenters expressed concern over changing the trail from its current use for mountain bikers (SI-11/12). Comments were also received regarding keeping the trail in its current location and also adding more trails. Where possible, responses have been grouped according to the issues and responded to at one time.

Trail Use

SI-1. "I'd like to see the area free of atvs, mountain bikes and any development of course. Increased erosion would adversely affect the watershed and quality of the habitat. Low impact use such as hiking should be allowed." (Alice Jones)

SI-2. "It is a good idea to separate the mountain bikes from the hikers, and any design that keeps them from destroying the terrain…" (Jim Hildinger)

SI-3. "I would like to see the original Cold Creek Trail restricted to hikers. I would like the bikers restricted to using the dirt road that starts from the gate at the end of High Meadow road and goes up the creek on the other side." (Liana Zambresky)

SI-4. "We should leave the Cold Creek Trail as-is." (Bud Voisinet)

SI-5. "The quality of the hiking experience is greatly compromised by sharing trails with bicycles." "Please consider closing the current trail (above where the crossing to the road is) to bicycles & leaving the trail "as-is" for hikers." (Gay Havens)

SI-6. "Please leave this one trail just for hikers." (Allen Havens)

SI-7. "Yes, it is a good idea to separate the mountain bikes from the hikers…" (Jim Hildinger)

SI-8. "I would like to see the original Cold Creek Trail restricted to hikers. I would like the bikers restricted to using the dirt road that starts from the end of the gate at the end of High Meadows road and goes up the creek on the other side." (Liana Zambresky)

SI-9. "The only changes that I would like to see are that it (the Cold Creek Trail) be limited to "foot travelers"." (Julie Nelson)

SI-10. "It would be ideal if we hikers could hike the trail without worrying about bikers descending on us while our attention is diverted toward enjoying the beauty of the creek. How about having the bikers use the fire roads and saving the present trail for hikers exclusively?" (Judy and Richard Kato)

SI-11. "I think bikes should be eliminated from the trail, and asked to use the road." "Don't re-route any of the trail until you have closed it to bikes and see if the areas you think are problems continue to be problems." (Sally Loomis)

> *Forest Service Response (SI-1 through SI-11): The proposal is to keep all trails in the area non-motorized multiple use.*

SI-12. "We don't want to see the Cold Creek Trail turned into an intermediate level, overly smoothed out, downgraded golden gate park trail. (Gary Bell)

SI-13. "I am requesting that any re-route of the Cold Creek Trail not be downgraded from its current level. Currently, it is one of our last advanced mountain bike trails and it is extremely important that it not be downgraded to an intermediate or lesser level trail." (Becky Bell)

> *Forest Service Response (SI-12/13): Trails that are to remain as multiple use, will be designed to achieve the goals of resource protection and meeting use needs within the Forest Service trail design standards.*

Keep the Trail Where It Is Currently Located

SI-14. "We like the Cold Creek Trail in its present location because of the proximity to Cold Creek and would not like to see it relocated." (Liv & Jim Seemann)

SI-15. "The current location of the Cold Creek Trail is one of the best locations for hikers. We love looking at the stream, we love watching the aspens change, we love the steep parts of the trail." (Gay Havens)

SI-16. "Please don't change the hikers trail along the creek." (Allen Havens)

SI-17. "I really do not want the Cold Creek Trail up to High Meadow to be re-routed and the original obliterated." "Please, if there are some sections that must be re-routed, just make a quick switchback and go right back to the trail. Please leave as much as possible as-is. (Sally Loomis)

SI-18. "Evaluate other alternatives that do not move the Cold Creek Trail from its current alignment. (League, Sierra Forest Legacy, Sierra Club)

SI-19. "We are frequent users of this conveniently located beautiful trail and would not like to see it relocated away from the creek." (Judy and Richard Kato)

Forest Service Response (SI-14 through SI-19): The Forest Service will examine other alternatives to the proposed action, including the no-action alternative which considers the trail in its current alignment. Alternative 3 was developed in response to these comments.

Appendix C
Monitoring Plan

Appendix C: High Meadow Restoration Project

Monitoring and Adaptive Management Plan

Monitoring

This section describes the monitoring that would be required for the High Meadow Restoration Project. The purpose of project monitoring is to track the implementation of the design features found in Section 2.2 and the prescribed BMPs (Appendix A), and in some cases, to measure their short-term effectiveness at protecting resources.

