# Decision Memo

## Spooner Hazardous Fuels Reduction and Healthy Forest Restoration Project

USDA Forest Service

Lake Tahoe Basin Management Unit

Douglas and Washoe Counties and Carson City, Nevada

### Background

The Spooner Hazardous Fuels Reduction and Healthy Forest Restoration Project (Spooner project) is located on both sides of portions of Highway 50 and Nevada State Route 28, between Logan House Creek/Lincoln Park (to the south) and Sand Harbor State Recreation Area (to the north) within the Lake Tahoe Basin Management Unit (LTBMU). The project area includes approximately 17,200 acres of mixed conifer, Jeffrey pine, and patches of mixed brush species at elevations from approximately 6,200 to 7900 feet above sea level. The project incorporates the communities around Logan Shoals, Cedarbrook, and Glenbrook for vegetation and fuels treatments. This project's intent is to implement the recommendations described in the 2007 Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy for the project area.

The needs for the project are to treat areas in Wildland Urban Interface (WUI) defense and threat zones to:

- Reduce the potential for a catastrophic wildland fire in the area by reducing wildland fire intensity and potential for sustained crown fire and long-range spotting.
- Move the project area toward a pre-fire suppression vegetative condition related to stand density, tree size class, and species composition to provide for healthy forest conditions.
- Create conditions that enable the managed reintroduction of fire into these fire-adapted ecosystems.
- Provide for defensible space adjacent to communities in the project area where fire suppression operations can be safely and effectively conducted in order to protect homes and communities from wildfires.

In meeting these needs, the following purposes would be achieved:

- Stands in proposed treatment areas within the Wildland Urban Interface (WUI) Defense Zones would: (1) be fairly open and dominated primarily by larger, fire tolerant trees; (2) have surface and ladder fuel conditions such that crown fire ignition is highly unlikely (under 90th percentile fire weather conditions after thinning); and, (3) have crown fuels open and discontinuous both horizontally and vertically, resulting in very low probability of a sustained crown fire (SNFPA ROD 2004, p. 40).
- In the WUI threat zones, under 90th percentile fire weather conditions, wildland fire behavior in treated stands would: (1) have flame lengths at the head of the fire less than four feet high; (2) have reduced hazards to firefighters by managing snag levels in locations likely to be used for control in prescribed fire and fire suppression, consistent with safe practice guidelines; and, (3) have production rates for fire line construction double from pre-treatment levels.
- In project treatment areas the landscape would shift from Fire Regime Condition Class 2 and 3, toward 1 and 2, improving the overall resiliency of the forest to large scale disturbances.

- In the two northern goshawk protected activity centers (PACs) within the WUI Defense Zone, treatment would: (1) occur where crown fire is expected based on fire behavior modeling and (2) remove only material needed to meet the fuels objectives, or at a minimum, move the area towards the objective for the WUI defense zones (e.g. treatments should be designed to maintain habitat structure and function of the PAC) (SNFPA ROD 2004, p. 60).
- Treatment in the northern goshawk PAC, within the WUI Threat Zone, would (1) occur in areas where avoiding the PAC would significantly compromise the overall effectiveness of the landscape fire and fuels strategy, and (2) be designed to maintain habitat structure and function of the PAC (SNFPA ROD 2004, p. 60).
- In the Riparian Conservation Areas (RCAs), treatment outcomes would (1) ensure water quality meets the goals of the Clean Water Act and Safe Drinking Water Act, and (2) ensure that species composition and structural diversity of plant and animal communities in riparian areas provide desired habitat conditions and ecological functions (SNFPA ROD 2004, pp. 42-43), and (3) enhance or maintain physical and biological characteristics associated with aquatic- and riparian-dependent species (Riparian Conservation Objective #4, SNFPA ROD 2004, p. 33)).
- In the roadless area, treatments would reduce the risk of catastrophic wildfire and maintain or restore ecosystem composition and structure through hand treatments (e.g. cut, pile and burn; SNFPA ROD 2004, p. 41).

## Decision

Based on the analysis that is documented in the Spooner Project Pre-Decisional Memo,[1] I have decided to implement the Spooner project as described in attachment 1 to this decision.

The key considerations I used in making my decision include:

- This project will help attain the recommendations outlined in the Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy for the project area (2007; pp. 8, 13-15). Accumulations of hazardous fuels will be reduced through first entry and maintenance treatments within the WUI.
- The project meets the purpose and need (noted above) and addresses site-specific resource concerns by employing project design features (noted in attachment 1) and Best Management Practices (noted in attachment 2). This project will remove ladder fuels and break up tree crown continuity which will reduce the wildland fire intensity and potential for sustained crown fire within these treatment areas. Tree thinning will also move the project area toward a pre-fire suppression vegetative condition related to stand density, tree size class, and species composition by thinning from below and favoring healthy shade intolerant conifer species such as Jeffrey and sugar pine. Mechanical treatment units will reach this condition sooner than the hand treatment units due to the number of entries needed (as shown in table 1 in attachment 1) but all units are designed to reach this condition within the 10-year implementation period. The vegetation treatments, along with reducing dead and down fuels to approximately 10 to 15 tons per acre will help provide defensible space where fire suppression operations can be safely and effectively conducted and allow the managed reintroduction of fire into these treatment areas. This is expected to improve the overall Fire Regime Condition Class on all 3,755 treatment acres in the project.
    - Condition Class within the treated landscape will change from a Condition Class 2 or 3 toward Condition Class 1 or 2. Implementation of treatment prescriptions would also

[1] The Spooner project pre-Decisional Memo can be found at the LTBMU website at: http://fs.usda.gov/ltbmu and navigate to "Land and Resources Management" and search under "Projects"

increase the likelihood that prescribed fire could be used for vegetation management inside the project area in the future.

- Fire Regime Condition Class is defined in terms of departure from the historic fire regime. Condition class is determined by the number of missed fire return intervals with respect to the historic fire return interval, for the stand structure and tree species composition of any given vegetation type. Departure from historical fire regimes results in alteration of key ecosystem components such as species composition, structural stage, stand age, and canopy closure. The relative risk of fire-caused losses of key ecosystem components increases as Condition class numbers increase, with little or no risk at the condition class 1 level, and high risk for loss of key ecosystem components at condition class 3.

- Logan Creek subdivision and Highway 50 are immediately adjacent to the western portions of units 24, 25, 26, 29 within the Lincoln Creek Inventoried Roadless Area. Many private residences are close enough to the Roadless Area that they could not be effectively defended during a catastrophic wildfire, with some residences as close as 400 feet to the Roadless boundary. In addition to the units identified above, Unit 27 and parts of Units 23 and 28 are also within the Roadless Area (Attachment 4). The project includes a total of 870 acres of hand thin/pile burn treatment in the WUI defense and threat zones within the Lincoln Creek Inventoried Roadless Area. All treatment areas within the WUI defense zone in the roadless area are part of the treatment areas proposed in the Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy. All units within the roadless area presently have the potential for high to extreme resistance to control, 45 to 72 percent tree mortality, and passive and conditional crown fire under 90$^{th}$ percentile fire weather conditions. The treatments within the roadless area will reduce the risk of catastrophic wildfire and maintain or restore ecosystem composition and structure through hand treatments while not impairing the roadless character.
- The project is consistent with the LTBMU Land and Resource Management Plan, as amended. The consistency check is documented in the project planning record (Project Record, Tab 7).
- As noted in the public involvement section of this document, two public review and comment periods were provided for this project. The majority of the comments we received, supported the project. Design features respond to some of the concerns that were brought up during scoping and we intend to coordinate with the Washoe Tribe of Nevada and California should they find funding to treat their 24 acres within the project area.

My conclusion to implement the Spooner Project is based on information presented in this document, my familiarity with the project areas and the entirety of the project file. I also based my conclusion on a review of the project record that shows a review of relevant scientific information as referenced in the project record and specialist reports. Furthermore, components of this project are consistent with the recent PSW-GTR 220 for An Ecosystem Management Strategy for Sierran Mixed-Conifer Forests (North et al. 2009).

This action is categorically excluded from documentation in an environmental impact statement or an environmental assessment. The authority for this decision is based on the Omnibus Appropriations Act 2009, Section 423[2]. This authority, which is specific to the LTBMU, is applicable because treatment areas total 3,755 acres (less than the 5,000-acre limit) of which 270 acres are mechanical thinning and 70 acres are cable yarding (less than the 1,500-acre limit). The project is also consistent with the Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy, has no treatments in wilderness areas, and does not involve any new permanent roads.

[2] A copy of Section 423 of the Omnibus Appropriations Act 2009 can be found in the project record (Tab 1) at the LTBMU Supervisor's Office.

## Extraordinary Circumstances

I find that there are no extraordinary circumstances that warrant further analysis and documentation in an environmental assessment or environmental impact statement. I took into account resource conditions identified in agency procedures that should be considered in determining whether extraordinary circumstances might exist:

- **Federally listed threatened or endangered species or designated critical habitat, species proposed for Federal listing or proposed critical habitat, or Forest Service sensitive species.**

  The potential effects of this proposed action on listed wildlife, fish, and plant species have been analyzed and documented in Biological Assessment (BA) and Biological Evaluations (BE)[3]. There is no critical habitat identified or proposed for federally-listed aquatic or terrestrial wildlife species on the LTBMU. Lahontan Cutthroat trout (threatened species) have been planted within Marlette Lake and are suspected to occupy portions of Marlette Creek, but have not been documented to occur there. Negligible impacts could be expected to the lower reaches of Marlette Creek (e.g. short term negligible increase in potential for sediment delivery and reduced stream shade) where treatment is proposed. The degree of the effects will not constitute extraordinary circumstances for this species and there is a no effect determination for Lahontan Cutthroat Trout. This impact is reduced with the implementation of design feature 25. Region 5 sensitive wildlife species are known to occur or have habitat within the project area. Most of these species habitats are associated with moderate to closed canopies, and larger diameter trees. There will be minor short-term, impacts expected to the habitat (e.g. denning habitat and noise); in most cases the treatment will have beneficial long-term impacts. These long term impacts include an increase in tree growth, size, and ultimately average diameter classes and less risk for stand replacing wildfire. In addition, several design features (design features 20-23, 26-27, 29-31) are incorporated into the project to minimize impacts. None of the expected minor impacts will constitute extraordinary circumstances for Forest Service sensitive wildlife species.

  According to the project BE for plant species[3], there is no critical habitat for federally listed (threatened or endangered) plant species and no species were found. Therefore there will be no effect to threatened and endangered plant species or designated critical habitat. Sensitive plant species were found in the project area (including one that is also a candidate plant species for listing). Design features 14, 15, 18, 19 are included in the project design to minimize impacts to these species. Minor impacts could be expected for some of the species, but the degree of the effects will not constitute extraordinary circumstances.