Types of Monitoring

Implementation monitoring consists of visual monitoring of project treatment areas, roads, stream crossing, landings, etc. to ensure that all management practices and design features are implemented as prescribed, including those designed to prevent sediment delivery and protect water quality (e.g., erosion control measures, riparian buffers, waterbars, critical dips).

Effectiveness monitoring consists of visual monitoring to evaluate the effectiveness of the prescribed design features and management practices at meeting their objectives. It includes evaluating the effectiveness of management practices designed to prevent sediment delivery and protect water quality (e.g., erosion control measure, riparian buffers, waterbars, and critical dips).

Required Monitoring

For all aspects of the High Meadow Restoration Project the Best Management Practice Evaluation Program (BMPEP) protocols developed by the USFS and the CA State Water Resources Control Board (USDA FS, 2002) will be followed to provide qualitative information about BMP implementation and effectiveness. The R-5 BMPEP On-Site Evaluation form will be used to rate the effectiveness of the BMPs.

Temporary Best Management Practices are required during all construction in the Tahoe Basin that involves soil disturbance. Temporary BMPs differ from permanent BMPs as they are designed to remain effective only until construction is complete and permanent BMPs can be applied. Depending on the nature of the activity and site characteristics, a variety of different BMPs may be employed to keep sediment from being mobilized. The LTBMU's Temporary BMP Monitoring program is designed to monitor BMPs applied to forest construction and restoration projects which have the potential for short term adverse impact to soil and water quality. Patterned after the Region 5 BMPEP process, protocols were developed in 2006 to systematically assess and document whether temporary BMPs were implemented, maintained, and effective at preventing adverse impacts to water quality. Protocols for this program are documented in the LTBMU Temporary BMP Monitoring Plan (Norman and Breibart, 2007) and were incorporated into all Storm Water Pollution Prevention Plans (SWPP) for construction and restoration projects on the Lake Tahoe Basin Management Unit in 2006.

Ecosystem Restoration Monitoring

Design implementation inspection and reporting

To be documented in a daily diary and presented in a final construction report shortly after project completion. This report would document any problems encountered during project implementation and changes that occurred between final design and on the ground implementation, including a discussion on impacts to meeting project objectives, if any.

Soil and Water BMP monitoring

As part of the SWPPP as required by the Lahontan Regional Water Quality Control Board, SWPPP monitoring would include regional Best Management Practices Evaluation Program (BMPEP) monitoring as described in the Regional BMPEP Monitoring Protocols (USDA FS, 2002), temporary BMP monitoring as described in the LTBMU TBMP Monitoring Plan (Norman and Breibart, 2007), and short term stream flow turbidity monitoring.

Vegetation monitoring

Sensitive plant surveys have been completed within the meadow complex. Monitoring would occur during project implementation to avoid impacts to sensitive plant locations.

The LTBMU botanists would be notified prior to project implementation activities in order to insure sensitive plant areas are flagged in accordance with the design criteria. If any new sensitive plants or sensitive plant communities are discovered during project implementation an LTBMU botanist would be notified so they can be flagged as above. For fen areas, LTBMU botanists would be on site to monitor implementation of design features to protect these features and their plant communities. Sensitive plant and fen areas would be monitored post implementation to determine effectiveness of design criteria.

Invasive Weeds

LTBMU noxious weed coordinator would be notified prior to project implementation activities in order to ensure that existing noxious weed infestations are treated or flagged.

Implementation of noxious weed prevention practices would be monitored in compliance with the state and SNFPA (2004) standards. Require washing equipment before entering the project area when: equipment is coming from outside the Lake Tahoe Basin; if the previous location is unknown; or the previous location is infested with weeds. Equipment would be inspected after washing to insure the absence of soil, seeds or plants materials.

After the project is completed for each year of ongoing implementation, the LTBMU noxious weed coordinator would be notified as to the treatment units where activities occurred that year. The LTBMU noxious weed coordinator would inventory the high risk areas (e.g. roads and landings) within the project footprint after project implementation to enable actions to ensure additional weed species do not become established in the areas affected by the project and to ensure that known weeds do not spread. All noxious weed infestations within the project footprint would be monitored and treated post implementation for three years or until eradicated.

Heritage resource monitoring

Due to the close proximity of recorded cultural resources, a heritage resource specialist would monitor ground disturbing activities associated with this project. All heritage resource sites will be flagged and avoided per design feature.

Soil moisture monitoring

An SEZ Risk Assessment Rating will be developed for the High Meadow Restoration Project area before implementation of mechanical vegetation treatments. The rating will be based on LTBMU's Heavenly Valley Creek SEZ Demonstration Project with further revisions based on lessons learned from experience gained using this protocol since the original implementation. LTBMU staff will work with TRPA and Lahontan to refine the rating criteria. A draft SEZ Risk Assessment Rating for High Meadow is found in the Project Record (Document F).