- **Floodplains, wetlands, or municipal watersheds.**

  Floodplains - Executive Order 11988's intent is to avoid adverse impacts associated with the occupancy and modification of floodplains. Floodplains are defined by this order as, ". . . the lowland and relatively flat areas adjoining inland and coastal waters include flood prone areas of offshore islands, including at a minimum, that area subject to a one percent [100-year recurrence] or greater chance of flooding in any one year." Many drainages do not have floodplains, and where they are present, they are narrow. The only exceptions are portions of North Logan House, Glenbrook, and Marlette Creeks; floodplains in these areas are included within the mapped SEZs. To ensure that floodplains-related impacts are negligible, Best Management Practices (see attachment 2) and project-specific design features (design features 25, 38-41, 44-47, 49-58, 64) are incorporated into this decision. The effects from the proposed action have been evaluated and will result in minor impacts or no impacts.

  Wetlands - Executive Order 11990's intent is to avoid adverse impacts associated with

[3] Effects to aquatic and terrestrial species are discussed in the Aquatic and Terrestrial Species BA/BE found in the project record (Tab 9A). Effects to sensitive plant species are discussed in the Botany BE found in the project record (Tab 9b).

destruction or modification of wetlands. Wetlands are defined by this order as, "areas inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds." The project area does not have any mapped wetlands. This has been validated by map and site-review. However, a few small springs and seeps were noted within the treatment areas during field surveys. These can be defined as wetlands, but are too small to be noted on maps. To ensure that wetland-related impacts are minimized, Best Management Practices (see attachment 2) and project-specific design features will be incorporated. These include but are not limited to flagging and avoiding spring areas (design feature 42), and operating heavy equipment only on dry soils (design feature 38). The effects from the proposed action have been evaluated and will result in negligible impacts.

Municipal Watersheds: There are no municipal watersheds located within the project area.

- **Congressionally designated areas, such as wilderness, wilderness study areas, or national recreation areas.**

  There are no congressionally designated areas such as wilderness, wilderness study areas or national recreation areas within the project area.

- **Inventoried roadless areas or potential wilderness areas.**

  No potential wilderness areas exist within the project area, per the LTBMU Land and Resource Management Plan, as amended.

  A portion of Lincoln Creek Inventoried Roadless Area (IRA) is within the southern portion of the project area[4]. This IRA is displayed in the Forest Service Roadless Area Conservation, Final Environmental Impact Statement, Volume 2, dated November 2000. According to the Forest Plan (p. II-2), Lincoln Creek roadless area would be used for non wilderness purposes and has not been proposed as a potential wilderness area (Forest Plan, p. IV-101).

  Forest roads 14N33 and 14N33A will be used for access for hand thinning and prescribed fire treatments. No temporary roads and no new classified forest roads are proposed within the IRA. The objective and operational maintenance level for these roads is level 2 (suitable for high clearance vehicles). Maintenance activities will be limited to those needed to provide passage for planned traffic and will not substantially improve the road standard or raise the service traffic level. As noted in the proposed action (Attachment 1), road maintenance of the classified forest roads could include grading, shaping, brushing, maintenance of drainage structures, and dust abatement, as needed to provide for safety and resource protection. Based on the project design, location of treatments within the WUI, and use of existing infrastructure (roads and landings) the roadless character of the IRA will not be altered or impaired.

  On October 2, 2009, the Secretary of Agriculture delegated authority to the Forest Service for the cutting, sale, or removal of generally small diameter timber when needed for several purposes including maintaining or restoring the characteristics of ecosystem composition and structure, such as to reduce the risk of uncharacteristic wildfire effects within the range of variability that would be expected to occur under natural disturbance regimes of the current climatic period.

  This project falls within the delegation of authority to the Forest Service and is consistent with the purpose above. The proposed project treatments will begin to restore the characteristics of

[4] A map showing the location of Spooner project treatments within the northern portion of the Lincoln Creek Roadless area is located in attachment 3.

ecosystem composition and structure, such as to reduce the risk of uncharacteristic wildfire effects within the WUI. As noted above, no road construction or reconstruction will take place within the Lincoln Creek Roadless Area.

- **Research natural areas.**

  There are no research natural areas within the project area.

- **American Indians and Alaska Native religious or cultural sites.**

  Surveys were conducted for Native American religious or cultural sites and prehistoric archaeological sites. These sites will not be affected as they are to be flagged and avoided as a project design feature (design features 85, 86). Alaskan sites do not apply to Nevada.

- **Archaeological sites, or historic properties or areas.**

  Surveys were conducted for archaeological sites and historic properties. No listed historic properties occur within the project area. As noted in the design features, eligible and unevaluated cultural resources will be avoided during all project activities (design feature 85). Fire-sensitive sites with flammable artifacts or features will be treated through a variety of techniques to avoid adverse effects during any burning activities associated with the project (design feature 86). Some linear sites cannot be avoided, but will continue being used for their historic purpose as transportation routes. This continued use does not meet the criteria of adverse effect to these resources.

## Public Involvement

As noted in the pre-decisional memo, the Spooner project was designed based on the collaboration that occurred through the local Community Wildfire Protection Plans and Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy.

The LTBMU listed the proposed action on the Internet web page's Schedule of Proposed Actions (SOPA) beginning on October 1, 2008 and every quarter since. An LTBMU representative met with Tahoe-Douglas Fire Protection District representatives prior to finalizing the proposed action and met with representatives from the TRPA during the scoping period to discuss the project. A scoping letter and project area map were mailed to 34 agencies, individuals and organizations on March 20, 2009 seeking public comments and informing them of two public meetings. In addition, a news release was sent out to the local media from the LTBMU on March 17, 2009 seeking public comments and advertising two public meetings for the project. The Tahoe Daily Tribune published an article summarizing the press release on March 21, 2009. There were a total of three verbal comments and four written comments that were received in response to the mailing, press release, and public meetings.

The overall scoping response from the public was supportive of the project. There were verbal comments of support of the project during the public meetings and concerns about burning residual trees from pile burns, smoke, and piles close to private property (unsightly and fire risk). In addition, the director of a historic lodge (Thunderbird Lodge) within the project area was concerned about potential impacts to their operations (e.g. trespass, damaging lodge ancillary improvements, unsightly piles, adverse impacts to visitors, staff and volunteers). The project has a design feature that states, "where feasible, within immediate foreground (up to 150 feet.) of highly visible areas (e.g. Highway 50, State Route 28, recreation improvements and facilities, residential areas, and classified roads and trails) remove slash and do not pile." In addition, the project includes multiple entries that are designed to meet project objectives while reducing the risk of piles burning residual trees. Another design features was specifically included to address the historic lodge, which states, "communicate with Thunderbird Lodge prior to commencing operations within proximity of the property to discuss operations with potential for short term disruptions to recreation activities. Maintain communication during operations."

The Washoe Tribe of Nevada and California and Cave Rock Chapter, Nevada Fire Safe Council provided letters of support.

The Federal government has trust responsibilities to Tribes under a government-to-government relationship. Consultation with the Washoe Tribe of Nevada and California occurred for this project and the Tribe provided a letter supporting the project. The Tribe requested that if any artifacts are found, operations cease and the Tribe's Environmental Protection Department and cultural resource coordinator are contacted (see Design Feature # 86). Within the Spooner project area is a parcel of land (approximately 24 acres) held in Trust for the Washoe Tribe per Section 2a of the Public Law 108-67 (2003 Washoe Indian Tribe Trust Land Conveyance Act). This parcel boundary is currently being corrected under the Omnibus Public Land Management Act of 2009 (under the Correction of Skunk Harbor Conveyance, Subtitle G-Section 2601(i) Carson City, Nevada, Land Conveyances). The parcel will be surveyed with the boundary posted prior to project implementation. No project treatments are proposed within this parcel. The LTBMU will coordinate implementation on NFS lands adjacent to this parcel with the Tribe and will coordinate with the Tribe on any plans they propose to treat within this parcel.

The LTBMU provided a second opportunity for public comment by mailing 39 letters with the attached pre-decisional memo on December 2, 2009 with a due date for commenting on December 17, 2009. The mailing list included agencies, interested groups, and public that were initially sent the scoping notice along with those individuals and groups that commented during the scoping period. The letter and pre-decisional memo were also uploaded on to the LTBMU website. Based on the United States District Court for the Eastern District of California decision made July 8, 2009, this second opportunity to comment was not required, but this additional comment period was included due to the transition in process.

Comments from the second opportunity to comment included letters of support from Tahoe-Douglas Fire Protection District, Nevada Tahoe Resources Team, and Tahoe Regional Planning Agency (TRPA). The TRPA comments included some areas of consideration and needs for clarification that were discussed with TRPA staff on December 17, 2009,and January 8 and 11, 2010.

The Washoe Tribe of Nevada and California commented, stating they are concerned that their parcel is not included in the proposed treatment areas. Though this analysis and decision does not include non-National Forest System lands, should funding become available to the Tribe during the implementation of this project, the LTBMU will work with the Tribe to coordinate a cost-effective process to merge the two projects.

Tahoe Regional Planning Agency

The Lake Tahoe Basin Management Unit (LTBMU) has worked closely with TRPA in project design to ensure that the project is consistent with TRPA environmental thresholds. This project involved coordination with TRPA staff early during the scoping process and has continued through this decision. A field trip was held in April 2009 between LTBMU and TRPA staff to discuss project treatments within the analysis area. TRPA staff provided verbal comments to the project and refinements were made to the proposed action as reflected in the pre-decisional memo. TRPA staff provided further comment during the pre-decisional comment period and met with the LTBMU in December 2009, and again on January 8, 2010 to discuss and make refinements to the project design consistent with TRPA thresholds. A TRPA environmental checklist and V (g) environmental threshold findings were completed during a meeting on January 11, 2010. This project falls under the Memorandum of Understanding between TRPA and Forest Service (2009) regarding Fuels Reduction and Forest Health Projects.

## Findings Required by Other Laws

National Forest Management Act - Forest Plan Consistency - This Act requires the development of long-range land and resource management plans (Plans). The Lake Tahoe Basin Management Unit Land and Resource Management Plan was approved in 1988 as required by this Act. It has been amended several times, including the Sierra Nevada Forest Plan Amendment (2004). The amended plan provides for guidance for all natural resource management activities. The Act requires all projects and activities are consistent with the Plan. The Plan has been reviewed in consideration of this project. The purpose and need and proposed action are responsive to guiding direction contained in the Plan. The proposed action is consistent with the standards and guidelines contained in the Plan.[5] As a part of Forest Plan Consistency, the Forest Management Indicator Species (MIS) list was reviewed to determine species applicable for this project. A MIS report was completed for this project, which analyzed effects to MIS species.[6] MIS species will not be significantly affected by this project.