Monitoring soil moisture would be used to determine when soil conditions are suitable for mechanical equipment operations, in order to avoid detrimental compaction. Soil moisture conditions are required to be relatively dry for mechanical treatment operations. In all SEZs within mechanical treatment units (stands 1, 2 and 5) and where soil moisture conditions are in question in upland stands, moisture determinations would be made immediately prior to implementation using the protocol presented on the first page of the SEZ sensitivity rating system in.

BMP and design feature implementation for vegetation management actions

Implementation monitoring would occur in each treatment unit, as well as other areas affected by the High Meadow Restoration Project vegetation management actions such as access roads, staging areas, water supply areas, etc. This would include completing a checklist that contains BMPs ad design features contained in the NEPA and contract documents that apply to soil and water quality protection. The checklist would require visits to the treatment stands before, during and after implementation to ensure that all BMPs and design features are carried out on the ground as they were prescribed.

ATM Monitoring

Storm Water Pollution Prevention Program (SWPPP)

The SWPPP practices and features would be incorporated into the specifications for road design on each road that is constructed or reconstructed as well as all stream crossings. It is not included at this time, it will be provided later as part of the roads package. Inspections or monitoring of the SEPPP practices would be done by Forest Service personnel or a qualified contractor.

During the summer, SWPPP inspections are made once a month, before forecasted storms when possible and after storms. A storm lasting more than 24 hours requires an additional inspection during the storm, when access and safety for personnel allows. If safety or access concerns prevent inspection during a storm, the inspection would occur as soon as access allows and conditions are safe for accomplishment of

the inspection. If the SWPPP design is not working as planned, changes would be made in the field to correct the problem and those changes would be recorded on the SWPPP drawings with copies sent to permitting agencies. Copies of all inspections are kept along with the SWPPP drawings.

Vegetation monitoring

Sensitive plant surveys have not been completed for the ATM actions proposed in this project. Prior to project implementation, surveys would be conducted to determine if any sensitive plant species have colonized area to be disturbed within project area. If any new sensitive plants or sensitive plant communities are discovered during pre-project surveys for project implementation these areas would be flagged an avoided and new trail alignment would be adjusted accordingly. Sensitive plant areas would be monitored post implementation to determine effectiveness of design criteria.

Construction and Reconstruction

Inspect construction and reconstruction as it is occurring to insure that BMPs are implemented according to the site-specific requirements for individual roads and trails.

Drainage

Insure that drainage structures are installed per contract BMPs. Continue to monitor function of drainage structures after storm events producing one inch or more precipitation, during spring runoff and at the end of each season of use. If this monitoring indicated a need, maintain all drainage structures during the season of use and as needed to protect soil and water quality over the winter.

Adaptive Management

Upon completion of the Cold Creek Trail reconstruction and the installation of right-of-way courtesy signing; an adaptive management approach will be used to monitor and manage trail use. The goal of this approach is to minimize the extent of conflicts between user groups, reduce or eliminate natural resource issues and manage this trail by implementing restrictions, if necessary, which are commensurate with the issues. Monitoring will measure the levels of trail use for hikers, mountain bikers and equestrians and will focus on identifying the extent of public safety issue associated with each user group. Monitoring will also focus on identifying new or existing resource issues specific to trail segments.

Monitoring will be implemented for a minimum of two seasons to clearly identify the nature and extent of possible resource and public safety issues. User feedback will be solicited from the members of the public on the High Meadow Project mailing list as well as unsolicited feedback. Based upon the monitoring results, Adaptive management will be applied to address each issue. On-site mitigation will be the first step to resolve possible natural resource or public safety issues. While a range of future management options is possible, the incremental choices, if