Endangered Species Act – Threatened and endangered species and critical habitat are addressed under the extraordinary circumstances section of this document.

Clean Water Act - This Act is to restore and maintain the integrity of waters. The Forest Service complies with this Act and the TRPA Water Quality Management Plan for the Tahoe Basin by implementing Best Management Practices (USFS 2000)[7]. The proposed action incorporates Best Management Practices and design features to ensure protection of soil and water resources. In addition, a cumulative watershed effects analysis (CWE) was completed along with an Erosion Hazard Rating (FSH 2509.22; USFS 1990) in order to determine project specific protection measures (design features and BMPs).

Clean Air Act - Under this Act areas of the country were designated as Class I, II, or III air sheds for Prevention of Significant Deterioration purposes. This project is within and will affect a Class II airshed. Impacts to air quality have been considered in the proposed action, air quality permitting requirements are described. Nevada Division of Environmental Protection regulates prescribed burning in the state in accordance with the State Implementation Plan (SIP). Prescribed burning in the proposed action will be coordinated with the State and follow the SIP to protect air resources; including, obtaining and following air quality permits.

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. As noted under the Decision section of this document, in the discussion of extraordinary circumstances, surveys were conducted for Native American religious or cultural sites, archaeological sites, and historic properties or areas that may be affected by the proposed action. Results of the surveys were submitted to the State Historic Preservation Officer and a report with their findings of eligibility is now in the project record along with concurrence with the determination from Nevada State Historical Preservation Office (letter dated October 14, 2009)[8].

National Environmental Policy Act - This Act requires consideration of potential environmental effects. The entirety of documentation for this project (project planning record) supports compliance with this Act and is available for public review.

Wetlands (Executive Order 11990) – Wetlands are addressed under the extraordinary circumstances section of this document.

[5] Documention on Plan consistency is on file in the project record (Tab 8) located at the LTBMU Supervisor's Office.
[6] The Wildlife MIS Report is on file in the project record (Tab 9A).
[7] The Soils/Hydrology Report, that includes BMPs, is on file in the project record (Tab 11). In addition the applicable BMPs are also located in attachment 2 of this document.
[8] Documentation showing compliance with the National Historic Preservation Act is on file in the project record (Tab 10).

Floodplains (Executive Order 11988) – Floodplains are addressed under the extraordinary circumstances section of this document.

Noxious Weeds (Executive Order 13112) – Executive Order 13112's intent is to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause. A weed assessment was completed for the project[9] and design features were included in the proposed action to reduce the potential introduction and/or spread in invasive plant species within the project area.

## Administrative Review (Appeal) Opportunities

The decision for this project is exempted from notice and comment (36 CFR 215.4) and appeal (36 CFR 215.12(f)).

## Implementation Date

It is anticipated the project will be completed in the next 10 years due to the need for multiple hand treatment entries into many of the treatment units. Project implementation may begin with mechanical and hand thinning as early as February 2010 as conditions allow.

## Contact Person

For additional information concerning the project, contact Duncan Leao, Lake Tahoe Basin Management Unit, 35 College Drive, South Lake Tahoe, CA 96150. Phone number (530) 543-2600.

Terri Marceron

TERRI MARCERON
Forest Supervisor

1/13/2010
Date

Attachment 1, Project Description
Attachment 2, BMPs
Attachment 3, Roadless Area in Relationship to Spooner Project
Attachment 4, Table of Treatments within the Lincoln Creek Roadless Area



[9] The Weed Risk Assessment is on file in the project record (Tab 9b)

Attachment 1 to Spooner Project Decision Memo
Spooner Hazardous Fuels Reduction and Healthy Forest Restoration
Project Description

## PROPOSED ACTION

The Spooner Hazardous Fuels Reduction and Healthy Forest Restoration Project (Spooner project) is in response to the purpose and need noted in the Decision Memo. Figure 1 is a map of the Spooner project proposed action including 30 treatment units, totaling approximately 3,755 acres, within the project area of WUI. Approximately 3,415 acres are proposed for hand treatment, 270 acres are proposed for mechanical treatment, and 70 acres are proposed for cable yarding. Within eight of these units are aspen restoration areas totaling approximately 50 acres (Table 1). All treatment units will likely receive some form of pile burning and/or jackpot burning and broadcast underburning. A total of 16 landings (13 existing and 3 new) are proposed within nine of the treatment units and a total of 0.43 miles of temporary road are proposed to increase access to two units (see figure 1). Table 1 provides a summary of the proposed action, by unit, of the main treatment systems, type of prescribed fire proposed, approximate miles of temporary roads, and the number of landings. There are areas in the project where promoting species diversity could prove beneficial for increasing insect and disease resistance as well as establishing a trend toward desired conditions and meeting the project purpose and need. Reforestation could occur in areas such as landings, where fuels treatments and thinning create openings after treatment.

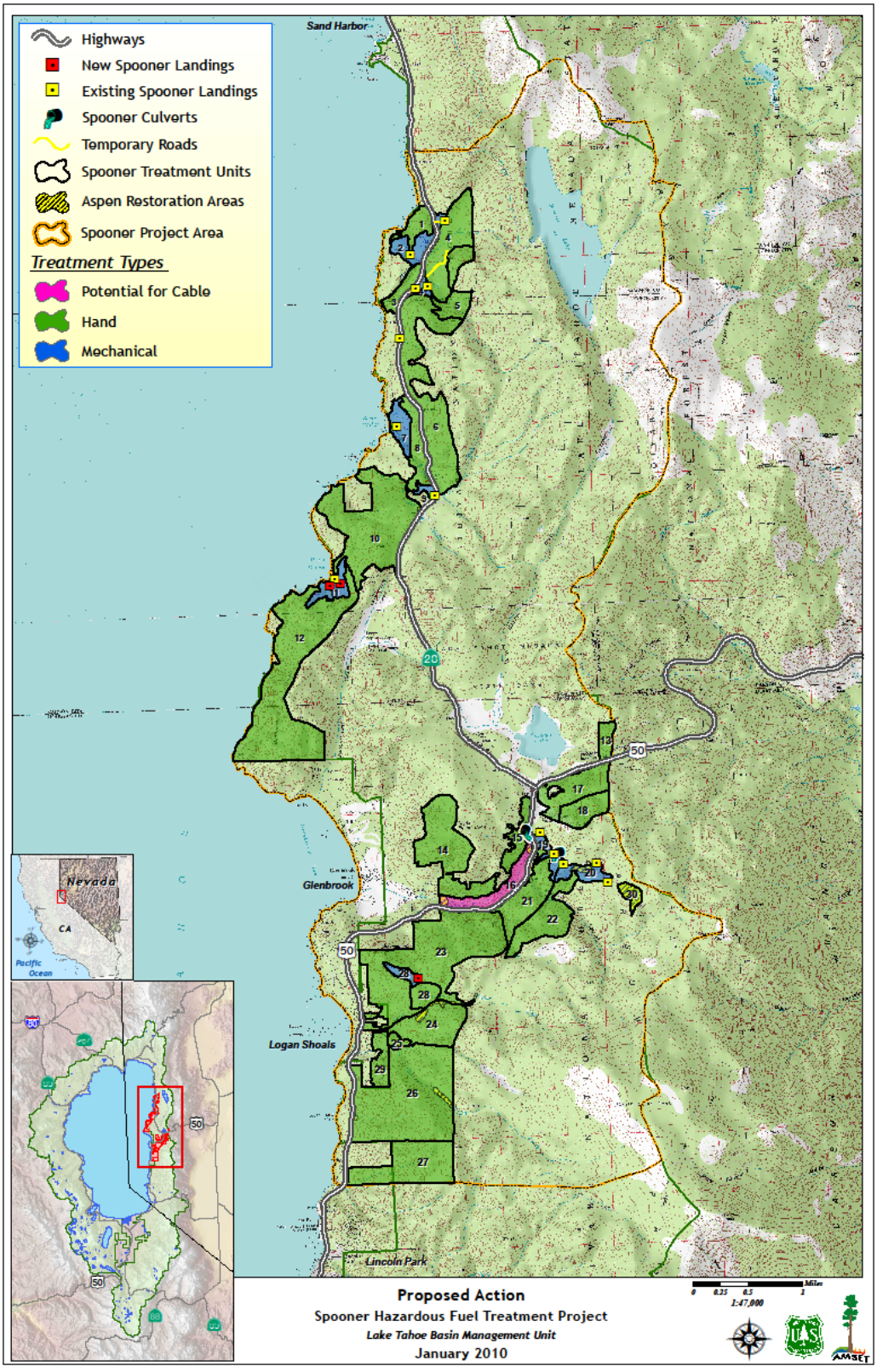


**Figure 1. Proposed Action Treatment Map**

**Table 1. Summary of Proposed Treatment by Unit**

| Unit # | Acres | Maximum No. of Entries Expected by Main Treatment System | | | No. of Entries Pile Burn/ Jackpot[10] Burn | No. of Entries Under-burn | Aspen Restor-ation acres[11] | Approx. Miles of Proposed Temp. Roads | Approx No. of Land-ings |
|---|---|---|---|---|---|---|---|---|---|
| | | Hand | Mech-anical [12] | Cable | | | | | |
| 1 | 42 | 2 | | | 2 | 1 | 0 | 0 | 0 |
| 2 | 46 | | 1 | | 1 | 1 | 0 | 0 | 1 |
| 3 | 36 | 4 | | | 4 | 1 | 0.1 | 0 | 0 |
| 4 | 165 | 3 | 1[13] | | 3 | 1 | 0 | 0.4 | 3 |
| 5 | 75 | 2 | | | 3 | 2 | 0 | 0 | 0 |
| 6 | 280 | 4 | | | 4 | 2 | 0 | 0 | 1 |
| 7 | 43 | | 1 | | 1 | 1 | 0 | 0 | 1 |
| 8 | 70 | 1 | | | 1 | 2 | 0 | 0 | 0 |
| 9 | 10 | | 1 | | 1 | 1 | 0 | 0 | 1 |
| 10 | 335 | 4 | | | 4 | 1 | 0.75 | 0 | 0 |
| 11 | 41 | | 1 | | 1 | 1 | 0 | .03 | 3 |
| 12 | 468 | 2 | | | 2 | 1 | 0 | 0 | 0 |
| 13 | 27 | 1 | | | 1 | 1 | 0 | 0 | 0 |
| 14 | 208 | 1 | | | 1 | 1 | 0 | 0 | 0 |
| 15 | 48 | 1 | 1[14] | | 1 | 1 | 0 | 0 | 0 |
| 16 | 76 | | | 1 | 1 | 1 | 7.0 | 0 | 0 |
| 17 | 105 | 2 | | | 2 | 1 | 0 | 0 | 0 |
| 18 | 62 | 1 | | | 1 | 1 | 0 | 0 | 0 |
| 19 | 27 | | 1 | | 1 | 1 | 0 | 0 | 2 |
| 20 | 40 | | 1 | | 1 | 1 | 5.5 | 0 | 3 |
| 21 | 112 | 3 | | | 3 | 1 | 0 | 0 | 0 |
| 22 | 116 | 2 | | | 2 | 1 | 0 | 0 | 0 |
| 23 | 444 | 2 | | | 2 | 2 | 1.5 | 0 | 0 |
| 24 | 126 | 2 | | | 2 | 1 | 7.75 | 0 | 0 |
| 25 | 13 | 2 | | | 3 | 1 | 0 | 0 | 0 |
| 26 | 442 | 2 | | | 2 | 1 | 6.0 | 0 | 0 |
| 27 | 180 | 4 | | | 4 | 1 | 0 | 0 | 0 |
| 28 | 51 | 2 | 1[18] | | 1 | 1 | 0 | 0 | 1 |
| 29 | 46 | 2 | | | 2 | 2 | 0 | 0 | 0 |
| 30 | 21 | 1 | | | 1 | 1 | 20 | 0 | 0 |
| **TOTAL** | **3,755 ac** | **3,415 ac** | **270 ac** | **70 ac** | **All units** | **All units** | **48.6 ac** | **0.43 mi** | **16** |

[10] Jackpot burning involves igniting concentrations of fuels on the forest floor, whether they are natural fuels or fuels resulting from a silvicultural cutting treatment (also referred to as activity fuels).
[11] All aspen restoration acres will be completed through hand treatments.
[12] Mechanical treatments might include any combination of the following: chipping, mastication, or piled for burning.
[13] Unit 4 will include approximately 26 acres of mechanical treatment occurring in two sub-unit boundaries and along the temporary road. The remaining acres will be hand treatment as shown in figure 1.
[14] Unit 15 includes approximately 20 acres with slopes less than 30%. This area will be mechanically treated by mastication.
[18] Unit 28 includes approximately 20 acres of mechanical treatment and the remaining acres will be hand treatment.

## Treatment Prescriptions

To address the purpose and need, the LTBMU developed six general treatment prescriptions for the units within the project area WUI. When laying out the project units for implementation purposes, there could be minor changes based on more detailed field review and operational feasibility (e.g. topographical considerations of slope and rock outcrops).

1. Within all treatment units, if applicable:
    - All trees 30 inches dbh and larger will be retained. Exceptions will be allowed for safety and equipment operability.
    - All healthy sugar pine trees showing no indication of white pine blister rust disease (*Cronartium ribicola*) will be retained and protected during treatment operations, as feasible.
    - Where feasible, live conifers less than 30 inches dbh that are heavily infected with dwarf mistletoe (*Arceuthobium* sp.), where the infection is of a Hawksworth rating 4 or greater, will be removed.
    - Healthy shade intolerant conifer species will be favorably retained over shade tolerant species in mixed conifer stands. Shade intolerant species include Jeffrey pine and sugar pine.
    - At least 10 percent of the existing shrub cover will be retained following hand or mechanical thinning.
    - Hand pruning of branches on remaining trees, up to 8 feet, will be performed, as necessary, to remove ladder fuels.
    - Stumps from live conifer trees, with the exception of incense-cedar, greater than 14 inches in diameter, only within mechanical treatment areas, will be treated with an EPA registered borax compound, such as Sporax®, for the prevention of the spread of annosus root disease (*Fomes annosus*). Sporax® will be applied by hand in an approved granular form to cut stumps within the effective timeframe.
    - Treated material will be removed either as saw logs (whole tree or cut-to-length), biomass, or fuelwood. Treated material not removed will be treated on site through pile burning, chipping, mastication, lop and scatter, and followed by broadcast burning.
    - Piled material for burning and jackpot burning will be located and designed to minimize tree scorch and mortality of the trees retained after treatment, avoid large boulders with an associated special interest plant species (i.e., *Orthotrichum shevockii*), and avoid trails and trailheads.
2. Treatment units within the WUI Defense Zone:

    Thinning will occur to remove ladder fuels and break up tree crown continuity:
    - Existing basal area of approximately 108 to 389 square feet per acre will be reduced by thinning from below, removing predominantly small (suppressed crown class) understory and intermediate crown class trees in hand treated units. Where mechanical treatments can occur, some intermediate and co-dominant trees will be removed to create crown separation and provide growing space for healthy residual overstory (dominant) trees. Stand densities and tree size distribution varies widely between treatment units and residual target basal area varies as well. The desired stand basal area will range from 80-150 ft2/ac depending on site characteristics and species composition. Basal area after thinning may be greater than the desired range due to maximum diameter limits and treatment type constraints. Existing and modeled post-thin stand conditions are displayed in table 2 by treatment unit.

- In hand treated stands, trees will be thinned up to an average of 30 to 40 foot spacing (25 to 45 trees per acre) from tree bole on live trees up to 16 inch dbh.
- Average tons per acre of dead and down fuels of approximately 20 to 108 tons per acre will be reduced to near or below 10 tons per acre.
- Within 300 feet of developed areas (homes and other infrastructure), up to 90 percent of the area will have the brush treated and what remaining brush is retained will meet the defensible space objective (i.e., on NFS lands within the 300-foot zone, reduce wildland fire spread and intensity sufficiently for suppression forces to succeed in protecting human life and property). These treatments would not be implemented in the Roadless Area.
- Immediately prior to implementation of prescribed fire, snags which pose a safety threat to fire personnel would be felled.

3. Treatment units within the WUI Threat Zone:

   Thinning will occur to remove ladder fuels and break up tree crown continuity:

   - Existing basal area of approximately 119 to 376 square feet per acre will be reduced by thinning from below, removing predominantly small understory trees. Where mechanical treatments can occur, some intermediate and co-dominant trees will be removed to create crown separation and provide growing space for healthy residual overstory (dominant) trees. Stand densities and tree size distribution varies widely between treatment units and residual target basal area varies as well. The desired stand basal area will range from 80-150 ft2/ac depending on site characteristics and species composition. Basal area after thinning may be greater than the desired range due to maximum diameter limits and treatment type constraints. Existing and modeled post-thin stand conditions are displayed in table 2 by treatment unit.
   - In hand treated stands, trees will be thinned up to an average of 25 foot spacing (70 trees per acre) from tree bole on live trees up to approximately 16 inch dbh.
   - Average tons per acre of dead and down fuels of approximately 20 to 85 tons per acre will be reduced to near or below 10 tons per acre.
   - Immediately prior to implementation of prescribed fire, snags which pose a safety threat to fire personnel would be felled.

4. Treatment units within the northern goshawk PACs (and where crown fire is expected based on fire behavior modeling):
   - Understory trees approximately 12-inch dbh and less will be thinned where they serve as ladder fuels to overstory trees.
   - Overstory trees will be retained as well as smaller mid- and understory trees that can be isolated from serving as ladder fuels. Where possible, residual canopy cover will average at least 60 percent.
   - Hand thinning will be confined to trees 6-inch dbh or less within 500 feet of known goshawk nest locations.
   - A limited operating period will apply from February 15th to September 15th unless surveys indicate that no nesting is occurring. Surveys will be performed in 2010, prior to treatment implementation in each applicable unit.
   - An average of 5 large snags per acre (20-inch dbh or larger) will be retained where they exist.
   - Large down wood (20 inches diameter at the large end) will be retained up to 15 tons per acre.

- Prescribed burning, including hand pile burning and broadcast underburning will be allowed within the PAC, including within 500 feet of known goshawk nest locations. The limited operating period described above would apply.

5. Where stands within the treatment units meet the treatment prescriptions noted above, additional treatment will reintroduce fire through prescribed fire underburning, bringing the stand back toward the fire return interval described under historic conditions.
6. Treatment units for aspen (*Populus* sp.) enhancement:
   - For aspen stands where lodgepole pine and other conifer species are encroaching, the prescribed treatment will include the removal of live conifers to increase the amount of hardwoods and other meadow vegetation that currently exists.
   - The general prescription for hand treatments will primarily include removing all live conifers up to 18 inches dbh and falling and removing of all dead conifers up to 20 inches dbh. All dead and down conifers up to 20 inches dbh will also be removed.
   - Mechanical treatments (including cable yarding) may include the removal of all conifers up to 30 inches dbh with the exception of trees assumed to be greater than 150 years old with characteristics such as flat tops, large limbs and large bark plates. No mechanical aspen treatments would be implemented in the Lincoln Creek Roadless Area.

**Table 2. Existing and projected post-thin stand conditions (FVS modeling) by treatment unit.**

| Unit # | Hand / Mech | Threat / Defense | Forest Type[19] | Pre Thin Basal Area ($ft^2$/acre) | Post Thin Basal Area ($ft^2$/acre) | % Basal Area Removed ($ft^2$/acre) | Post Thin Average Canopy Cover (%) | Pre Thin Average Stand Diameter (in inches) (QMD) | Post Thin Average Stand Diameter (in inches) (QMD) | Post Thin Average Crown Base Height (in feet) | Post Thin Average Crown Bulk Density |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | H | D | JPN | 115 | 88 | 23 | 28 | 8 | 13 | 7 | 0.065 |
| 2 | M | D | JPN | 148 | 98 | 34 | 31 | 11 | 16 | 9 | 0.064 |
| 3 | H | D | JPN | 177 | 125 | 30 | 39 | 8 | 16 | 9 | 0.091 |
| 4 | H/M | D/T | JPN | 359 | 321 | 11[20] | 60 | 12 | 26 | 8 | 0.079 |
| 5 | H | T | JPN,SMC | 135 | 129 | 4[20] | 36 | 10 | 16 | 6 | 0.073 |
| 6 | H | D | JPN,SMC | 185 | 147 | 21 | 41 | 8 | 19 | 9 | 0.074 |
| 7 | M | D | JPN | 220 | 186 | 15 | 42 | 13 | 21 | 9 | 0.068 |
| 8 | H | D | JPN,SMC | 65 | 61 | 5[20] | 26 | 9 | 11 | 6 | 0.028 |
| 9 | M | D | SMC | 133 | 128 | 4[20] | 42 | 12 | 13 | 6 | 0.056 |
| 10 | H | D/T | SMC/JPN | 173 | 122 | 29 | 36 | 8 | 15 | 7 | 0.098 |
| 11 | M | T | JPN | 188 | 124 | 34 | 35 | 12 | 25 | 10 | 0.029 |
| 12 | H | T/D | JPN,SMC | 151 | 135 | 10[20] | 41 | 10 | 15 | 7 | 0.088 |
| 13 | H | D | JPN,SMC | 235 | 217 | 8[20] | 55 | 13 | 20 | 16 | 0.102 |
| 14 | H | D/T | JPN,SMC | 375 | 349 | 7[20] | 72 | 17 | 23 | 7 | 0.119 |
| 15 | H/M | D | SMC | 110 | 109 | 1[20] | 35 | 13 | 16 | 10 | 0.041 |
| 16 | H | D | SMC,JPN | 327 | 322 | 2[20] | 64 | 18 | 29 | 3[15] | 0.053 |