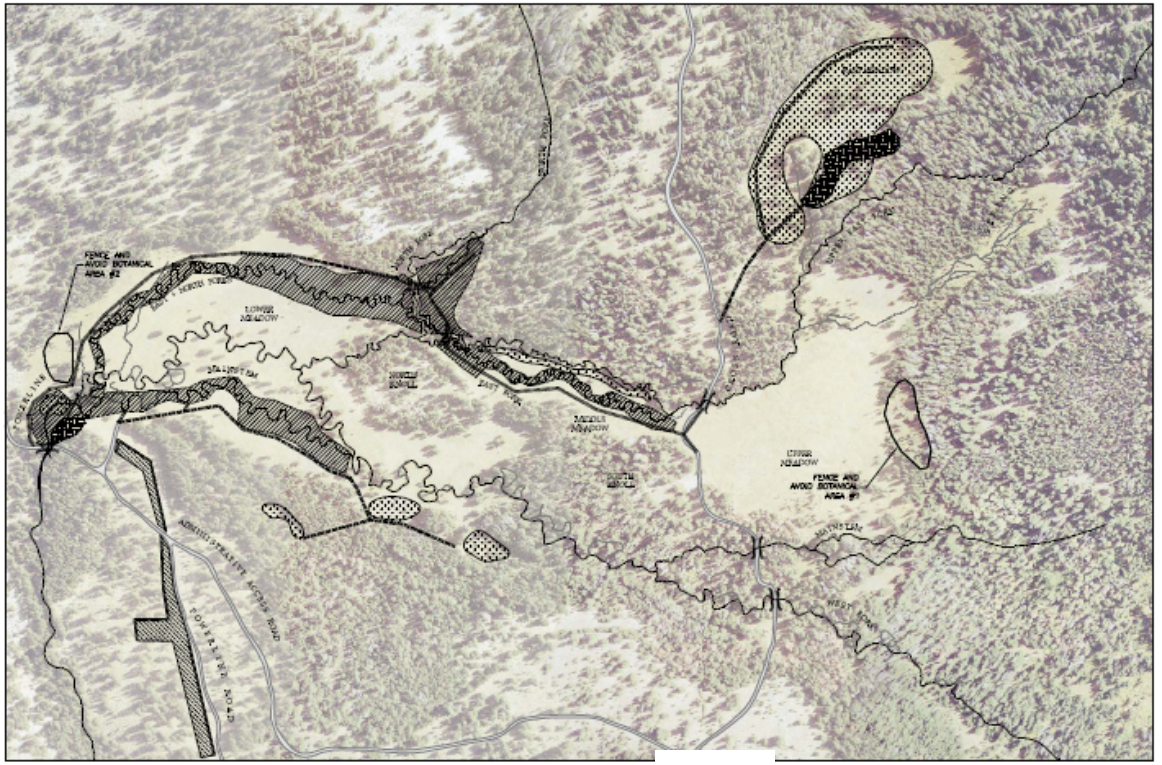
needed, will begin with informal resolutions between user groups and could escalate to conflict resolution or trail closures for certain groups. Potential actions may include additional signing and education, odd/even management (separating allowed uses by odd/even days), additional trail re-routes, or elimination of use by certain users (hikers, mountain bikes, equestrian, etc). The ultimate resolution will be strongly guided by the nature and extent of monitoring results and future management will remain flexible so they can adapted to these results.

Appendix D
Channel Restoration Plans

A-1
Location of New Stream Channel
High Meadow Restoration Project

PROJECT AREA MAP
SCALE: 1"=300'

Note: Blue lines indicate existing stream channel alignment. Yellow lines indicate proposed stream channel alignment.



PHASING AND ACCESS PLAN – Phase 1

TYPICAL CONSTRUCTION TASKS – Phase 1

ACTIVITIES SHALL INCLUDE BUT ARE NOT LIMITED TO THE F

YEAR 1 (AUGUST 1ST TO OCTOBER 15TH)

1. TRANSPORT EQUIPMENT AND MATERIALS TO THE PROJECT SITE. IMPLEMENT NOXIOUS WEED CONTROL. PREPARE TEMPORARY STAGING AND STOCKPILE AREAS.
2. INSTALL TEMPORARY ACCESS ROADS.
3. INSTALL TEMPORARY SILT FENCE AND E.S.A. FENCE.
4. INSTALL TEMPORARY SANDBAG DAMS AND DIVERSION PIPES IN EXISTING CHANNEL.
5. SALVAGE TOPSOIL AND SOD FROM NEW CHANNEL, UPPER EAST FORK CHANNEL FILL, AND TERRACE AREAS.
5. EXCAVATE NEW CHANNELS AND TERRACES AND HAUL MATERIALS TO UPPER EAST FORK CHANNEL FILL AREA AND TEMPORARY STOCKPILE AREAS.
6. INSTALL CHANNEL SUBSTRATE, RIFFLES, BOULDER WEIRS, AND TEMPORARY RIFFLE PROTECTION.
7. INSTALL SOD.
8. LOCATE WILLOW CUTTINGS FROM NEARBY SOURCES AND INSTALL WILLOW STAKES AND LIVE FASCINES.
9. INSTALL TEMPORARY IRRIGATION.
10. INSTALL WINTER EROSION CONTROL AND PREPARE DIVERSION FOR WINTER SEASON.
11. REMOVE ACCESS ROADS, EQUIPMENT, FENCES, AND MATERIALS.
12. REVEGETATE DISTURBED AREAS.