[19] Forest Types: JPN = Jeffrey Pine, SMC = Sierran Mixed Conifer

| Unit # | Hand / Mech | Threat / Defense | Forest Type[19] | Pre Thin Basal Area ($ft^2$/acre) | Post Thin Basal Area ($ft^2$/acre) | % Basal Area Removed ($ft^2$/acre) | Post Thin Average Canopy Cover (%) | Pre Thin Average Stand Diameter (in inches) (QMD) | Post Thin Average Stand Diameter (in inches) (QMD) | Post Thin Average Crown Base Height (in feet) | Post Thin Average Crown Bulk Density |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | H | D | SMC,JPN | 181 | 151 | 17 | 42 | 10 | 17 | 8 | 0.099 |
| 18 | H | T | SMC | 141 | 120 | 15 | 32 | 12 | 16 | 2[20] | 0.095 |
| 19 | M | D | JPN | 225 | 148 | 34 | 42 | 11 | 20 | 12 | 0.063 |
| 20 | M | T | JPN | 268 | 177 | 34 | 51 | 15 | 19 | 26 | 0.059 |
| 21 | H | D | JPN,SMC | 203 | 150 | 26 | 40 | 9 | 17 | 8 | 0.078 |
| 22 | H | T | SMC | 122 | 109 | 10 | 37 | 9 | 14 | 7 | 0.089 |
| 23 | H | D/T | SMC/JPN | 169 | 138 | 19 | 41 | 10 | 18 | 12 | 0.055 |
| 24 | H | D/T | JPN,SMC | 203 | 137 | 32 | 39 | 10 | 18 | 11 | 0.059 |
| 25 | H | D | JPN | 200 | 132 | 34 | 39 | 10 | 19 | 16 | 0.047 |
| 26 | H | D/T | SMC/JPN | 217 | 200 | 8[20] | 38 | 15 | 24 | 1[20] | 0.063 |
| 27 | H | D/T | SMC/JPN | 209 | 169 | 19 | 43 | 9 | 21 | 2[20] | 0.058 |
| 28 | H/M | D/T | SMC/JPN | 135 | 129 | 5[20] | 38 | 13 | 16 | 12 | 0.064 |
| 29 | H | D | SMC/JPN | 217 | 200 | 8[20] | 38 | 15 | 24 | 1[20] | 0.063 |
| 30 | H | T | JPN | 268 | 121 | 55 | 38 | 15 | 21 | 40 | 0.037 |

[20] Open-grown overstory trees with low crowns contribute to average crown base height; pruning treatment not reflected in this average crown base height. Pruning will raise average to 8 feet or greater.

## Treatment Systems

The type of mechanical equipment used for thinning operations on slopes less than 30 percent will depend on vegetation removal needs, and operational feasibility. They could include whole tree yarding using mechanical harvesters and whole tree skidding, cut-to-length harvest with log-forwarding operations on a slash mat where slash is available, and cable skidding for endlining material from adjacent hand thin units. Endlining involves attaching a cable to one end of a log and pulling the log to an area where it can be picked up by a skidder or other yarding equipment. For non-commercial sized trees and brush, masticators and/or chippers could be used, or the material could be removed as biomass or be piled and burned. For those hand treatment units with roads adjacent to or within the units, mechanical equipment, including endlining with cable, could be used. A portion of unit 15 has slopes less than 30 percent. A masticator will be used in this area to thin the stand. In addition, units 4 and 28 will have two treatment systems. Unit 4 will have approximately 26 acres of mechanical treatment in 2 sub-units and within 200 feet of the temporary road while the remaining area will receive hand treatment. Unit 28 will have approximately 19 acres of mechanical treatment outside of the Roadless Area and the remaining 32 acres of hand treatment within the Roadless Area. Table 2 identifies the two treatment systems that will be used within all units. Some proposed mechanized treatment units have isolated portions on slopes greater than 30 percent. In those areas, hand treatment or Yoader/cable treatment will be required if equipment is unable to reach or endline from outside. Thinned material could be removed from site and/or piled and burned.

Treatment systems on the steeper slopes (greater than 30 percent) and sensitive areas (e.g. stream environment zones) will also depend on vegetation removal needs and operational feasibility. The majority of these areas are proposed for hand treatment. Unit 16 may be partially treated through cable yarding (partial or full suspension of logs), using equipment such as a Yoader (a hybrid cable yarder-loader). If monitoring results are favorable using this system, adaptive management will be applied and other units could receive this method of treatment given access feasibility and ability to meet prescribed project design features (potentially small portions of units 3, 4, 5, 14, 15, 16, and 23). The Yoader system will enable mechanized treatment on slopes greater than 30 percent, which means less hand thinning and fewer slash piles to burn. The Yoader or cable system has also been used within the Lake Tahoe Basin in other forest health and fuels reduction projects.

## Road Maintenance and Temporary Improvements

Road maintenance will include grading and shaping classified forest roads to provide a suitable surface for equipment to travel (e.g. removing ruts, shoulder and slough repairs). Classified roads and trails are under Forest Service jurisdiction and are required to protect, administer, and use the National Forest System lands for administrative and public access. All other roads and trails are unclassified, and are generally characterized as non-system and user created. The native surface roads will be maintained during the implementation of the project by abating dust using water. Roads will be watered for dust abatement at least as often as specified in Forest Service Handbook 2409.15 (USFS 1992).

Design features for temporary roads include provision of drainage structures to disconnect road runoff from surface water features during use, as well as requirements for decommissioning when use of the temporary road is complete.

Due to gullying from overland flow from a cut-slope along Forest Service Road 1451 (also known as Old Highway 50), a new culvert is proposed just above the Glenbrook Creek crossing approximately half a mile southwest of the intersection of Road 1451 and Interstate Highway 50. In addition, one existing culvert will be replaced (i.e., along Genoa Peak Road (Road 14N32) between units 19 and 20.

Forest road 14N33A and portions of 14N33 lie within the Lincoln Creek Roadless Area; these roads will be maintained to facilitate access. Both of these roads are classified as maintenance level 2 as defined in FSH 7709.59 Chapter 60 (both operational and objective maintenance levels). Maintenance actions will be consistent with maintenance level 2 (suitable for high clearance vehicles) as defined in FSH 7709.58,

10, 12, 12.6, exhibit 01 and may include:

- Surface grading of the road prism to provide for passage of high clearance vehicles
- Removal of logs and brush as needed to provide passage for planned traffic
- Shoulder maintenance as needed for planned traffic
- Cleaning of drainage structures as needed to keep structures functional and prevent unacceptable environmental damage
- Dust abatement as needed during project use.

Maintenance activities will not be undertaken to accomplish substantial improvements in road standard, to make extensive repairs, or to raise the traffic service level such that the roads will be passable to standard four wheel passenger cars. No new temporary roads, road reconstruction, or road construction are proposed in the roadless area. No actions will be taken that will alter the roadless character.

Existing landings will be used where available. Where existing landings are not available, new landings will be constructed. Use of 13 existing and 3 new landings is proposed. New constructed landings will be approximately one acre or less in size and existing landings will be no larger than two acres (i.e. previously used helicopter landings) in order to safely facilitate the handling and removal of material (e.g. logs, biomass) in compliance with Occupational Safety & Health Administration (OSHA) requirements. Constructed landings may require removal of trees larger than 30 inches dbh, but removal will be minimized with choice location of landings.

The project is proposing a total of approximately 0.43 mile of temporary (or unclassified) roads. Temporary roads are not proposed within the Lincoln Creek Roadless Area. The temporary road into unit 11 (0.03 mile) will be used to access a landing. The temporary roads into unit 4 (0.4 mile) will be used to chip material alongside the road and allow equipment to complete minimal treatment along the roads. A portion of a temporary road (also in unit 4 and approximately 0.1 mile) will be new construction.

Public and contractor safety will be provided adjacent to roads and trails by posting signs, maintaining truck traffic communications, keeping primary roads open, and issuing temporary Forest Closure Orders where contractor operations (thinning, chipping, mastication, and log hauling) pose a safety hazard to the public and the contractor. Temporary forest closures include closing public use of specific areas where project work is occurring. The amount of public use and the presence and proximity to recreation facilities and improvements will be factored into decisions on where to implement temporary forest closures. Closures will likely occur in the treatment units around Secret Harbor/Chimney Beach, Skunk Harbor, Thunderbird Lodge, and old Highway 50. Public use during weekends and holidays will be considered in scheduling project activities and temporary closures.

## Project Duration

The anticipated timeframe to complete the project is ten years, depending on funding and staffing availability. Project implementation may begin with mechanical and hand thinning in February 2010 based on operable conditions and the completion of NEPA analysis and decision. Once initial thinning treatments are complete (3 to 5 years), prescribed pile and understory broadcast burning will occur.

Due to the terrain (majority of the treatment areas have no vehicle access and are located in steep areas greater than 30 percent slope), density of live vegetation, and amount of dead and down material, the majority of the hand treatment areas will require more than one entry to bring the areas into the desired conditions, noted earlier. This means that in hand treated units, where no road access is available for fuels removal and existing surface fuel loading in combination with live fuel ladders will not allow prescribed pile burning to occur safely and effectively, more than one entry is needed. This could include a combination of hand piling of surface fuels followed by pile or jackpot burning, and then thinning and piling of understory trees followed by additional pile burning. Table 2 shows the approximate number of entries by treatment type expected by unit during the implementation term of this project.

## Design Features

The following design features are included as part of this project to minimize environment impacts and ensure Forest Plan consistency:

### Noxious Weeds

The noxious weeds targeted for eradication in the project area are those identified by the Lake Tahoe Basin Weed Coordinating Group, along with additional species identified and targeted for eradication by the Forest Service. Known locations of noxious weeds are shown on maps in the project record, Tab 9B, and summarized in table 3.

**Table 3. Weed species located during field surveys in 2008 in the analysis area.**

| Common Name | Scientific Name | Unit Number | Number of Occurrences in Treatment Area | Gross Area of the Infestation * |
|---|---|---|---|---|
| Cheat grass | *Bromus tectorum* | 16, 17, 18, 26, 27, 29 | 5 | 3 acres |
| Globe-podded hoarycress | *Cardaria pubescens* | 16 | 1 | 100 ft.$^2$ |
| Russian knapweed | *Centaurea repens* | 21 | 1 | 100 ft.$^2$ |
| Bull thistle | *Cirsium vulgare* | 4, 7, 8, 11, 16, 19, 20, 21, 23, 28 | 10 | 10 acres |

*Figures are approximate and based upon GIS and observational data

1. All off-road equipment used will be washed before moving into the project area to ensure that the equipment is free of soil, seeds, vegetative material, or other debris that could contain or hold seeds of noxious weeds. “Off-road equipment” includes all logging and construction equipment, brush hogs, masticators, and chippers; it does not include log trucks, chip vans, service vehicles, water trucks, pickup trucks, and similar vehicles not intended for off-road use. Equipment will be considered clean when visual inspection does not reveal soil, seeds, plant material, or other such debris.
2. When working in known weed infested areas equipment will be cleaned before moving to other NFS lands which do not contain noxious weeds.
3. All earth-moving equipment, gravel, fill, or other materials used for road maintenance and culvert construction are required to be weed-free. Use onsite sand, gravel, rock, or organic matter when possible. Otherwise, obtain weed-free materials from gravel pits and fill sources that have been surveyed and approved by an LTBMU botanist, noxious weed coordinator, or ecologist.
4. Use weed-free mulches, and seed sources. All activities that require seeding or planting must utilize locally collected native seed sources when possible. Plant and seed material should be collected from or near the project area, from within the same watershed, and at a similar elevation when possible. Seed mixes must be approved by a LTBMU botanist, noxious weed coordinator, or ecologist.
5. Piling and burning will be prohibited in flagged weed infestations.
6. Weed infestation areas identified before or during project implementation, within the treatment units or along travel routes near the treatment units, will be hand treated or “flagged and avoided.”

7. Prior to project implementation, all known bull thistle (*Cirsium vulgare*) populations within treatment units will be treated (i.e., manually pulled) by the LTBMU weed crew before individuals flower, or flagged and avoided by mechanical treatment with a 50-foot buffer.
8. Russian knapweed (*Acroptilon repens*) and globe-prodded hoary cress (*Cardaria pubescens*) populations will be flagged and avoided up to a 100-foot buffer. If location of infestation is a crucial access point, population will be hand dug by the LTBMU weed crew prior to project implementation.
9. LTBMU contract administrator will be consulted prior to project implementation to ensure appropriate buffers and flagging is in place.
10. All cheat grass (*Bromus tectorum*) infestations 20 square feet and greater will be flagged and avoided up to a 100-foot buffer or treated using approved methods prior to vegetation treatments. This means that no persons or equipment will be allowed and treatment will not occur within the flagged area.
11. Staging areas for equipment, materials, or crews will be prohibited in areas with weed infestations.
12. When use of landings and staging areas is completed, native vegetation will be reestablished through planting native seeds to minimize weed establishment and infestation on landings and staging areas within 100 feet of cheatgrass, knapweed, and hoary cress infestations.
13. Avoid locating cable unit corridors in noxious weed infestations.

### Forest Service Sensitive and Special Interest Plant Species

14. Flag and avoid *Botrychium ascendens* populations (4 locations within Unit 4) with up to a 100-foot buffer. Trees will be directionally felled away from the buffer zone.
15. Flag and avoid current and historically occupied *Rorippa subumbellata* populations, with up to a 100-foot buffer.
16. *Orthotrichum shevockii* moss is listed as an LTBMU special interest species. To limit possible effects of fuels reductions treatments on known special interest mosses (present on one rock outcrop in treatment unit 3 and one in unit 29), granitic rock outcrops 5 feet and taller within LTBMU botanist designated areas will be avoided during treatments. These include, but are not limited to, the use of outcrops for piling and burning brush on or next to outcrops, and storage of materials used for implementation or erosion control on rock outcrops.
17. To prevent scorching and/or overheating of known *Orthotrichum shevockii* mosses present on the rocks, pile burning activities will not occur within 30 feet from these rock outcrops. During prescribed fire under-burn operations, shrubs next to the rock outcrops with *Orthotrichum shevockii* may be removed.
18. Extend similar protection measures to any newly discovered populations of sensitive or special interest plants found before or during project implementation.
19. The LTBMU contract administrator will consult with botanical staff prior to beginning operations in each unit to ensure appropriate buffers and flagging is in place.

### Special Status Wildlife & Fisheries

Current surveys do not include any detections of bald eagle or willow flycatcher in the project area. Detections of marten have been limited to the winter season, and no dens have been found in the project area. Osprey nest sites change regularly, so at this time it is unknown which units might have nest sites during project implementation. Design features and LOPs for these species are included to provide for protection in the event of detection between the time the project decision is made and the time the project is completed.

Two goshawk PACs are within proposed treatment units (portions of units 4, 5, 7, 8, 9, 10). The PAC in units 4 and 5 last known nest was detected in 1983. There is no history of goshawk nests in the PAC in portions of units 7 through 10. Habitat in these PACs are described in the project record, Tab 9A and treatment prescription specific to these areas is addressed on pages 12 and 13 of this document.

20. During project implementation, any detections of threatened, endangered, sensitive or special interest animal species, or nests or dens of these species, shall be reported to the Forest wildlife biologist. Known nests or dens will be protected in accordance with the Forest Plan and Tahoe Regional Planning Agency (TRPA) Environmental Threshold Carrying Capacities (ETCCs) for the Lake Tahoe Region. Contract provision, Protection of Habitat of Endangered Species, will be included in the contract.

21. Habitat for osprey (*Pandion haliaetus*) and northern goshawk (*Accipiter gentiles*) will be protected through avoidance of known occupied nesting areas, by limiting operating periods (LOPs) during sensitive nesting times in protected activity centers (PACs), and through limited treatments. A LOP constitutes a period during which activities will not occur and is enforced in implementation contracts and/or project implementation management (for non-contract work). A Fuel Hazard Reduction Project PAC generally constitutes a buffer centered on the territory or nest of a particular species that has been identified as present in a given area; PAC size varies by species. Most vegetation management activities are prohibited during LOPs, except where surveys confirm that nests are uninhabited.

22. The LOP for osprey is March 1 through August 15 - no tree thinning, prescribed fire, restoration projects, or temporary road construction will occur during this period within 0.5 mile of active nest sites.

23. A northern goshawk PAC is defined as an area generally 200 acres in size that includes the best available forested habitat around known or suspected nest sites (or, if the nest cannot be located, the location of territorial adults or recently fledged juveniles during the fledgling dependency period) in the largest contiguous blocks possible. Adherence to a LOP and prohibition of the project activities within approximately 0.25 miles of a known nest site during the breeding season (February 15 through September 15) is required unless surveys confirm that northern goshawks are not nesting. If the nest stand within a protected activity center (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 ROD 2004, p. 60, #76; USFS 2004).

24. Breeding season LOP restrictions may be waived, where necessary, to allow for use of prescribed fire in up to 5 percent of northern goshawk PACs per year on a forest. (SNFPA ROD 2004, p. 61, #79; USFS 2004).

25. A 100-foot buffer will be maintained on either side of Marlette Creek (units 3 and 4) to protect the habitat of Lahontan cutthroat trout. Hand and prescribed fire treatments may be allowed. The buffer has the same restrictions as the stream environment zones noted in the Hydrology/Water Quality/Soils design features noted below.

26. The applicable LOP for American marten (*Martes americana*) will be implemented if den sites for these species are detected around treatment areas prior to or during project implementation.

27. The applicable LOP for bald eagles will be implemented if active nest sites are detected around treatment areas prior to or during project implementation.

28. The applicable LOP for willow flycatcher will be implemented in the suitable habitat surrounding any active nests in units 16 and 21 if willow flycatchers are detected in these areas prior to or during project implementation.

29. Where available, retain approximately 10 tons (non-PAC areas) to 15 tons (PAC, SEZ areas) of course woody debris (CWD) per acre larger than 20 inches in diameter (at the large end) and of

variable decay classes. These conditions will be met where possible, otherwise as closely as possible, while also meeting fuel reduction objectives.

30. A minimum of three of the largest snags per acre will be maintained across all activity areas with the exception of goshawk PACs. A minimum of 5 snags per acre will be maintained in goshawk PACs where they occur. Only snags 15 inches dbh or larger will be counted towards meeting this requirement. In addition, these snags will be clumped and distributed irregularly across the treatment units vs. maintaining individual snags scattered throughout each acre. Prior to project implementation some snags may be identified in consultation with LTBMU wildlife biologist.

31. Implementation of the measures described under Hydrology/Water Quality/Soils (below) will protect fish, waterfowl, and aquatic wildlife habitat. These measures are designed to reduce disturbance and sediment deposition in riparian zones while protecting riparian resources including wildlife habitat.

### Hydrology/Water Quality/Soils

Watershed resources and water quality will be maintained and protected during Project activities through the employment of project-specific design features and best management practices (BMPs) described in the *Water Quality Management for Forest System Lands in California: Best Management Practices* (USFS 2000). Proposed activities shall adhere to riparian conservation objectives (RCOs) for management of Riparian Conservation Areas (RCAs) and Stream Environment Zones (SEZs).

The RCA designation is used for regional planning. RCAs are a SNFPA defined buffer for streams, special aquatic features and other hydrological depressions (USFS 2004). The buffer width is dependent on the stream or feature type (perennial, intermittent, ephemeral) rather than soils or vegetation present in the area. Activities within RCAs will be consistent with RCOs as described in the SNFPA 2004 ROD.

The SEZ designation is used by the LTBMU and TRPA to define biological communities that owe their characteristics to the presence of surface water or a seasonally high groundwater table. The criteria for defining SEZs include indicators of vegetation, hydrology, and/or soil type (TRPA 1988). Treatment activities may be limited within SEZs.

For project planning purposes, SEZs were based on riparian vegetation as mapped by the Forest Service using infrared, low-altitude aerial photographs taken in 1987 and as mapped by Forest Service botanists during field surveys. Soil types were not used, as the scale of National Resource Conservation Service (NRCS) mapping was not sufficiently detailed to indicate SEZ soil types within the project area. SEZ boundaries will be flagged during treatment unit layout and marking; a watershed specialist will be consulted if there is a question about SEZ boundary location.

Treatment activities will take place primarily within the normal operating period, around May 1 to October 15. However, operable conditions may take place outside of that period and inoperable conditions may occur during that period. Some activities may be conducted outside the normal operating period, including pile burning and over-snow mechanical treatments. Design features and BMPs below are included and apply to treatment activities within and outside of the normal operating period.

32. Watershed or transportation specialist will review project BMPs prior to a large storm event (1 inch or greater) that may exceed BMP capacity and will notify contract administrator if additional BMPs are recommended to disconnect runoff from surface water features.

**Vegetation treatments in uplands (during normal operating period)**

33. To minimize compaction, gullying, and rutting, ground based and cable equipment operations will be conducted only when soils are dry to moist at the 4-8 inch depth. This determination will be made by a LTBMU watershed specialist, using the table in the SEZ Sensitivity Rating (on file in the project planning record, Tab 11) as a guideline.