LEGEND

	YEAR 1 DISTURBANCE AREA (ACRES)	SURFACE TREATMENT/REVEGETATION
WET MEADOW ACCESS ROAD (APPROX.)	0.7	REMOVE TEMPORARY ACCESS ROAD
DRY UPLAND ACCESS ROAD (APPROX.)	1.2	RIP AND MULCH
EXISTING DIRT ROAD (APPROX.)		
DIVERSION PIPE (APPROX.)		
STOCKPILE AREA WITH SILT FENCE (APPROX.)	1.6	RIP AND MULCH
SOD HARVEST AREA (APPROX.)	2.0 HARVEST (WORK AREA IS SHOWN TO ALLOW SELECTIVE HARVESTING)	PLUG AND SEED
TEMPORARY STREAM CROSSING (APPROX.)		
CHANNEL AND TERRACE CONSTRUCTION DISTURBANCE AREA (APPROX.)	6.9	TOPSOIL, PLUG, AND SEED
EXISTING CHANNEL FILL AREAS (APPROX.)	1.0	TOPSOIL, PLUG, AND SEED

S:\BWE_GIS\PROJECTS\LGPS\HIGH_MEADOW\00561_00\MAPDOC\2009_APRIL\A2_PLANS_YEAR1.MXD (04-23-09)

A-2
Specific Activities Associated with Channel Restoration Phase 1
High Meadow Restoration Project

PHASING AND ACCESS PLAN Phase 2

TYPICAL CONSTRUCTION TASK Phase 2

ACTIVITIES SHALL INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING TASKS:

YEAR 2 (PRIOR TO AUGUST 1ST)

1. INSTALL TEMPORARY FLOW DIVERSION STRUCTURES BETWEEN EXISTING CHANNELS AND NEW CHANNELS.
2. PERIODICALLY FLUSH NEW CHANNELS.
3. RELOCATE FISH AND AQUATIC WILDLIFE FROM OLD CHANNELS TO LOWER MAINSTEM CHANNEL.
4. DIVERT FLOW INTO NEW CHANNELS.
5. REMOVE TEMPORARY RIFFLE PROTECTION.

YEAR 3 (AUGUST 1ST TO OCTOBER 15TH)

1. TRANSPORT EQUIPMENT AND MATERIALS TO THE PROJECT SITE. IMPLEMENT NOXIOUS WEED CONTROL.
2. INSTALLTEMPORARY ACCESS ROADS.
3. INSTALL TEMPORARY SILT FENCE AND E.S.A. FENCE.
4. DIVERT FLOWS INTO NEW CHANNELS.
5. SALVAGE SOD, GRAVEL, AND TOPSOIL FROM CHANNEL FILL AREAS.
6. FILL EXISTING CHANNELS AND INSTALL SOD.
7. INSTALL WINTER EROSION CONTROL.
8. REMOVE ACCESS ROADS, EQUIPMENT, FENCES, AND MATERIALS.
9. REVEGETATE DISTURBED AREAS.

LEGEND

	AREA (ACRES)	SURFACE TREATMENT/REVEGETATION
WET MEADOW ACCESS ROAD (APPROX.)	0.2	REMOVE TEMPORARY ACCESS ROAD
DRY UPLAND ACCESS ROAD (APPROX.)	0.9	RIP AND MULCH
EXISTING DIRT ROAD (APPROX.)		
DIVERSION PIPE (APPROX.)		
STOCKPILE AREA WITH SILT FENCE (APPRX	1.0	RIP AND MULCH
SOD HARVEST AREA (APPROX.)	0	PLUG AND SEED
TEMPORARY STREAM CROSSING (APPROX.)		
CHANNEL AND TERRACE CONSTRUCTION DISTURBANCE AREA (APPROX.)	0.6	TOPSOIL, PLUG, AND SEED
EXISTING CHANNEL FILL AREAS (APPROX.)	0.6	TOPSOIL, PLUG, AND SEED

A-3
Specific Activities Associated with Channel Restoration Phase 2
High Meadow Restoration Project