34. Hand treatments, end-lining, equipment reach, or cable treatments will be used on slopes greater than 30 percent.

35. Where small areas of slopes greater than 30 percent are present in a unit, hand-fall trees and end-line the logs to a part of the unit where they could be picked up by heavy equipment. Endlining will primarily occur in the mechanical units and along the temp road in Unit 4.

36. Install water bars on skid trails and cable unit corridors to provide proper drainage and prevent erosion when operations are complete and before forecasted rain. Design and minimum spacing of water bars will be in accordance with the Forest Service Timber Sale Administration Handbook.

37. To the extent feasible, where end-lining occurs on slopes greater than 10 percent, end-line material along slope contours (i.e. cross-slope) to avoid creating ruts oriented down-slope. Where Forest Service implementation monitoring finds potential for sediment delivery to streams, contractor will rake in the berms from ruts created by end-lining or cable system use.

**Vegetation treatments in RCAs and SEZs (during all operating periods)**

38. Limit work in SEZs to times when soils are dry or when operable winter conditions are present (see Design Feature #33 for soil moisture determination criteria).

    For Whole Tree yarding operations, Table 4 will be used to determine equipment exclusion buffers for perennial channels, lakes, and ponds:

**Table 4. Equipment exclusion buffers for whole tree yarding operations along perennial channels, lakes, ponds.**

| Slope | Soil Cover | |
|---|---|---|
| | Less than 75% | Greater than 75% |
| Less than 20% | 75 feet | 50 feet |
| Greater than 20% | 100 feet | 75 feet |

a. A minimum 25-foot buffer will still apply in Whole Tree treatments units along intermittent channels.
b. A minimum10 foot buffer from the top of steep slopes (>30%) that are connected to an SEZ would also apply for Whole Tree equipment exclusion.

39. Standard ground based equipment in Whole Tree treatment stands will not operate in SEZs or stream channel buffers. Mechanical equipment (including CTL) may reach into SEZs to remove fuels. Tree removal using a cable system will be acceptable, but cable corridors will be located outside of SEZs, and outside the Whole Tree buffer for perennial channels, lakes, and ponds.

40. For any CTL operations, avoid tree removal methods that disturb the ground surface within 25 feet of perennial or intermittent streams or other water bodies (e.g. lakes, ponds, springs, or seeps). Avoid tree removal using a cable system within this buffer unless full suspension can be achieved.

41. Contract administrator would consult with LTBMU watershed specialist to determine additional needed buffer widths, based on proximity to Lake Tahoe and perennial channels, slope steepness (greater than 20 percent), and amount of existing ground cover (less than 30 percent).

42. Limit mechanical equipment operations in SEZs to innovative technology equipment that has been demonstrated to adequately protect soil and water resources, such as; cut-to-length harvester and forwarder (CTL) operations; low ground pressure equipment; rubber-tired equipment; equipment that operates on a bed of slash; over-snow equipment; or, other innovative technologies that reduce impacts to soils.

a) Spooner SEZ stands that exhibit equal or less sensitivity than the Heavenly Valley Creek SEZ Demonstration Project (HSEZ) site based on the most current version of the Sensitivity Rating System may be treated with mechanical equipment under operable soil moisture conditions. (Stands 2, 4, 7, 19, and 20 all rated equal or less sensitive using the rating system, stands 11 and 28 would be rated prior to treatment).

b) SEZ stands that rate more sensitive than the HSEZ project site will be treated by hand crews, end-lining, or mechanical over-snow operations.

c) When stands are rated more sensitive than the HSEZ site, but only a portion of the stand is responsible for the high sensitivity rating, the less sensitive part may be treated with mechanical equipment, but the sensitive portions of these stands must be treated by hand crews, end-lining, or mechanical over-snow operations. Areas with wet soils or other sensitive features will be flagged for hand treatment prior to commencement of mechanical operations.

43. During layout and marking, flag and avoid equipment use in and adjacent to special aquatic features (springs, seeps, and marshes). Use hand treatments or other low impact treatments in these areas. These areas are considered SEZs and are subject to the same design features.

44. Leave existing downed trees and large woody debris (LWD) that are in perennial or intermittent stream channels in place unless channel stability needs dictate otherwise, as determined by a LTBMU Watershed Specialist or Fisheries Biologist.

45. Design underburning prescriptions to avoid adverse effects on soil and water resources. Plan prescribed fire to ensure that fire intensity and duration do not result in detrimentally burned soils. Flame heights will not exceed two feet within 50 feet of stream courses or on wetlands unless higher intensities are required to achieve specific fuel reduction objectives. Whenever feasible, plan prescribed fire (underburning and slash piles) when soils are wetter (at least moist – see table in project planning record, Tab 11 ) and fuels are dry to decrease the potential for damage to soils.

46. Prescribed underburns will not be ignited in SEZs. Fire may be allowed to back into SEZs. Firelines will not be constructed within SEZs.

47. Treat SEZs within whole tree stands through endlining of bole material. Slash in excess of 15 tons per acre will be removed by hand or endlined from the buffer from stream channels and lakes, piled and burned.

48. Where feasible, logs will be fully suspended within SEZs. To achieve desired fuel loading in SEZs within whole tree units, logs may be end-lined out of the SEZ after consultation with a LTBMU Watershed Specialist. Where end-lining occurs:

a) Provide ground cover adequate to prevent erosion in disturbed areas, such as slash, wood chips, or masticated material.

b) Where implementation monitoring indicates potential for sediment delivery to a stream, rake in the berms from ruts created by end-lining.

49. To avoid removing or altering bank stabilizing vegetation, live or dead trees within 5 feet of the bank edge of perennial or intermittent streams and lakes or ponds may be marked for removal, as approved by the LTBMU Fisheries Biologist and/or Watershed Specialist. This is only allowed where fuel loads or stand densities exceed prescription and where LWD is at or above desired levels or where trees are a hazard to safe operations.

50. Trees will be felled away from perennial and intermittent stream channels unless the channel reach is identified as deficient in LWD, in which case a LTBMU Fisheries Biologist and/or Watershed Specialist will select trees greater than 12 inches DBH to be felled directionally into the channel.

51. Where it is necessary to cross an area with inoperable soil moisture conditions (as defined in design feature 33), equipment will operate over a slash mat, or other protective methods determined by watershed specialist and LTBMU contract administrator to minimize soil compaction.

**Hand piling and pile burning in SEZs**

52. Maintain a 50 ft buffer (no piling or burning) along perennial or intermittent streams, lakes, bogs, and fens. Slash would not be piled in springs and seeps.

53. Permit piling and burning up to 10 feet from the edge of ephemeral channels.

54. Allow fire to creep between piles and into these buffers, maintaining a burn intensity that will protect soil and water resources. Do not allow fire in flagged areas with sensitive plant occurrences and noxious weeds.

55. Where feasible, place piles in a non-linear pattern within each unit, maximizing the distance between piles such that average pile spacing is 10 feet.

56. No more than 15 percent of any SEZ acre may be piled in a given year, with an average pile diameter of 10 feet.

57. After initial ignition of piles, but while still burning, allow each pile to be re-piled once (i.e., place unburned pieces back into the burning pile). Additional re-piling will be allowed if necessary to achieve 80 percent consumption of the piled material, except for piles adjacent to aspen.

58. Hot piling of burn piles is prohibited within SEZs. (i.e., don't feed one pile with the material from other piles or ground material).

**Roads (during normal operating period)**

59. New temporary (unclassified) roads will be outsloped to ensure proper drainage of the road surface. Additional BMPS will be installed as recommended by a watershed or transportation specialist to ensure that temporary roads are hydrologically disconnected from intermittent and perennial stream channels. These BMPs could include lead-off ditches, water bars, rolling dips, etc, and will be installed during temporary road construction and maintained during the time the road is in use or installed at the end of operations each day.

60. Ephemeral channel crossings would be avoided where feasible, and where necessary, would be minimized to 1 crossing every 800 feet of channel length.

61. Remove ephemeral channel crossings prior to any National Weather Service forecasted large precipitation event (1 inch or greater) and before the winter season begins.

62. After mechanical operations are complete and where feasible based on soil type, temporary roads will be restored by using all of the following methods:

    a) Providing ground cover, such as slash, wood chips or masticated material (spread no more than 6-inches thick).

    b) Removing all temporary crossings and installing drainage structures as appropriate to prevent accumulating water on the decommissioned road surface.

    c) Ripping, where feasible (based on soil rock content and absence of noxious weeds), when soils are moist or dry. Contract Administrator shall determine whether ripping is feasible.

    d) Installing natural barriers such as large logs and rocks where necessary at the road entrance points to prevent continued use of road alignment.

63. Strategically establish barriers along open areas adjacent to road or trail access (boulders, split rail fence, and barriers/signs) to discourage post-treatment establishment of user-created routes that are not designated routes.

64. Berms, signage, gates, or rocks will be used off Genoa Peak Road (Forest Road 14N32) to prevent Off Highway Vehicle (OHV) access and activity into landings and staging areas and temporary roads.

**Landings**

The project includes approximately 16 landings; of these, 3 are new and 13 are existing. Two of the new landings will be located within RCAs; and all new landings will be outside of SEZs. Of the existing landings, 9 will be within and 4 will be near the edge of RCAs, but all will be outside of SEZs. Avoiding new disturbance was considered a higher priority than avoiding having landings in RCAs.

65. Landings, fuel storage, and refueling are prohibited in SEZs.

66. Proper drainage from landings will be provided during use; ditching, sloping, and water bars or other BMPs may be used where needed as recommended by watershed specialist to disconnect runoff from surface water features.

67. Hazardous materials, including Sporax® or equivalent, diesel fuel, and gasoline will be transported (except across designated crossings), stored, and handled outside SEZs. Sporax® or equivalent used in SEZs must be used according to label directions. Spill Prevention, Containment, and Countermeasures Plans will be prepared, if quantities used require them.

68. Restore landings after operations are complete using the following methods, as determined by the LTBMU Watershed Specialist:

    a) Providing ground cover, such as slash, wood chips or masticated material (spread no more than 6-inches thick).

    b) Ditching, sloping, and water bars may be used where needed as recommended by watershed specialist to disconnect runoff from surface water features.

    c) Landings will be ripped to approximately a 12-inch depth after ground cover has been spread. Ripping is not permitted in known infestations of noxious weeds, and may not be possible in rocky soils; this determination may be made by the Contract Administrator.

    d) Landings within 50 feet of an SEZ or greater than ¼ acre will be seeded with a native seed mix of grasses, forbs, and shrubs. Landings within 100 feet of cheatgrass, knapweed and hoary cress infestations will also be seeded.