Appendix E
Trail and Road Management Table

Trail Name	Trail Type	Trail Class	Use	Length
Monument Pass Trail	Native Surface Trail	2 – 18 to 24 inches wide.	Trail would be designed for bicycle use and would be managed for hiker, biker and horse use. All motorized use prohibited.	2.1
Cold Creek Trail	Native Surface Trail	2 – 18 to 24 inches wide.	Trail would be designed for hiker use and would be managed for hiker and biker use. Horse use would be allowed but discouraged. All motorized use prohibited.	3.2
Star Lake Trail	Native Surface Trail	2 – 18 to 24 inches wide.	Trail would be designed for bicycle use and would be managed for hiker, biker and horse use. All motorized use prohibited.	3.4
Road Name	**Road Type**	**Road Maintenance Level**	**Road Design Level**	**Length**
12N21	Gravel	2 – High clearance vehicles. Long term use of the road would be to maintain level 2. No change from current use.	Road is designed to Traffic Service Level D (per Forest Service Handbook 7709.56, Chapter 4). High clearance vehicles such as SUV's and pick ups are considered the design vehicle with critical vehicle being an American Association of State Highway and Transportation Official (AASHTO) H20 vehicle (typically a dump truck type vehicle.	5.7
12N21A (Dickinson Bypass)	Gravel	2 – High clearance vehicles. Management would be to maintain level 2. No change from current use.	Use of the road is for the power company to access the powerline for maintenance. Road is designed to Traffic Service Level D, same as 12N21.	0.5

Appendix F
Response to Comments on May 2009 Environmental Assessment

Response to Comments
High Meadow Restoration Project

In response to the legal notice for the 30 day comment period for the Environmental Assessment (EA), ten (10) comment letters were received. One additional letter was postmarked a day after the comment period ended and was not considered (36 CFR 215.6 (a)). The comments and the Forest Service (FS) responses are as follows:

Comment Letter A – Gay Havens

Comment #1: The EA acknowledges that relocating the Cold Creek Trail (the Proposed Action) would adversely affect the scenic value of that trail. Alternative 3 would also affect the scenic value of the trail, as removing the steep sections would move the trail away from its current location, which is part of the scenic and recreational value.

Forest Service Response: The need for the project is responsive to ongoing sedimentation problems that can adversely affect the stream channel and downstream beneficial uses. The EA (pp 38-46) disclose that sedimentation will be substantially reduced by both the Proposed Action and Alternative 3. Also see Project Record Document E4 for WEPP modeling results, which quantifies the reduction in sedimentation likely to enter Cold Creek from the Upper Cold Creek Trail. The development of Alternative 3 was based upon public comments such as yours and is intended to retain much of the scenic value of the current trail location while relocating portions of the existing user created trail. Of the approximately 6,134 feet of the Cold Creek Trail in Alternative 3 (EA, Figure 5), approximately 1,910 feet of the Cold Creek Trail (re-route segments 1, 3 and 5; EA, Figure 5) would be moved slightly closer to the creek, improving access to the recreational and visual experiences associated with the creek and aspen stands. An estimated 1,130 feet of the trail would remain in its existing location. Only one reroute, a 2,278 foot segment will move the trail approximately 750 feet upslope from the existing alignment to bypass a steep, erosive segment adjacent to the stream to address water quality concerns. Overall, this approach addresses the sedimentation problems to keep public access on the trail while minimizing environmental effects. As discussed in the EA (pp 42-46), modeling of estimated sedimentation from Alternative 3 indicates that sedimentation and the Upper Cold Creek Trail surfaces would be reduced by approximately 80% as compared to taking no action.

Comment #2: The Upper Cold Creek Trail should be closed to mountain bike use.

Forest Service Response: The Proposed Action is driven by the concern for environmental impacts from the current trail location. The sedimentation concerns are related to all uses (including but not limited to mountain bikes, hikers, and equestrian use), and the fact that the trail does not meet current FS design standards and does not receive regular maintenance (as it is not a system trail). The Action Alternatives, 1 and 3, do not propose to change the allowable uses on the trail. This action may be considered in the future, based upon ongoing

monitoring of environmental effects and the degree of user conflicts. Design features have been incorporated into the project (EA, section 2.2.4) to minimize user conflicts and the Monitoring Plan (Appendix C) will provide information for possible future adjustments to user levels and/or access, as well as trends in environmental conditions.

Comment #3: Additional monitoring of use levels should be completed before any changes are made to the trail.

Forest Service Response: The purpose of this project is to reduce the environmental effects associated with sedimentation and erosion along the existing trail location. FS specialists have identified these impacts during monitoring of the trail for trail use. The FS will continue to monitor visitor use levels and types and may consider changes in user access based on the results of monitoring.

Comment #4: We urge you to do nothing to the current trail location. Both the Proposed Action and Alternative 3's seven re-routed sections would eliminate the scenic value and "destination" experience that hikers seek.

Forest Service Response: We understand the intrinsic value that the current trail location provides to many users. The Upper Cold Creek Trail is not a FS classified trail and does not meet FS trail standards in its current condition. The EA clearly acknowledges the scenic and recreational values that are currently represented (EA, pp 46-58). The Proposed Action is fully responsive to the environmental concerns that must be addressed in order to protect the environment of Cold Creek and downstream uses. In addition, Alternative 3 addresses not only the sedimentation concerns but is responsive to recreational values by retaining approximately 1,130 feet of the current trail location and moving 1,910 feet of the trail closer to Cold Creek.

Comment Letter B – Donald Heath

Comment #1: I urge you not to change the current location of the Upper Cold Creek Trail. Widening the trail to accommodate more mountain bike traffic would not be good for the steep terrain of the trail.

Forest Service Response: The Proposed Action and the re-routes associated with Alternative 3 would be designed to current trail construction standards that would accommodate all types of uses. This trail will be a Trail Class 2, typically constructed at a width of 18" to 24". The trail reroutes are not being proposed to accommodate or encourage more mountain bike use. In addition, both actions are intended to reduce the trail's locations on steep slopes so that sedimentation and erosion will be reduced. Please see responses to Comment Letter A, Comment 1 and 4, for discussions of the scenic values associated with the Proposed Action and Alternative 3.

Comment Letter C – Mark Mallatt

Comment #1: Mr. Mallatt concurs with the need for and the proposal to relocate the trail to a designed standard that reflects proper engineering considerations.

Forest Service Response: Alternative 3 is consistent with your comment.

Comment Letter D – Liana Zambresky

Comment #1: Commenter supports Alternative 3 and wishes to keep the Upper Cold Creek Trail in its current condition and location as much as possible. She also does not believe that "all foot paths should be turned into roads to accommodate mountain bikers…"

Forest Service Response: Alternative 3 is consistent with your comment. The FS is proposing to bring the Upper Cold Creek trail up to FS design standards so that all users have adequate access while minimizing environmental impacts. This trail will be a Trail Class 2, typically constructed at a width of 18" to 24". The trail reroutes are not being proposed to accommodate or encourage more mountain bike use. The trail would continue to be open to multiple non-motorized use and there are no proposed changes to these allowed uses. The managed trail would reduce potential conflicts with user information and trail design. See the response to Comment A2, which addresses the concern about conflicts between different trail users and how the FS intends to monitor these potential conflicts prior to considering any possible changes in use.

Comment Letter E – Washoe Tribe of Nevada and California

Comment #1: The Washoe Tribe supports the proposed project and asks the Forest Service to contact the Tribe in the event that any point artifacts are located during the project's implementation.

Forest Service Response: Alternative 3 is consistent with your comment. The EA (pg 25) contains several design features to ensure that known cultural sites are protected and that appropriate protection measures are taken in the event that new sites or artifacts are discovered during implementation.

Comment Letter F – Barbara Shirahama

Comment #1: The commenter supports the meadow restoration and encourages that no changes be made to the current location of the Upper Cold Creek Trail. The commenter states "Restore the meadow…but make no changes to the trail… Let the road be the High Meadow downhill and keep the trail as magical as it has always been."

Forest Service Response: Alternative 3 is consistent with your comment. See the response to Comment A2. The FS is striving to meet the need for environmental protection while recognizing the desires of trail users to retain the scenic and recreational values currently afforded by the Upper Cold Creek trail. The FS did consider an alternative that would have either eliminated mountain bike use or changes the use periods for different users, however this alternative was not considered in detail due to a lack of adequate information regarding the level and scope of user conflicts (EA, pg 23). The FS intends to monitor the user experiences and use levels after the project is completed. Any consideration for changing the allowable uses would be based on this monitoring information and user experiences.

Comment Letter G – J.B. Lekumberry on behalf of the Giovacchini Family

Comment #1: The project would adversely affect our access to our historic water rights by restoring 6.4 miles of unclassified roads, particularly the Ridge Road. This action would have an impact on our family business associated with our private property by eliminating or reducing access for maintenance and access to our water rights. It would also affect our ability to continue our historic uses on our property.

Forest Service Response: A review of the legal rights of others to use any non-system roads proposed for restoration did not reveal any such rights. The Ridge Road (FS 12N21) does have a reciprocal easement, this decision will not change access on this road. A review of the Final Summary of Title (See Project Record Document E18) and the Grant Deed (See Project Record Document E19) did not reveal any easement past the eastern boundary of the private parcel.

A search of the California State Water Boards Water Rights database did not reveal any appropriative water right within the project area. The only water rights in the project area are Riparian Water Rights that belong to the United States (See Project Record Document E18). Riparian Water Rights are those where water is extracted for use on lands that are directly adjacent to the stream. Any owner of a parcel immediately adjacent to a water course (e.g. the property boundary is delineated by the waterbody) has the right to take water for domestic and agricultural use at any time unless specific deed restrictions are stated in the title to the land. Also, riparian water rights cannot be transferred to non-riparian owners. Therefore, the property owners have riparian water rights on Cold Creek where it directly abuts their land (lower on Cold Creek) and on any stream within their property boundaries.

Comments 2 – 5 are being responded to in a separate document.

These comments deal with FS road 12N21 and the reciprocal easement that are not included in this decision. These comments will be addressed before the decision on this portion of road is made.

Comment #6: Implementation of the project and public access on the Ridge Road may lead to damage to our private property and to the road on our property. We wish to pursue a formal road use agreement to ensure proper maintenance of the road and to avoid any impacts to our property.

Forest Service Response: We agree that a formal road use agreement should be done for FS road 12N21. Temporary and permanent road improvements would be made with this project, similar to the work on the lower road that the FS has completed in the past. FS access to the project area will continue on the 12N21 road according to the reciprocal easement. The limited scope of mobilization needed for restoration will not irreparably damage road 12N21. We are not aware of any damage done to private property as a result of public use of road 12N21.

Comment Letter H – Steve Cannon

Comment #1: The definitions of "mechanical and manual methods" for removing the dead trees are not clear. You should clarify the definitions and explain the rationale for each use.

Forest Service Response: The EA (pp 11-13) includes both general and stand-specific discussion about the methods proposed for removal. The FS intends to use chainsaws to fall and limb the dead trees. This use of chainsaws is considered a manual method. If the felled trees are going to be removed for either commercial firewood or for other commercial purposes, equipment such as small skidders and/or cut-to-length mechanized equipment would be used to move the material to the landings. These are considered mechanical methods for removal. The Lake Tahoe Basin Management Unit (LTBMU) has a 30% slope limitation for all ground-based equipment. No mechanized equipment of any type is proposed to operate in stands greater than 30% slope. Also, mechanized ground-based equipment will be excluded from wet areas, stream zones, etc. regardless of the slope unless conditions are consistent with the Forest protocol to operate within such areas. These are areas adjacent to meadows or streamside environment zones where downed trees may be left in order to avoid impacts to sensitive soils or to protect sensitive plant habitat.

Comment #2: The EA does not specify how the removed dead trees would be disposed of, such as fuelwood or commercial timber sale. The commercial value is deteriorating, and the reduced economic value of delaying the removal should be considered a significant issue. In addition, the EA does not specify which kind of contract will be utilized (service contract versus timber sale contract).

Forest Service Response: The EA (pg 12) acknowledges that removed trees would be disposed of by a variety of options, including fuelwood, biomass, or sawlog. The specific method of disposal is an administrative decision that will be made as the project is implemented. The purpose of this project is to restore ecosystem function (EA, pp 7-10) therefore; these trees are being removed for environmental not economic reasons.

Comment Letter I – Craig Anderson

Comment #1: Mr. Anderson supports the project, noting that both the Proposed Action and Alternative 3 would improve trail conditions.

Forest Service Response: Alternative 3 is consistent with your comment.

Comment Letter J – Sally Loomis

Comment #1: The commenter is supportive of Alternative 3, and hopes that the existing trail location will be kept as much as possible to retain the current scenic and recreational experiences.

Forest Service Response: Alternative 3 is consistent with your comment.

Comment #2: The commenter is concerned that the trail relocations will increase mountain bike traffic and the experience of hikers on the unique current trail location will be lost. The Forest Service should consider closing the trail to mountain bikes.

Forest Service Response: See the response to comment A2. The FS intends to monitor the user experiences and use levels after the project is completed. Any consideration for changing the allowable uses would be based on this monitoring information and user experiences.

Comment Letter K – Steve Cannon

This letter was postmarked June 24, which is one day after the comment period has ended. Therefore it will not be addressed in this response to comments (36 CFR 215.6 (a)).