**Vegetation treatments in uplands (outside normal operating period)**

69. When working outside of the normal operating period, conditions must be adequate to prevent erosion, sediment delivery to water bodies, and soil compaction that will impact soil productivity or soil hydrologic function. Operable conditions must be present on at least 85 percent of the treatment unit and generally will include the following:

    a) Frozen soil operations are permitted where operated vehicles, tractors and equipment can travel without sinking into soil, road, and landing surfaces to a depth of more than 2 inches for a distance of more than 25 feet. Temperatures must also remain low enough to preclude thawing of the soil surface.

    b) For over-snow operations, approximately 12 inches of compacted snow/ice will be maintained on undisturbed ground, and 6 inches of compacted snow/ice will be maintained on existing disturbed surfaces.

c) Lesser depths may be agreed to by a LTBMU Watershed Specialist and the Contract Administrator based on site specific conditions (limited areas and times) and current research and monitoring.

70. If operable soil moisture conditions are present beneath a lesser snow depth (i.e., less than 6 inches), operations may continue until soil moisture conditions become inoperable. Use the table in the SEZ Sensitivity Rating (found in the Soils and Hydrology Report on file in the project record, Tab 11) to determine operable soil moisture conditions. Monitor conditions closely and stop operations when surface soil (2-4") disturbance is greater than what would be expected during normal season operations.

71. Flag and avoid springs, seeps, and other areas that do not freeze well or are soft (see 66a).

72. When working outside of the normal operating period, monitor operations daily when rain is probable or when temperatures rise above 45 degrees Fahrenheit to ensure that adequate snow and frozen soil depths are maintained and that soil and water quality impacts are not occurring.

73. Move equipment and materials to areas near pavement or at landings before conditions become inoperable (Contract Administrator will evaluate daily).

74. For over-snow and frozen soil operations in SEZs, exclude ground based equipment from the 25-foot buffer around perennial and intermittent channels.

75. Temporary crossings on intermittent or ephemeral channels may be approved on a case by case basis through agreement between the LTBMU Contract Administrator and Watershed Specialist, and the conditions specifying the type of crossing will be documented. These crossings will maintain the stream channel profile so that the crossing will not result in bank damage.

**Roads (outside of normal operating period)**

76. Unless adequate snow cover or frozen soil conditions exist, where a native surface road meets a paved road, the road intersection must be covered with rock or organic material to reduce tracking of mud onto the paved road.

77. Except under frozen soil conditions, if a native surface road becomes rutted, close the road unless spot-rocking or other mitigation of rutted areas will be effective in preventing road damage. Rutting is defined as two-inch deep depressions, over 10 percent or more of the road surface, on a per mile basis. Any rutting that can deliver sediment to a water body or SEZ must be avoided.

78. During winter operations, paved surfaced roads may be plowed, including turnouts, if the action will not cause damage to the road surface and associated drainage structures.

79. On native surface roads, retain a minimum of 6 inches of compacted snow on 85 percent or more of the road surface after plowing to facilitate freezing. During road use, a minimum of 6 inches of compacted snow must be present on 85 percent or more of the road surface, unless the road surface is frozen to a depth of 3 inches or more. Ensure that plowing does not damage drainage structures.

80. Road alignments within the contract area that require snow removal will be visibly identified (e.g. marking) on both sides along the entire alignment to facilitate plowing. Excess snow removed during plowing will not be placed into drainages or riparian areas.

81. Before over-snow operations begin, mark existing culvert locations. During and after operations, ensure that all culverts and ditches are open and functional.

82. When roads are plowed, snow berms must be breached to allow drainage during snowmelt. Space outlets so as not to concentrate road surface flows (usually spaced at a minimum of every 300 feet). Erosion control structures may be necessary at outlets to collect road generated sediment, and will be agreed to by the Contract Administrator and a LTBMU Watershed Specialist.

## Heritage Resources

83. Heritage sites which are either unevaluated for, or determined eligible to the National Register, that are located within the proposed undertaking's Area of Potential Effect (APE) will be flagged and avoided from any project related disturbing activities. In the event that any new sites are discovered during project implementation, the Forest Archaeologist will be notified and the procedures in accordance with the Advisory Council on Historic Preservation Regulations 36 CFR Part 800 will be implemented.

84. Sites that are flammable (i.e. Comstock era stumps, wooden flumes, etc) will also be avoided and protected during prescribed burning (including slash piling and broadcast burning).

85. If any newly found pre-historic artifacts are located in treatment areas, any operations that could disturb the site(s) will cease and the LTBMU archaeologist will contact the Washoe Tribe of Nevada.

### Scenic Resources, Recreation, and Improvements

Recreation improvements and facilities include roads, utilities, structures, and/or parking areas that are within treatment areas or are used to access treatment units [e.g. units 1, 2 (road access and underground utilities for Thunderbird Lodge), units 4, 5, 6 (recreation trail), units 7, 8 (Secret Harbor and Chimney Beach access road, parking, portable vault toilets, and hiking trail), unit 11 (Skunk Harbor access road and historic cabin), unit 17 (Spooner Fire station parking and special use snow mobile trail), unit 16 (emergency escape route road (Old Highway 50) for Glenbrook community), and units 25, 29 (special use road for water district)].

86. Where feasible, within the immediate foreground (up to 150 feet.) of highly visible areas (e.g. Highway 50, State Route 28, recreation improvements and facilities, residential areas, and classified roads and trails) remove slash and do not pile.

87. Flush cut stumps within a maximum of 6 inches of the uphill side of the stump where practicable.

88. Leave shrub islands of various shapes and size in a random distribution to provide a natural appearance, while meeting fuel reduction objectives adjacent to private land or recreation improvements and facilities.

89. Within Highway 50 and State Route 28 (East Shore Drive National Scenic Byway) corridors, do not locate landings perpendicular to the Highways when possible to eliminate direct views into landings from the Highways,.

90. Any temporary equipment staging areas and access points will be rehabilitated and blocked after project completion. Rehabilitation may include returning the ground to natural contours, implementing de-compaction and erosion control measures as needed, and covering bare soil with slash, chips, pine needles, or cut brush as necessary.

91. The location of temporary roads shall fit the landscape with a minimum degree of landform alteration limiting the amount of earthwork. Avoid excessive cut and fill slopes for road construction.

92. Recreation Staff and/or Forest Landscape Architect will be consulted during layout design, and prior to the conclusion of thinning activities near forest system trailheads and recreation improvements and facilities. This design feature is intended to ensure the retention VQO is met in the immediate foreground.

93. Post signs and temporary closures advising trail users when project activities are going to take place at appropriate trailheads and recreation areas. This could include news releases about temporary forest area closures related to the project.

94. Where there is a safety concern for recreationists, sites where project treatment is implemented will be temporarily closed (Forest Closure Order).

95. Repair and rehabilitate any incidental damage caused by this project to recreation improvements/facilities after project activities are completed.

96. Interpretative panels to aid in public education of fuels management and forest health will be placed around recreation sites nearby during project activities, when appropriate.

97. Communicate with Thunderbird Lodge prior to commencing operations within proximity of the property to discuss operations that may result in potential short term disruptions to recreation activities. Maintain communication during operations.

98. Before commencing over-snow operations in the Spooner junction area (road 14N32 and Genoa Peak Road) ensure that operations will not impact over-snow vehicle recreation opportunities or compromise public safety.

99. Where skid trails or cable corridors are readily visible to recreational users, use natural features (e.g. trees, shrubs, logs, rocks, etc.) to aid in blocking and/or closing these trails to unauthorized vehicular use.

100. Roadside "eyebrows" of brush will be left intact to minimize the potential for unauthorized motorized use (illegal OHV activity). These "eyebrows" will vary in width to avoid an unnatural appearance.

### Agency Coordination

LTBMU staff have coordinated with TRPA for project planning per the Memorandum of Understanding between TRPA and Forest Service (2009).

Nevada Division of Environmental Protection (NDEP) regulates prescribed burning. In Washoe County, burning is permitted in accordance with the State Implementation Plan (SIP). In Douglas and Carson City Counties, notification is required. Prescribed burning in this project will be coordinated with the State and will follow the SIP to protect air resources, including obtaining and following air quality permits from NDEP for Washoe County.

### Monitoring

The following are monitoring elements for this project:

a) Each year, the 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 used for protecting soil and water resources associated with timber, engineering, recreation, grazing, and revegetation activities. During the spring, fuel treatment units that were treated the previous field season are evaluated for BMP implementation and effectiveness. The Project BMPs will be included in the pool for random BMP evaluations under the BMPEP program.

b) If cable yarding (i.e. Yoader) is implemented, monitoring will be conducted using BMPEP form T03-Suspended Yarding. In addition, an interdisciplinary team review will be conducted after completion of treatment to determine whether resource impacts are acceptable and whether any immediate remediation is needed.

c) Implementation monitoring in fuels treatment areas will include completing a checklist of the BMPs and design features in the NEPA and contract documents. Implementation monitoring will also include ensuring that SEZ flagging remains in place throughout the duration of the project.

d) The LTBMU weed crew will monitor known infestations of noxious weeds within treatment areas for 3 years after thinning is complete. Bull thistle, hoary cress, and Russian knapweed will be treated and monitored every year until eradicated. Other species will be treated in accordance with the LTBMU noxious weed program.

# REFERENCES

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US Forest Service. 1992. Forest Service Handb. 2409.15, Ch. 60. Forest Service Timber Sale Administration Handbook. Washington, DC. Accessed via World Wide Web at http://www.fs.fed.us/cgi-bin/Directives/get_dirs/fsh?2409.15 on May 28, 2009.

US Forest Service. 2000. Water Quality Management for Forest System Lands in California: Best Management Practices. Pacific Southwest Region, September 2000. Assessed via World Wide Web at http://www.fs.fed.us/r5/publications/water_resources/waterquality/index.html on May 28, 2009.

US Forest Service. 2004. Sierra Nevada Forest Plan Amendment (SNFPA) Final Supplemental Environmental Impact Statement; Record of Decision. Pacific Southwest Region; R5-MB-046. Accessed via World Wide Web at http://www.fs.fed.us/r5/snfpa/final-seis/rod/index-rod.html on May 28, 2009.

US Forest Service 2009. An ecosystem management strategy for Sierran mixed-conifer forests. North, Malcolm; Stine, Peter; O'Hara, Kevin; Zielinski, William; Stephens, Scott. Gen. Tech. Rep. PSW-GTR-220.

# Attachment 2 to Spooner Project Decision Memo
# Summary of Spooner Hazardous Fuels Reduction and Healthy Forest Restoration Project, Best Management Practices (BMPs)

**Summarized from "Water Quality Management for Forest System Lands in California – Best Management Practices", USDA Forest Service, Pacific Southwest Region, September 2000**

| Best Management Practice | Description |
|---|---|
| BMP 1-1: Timber Sale Planning Process (TSPP) | Earth scientists or other trained individuals will evaluate onsite watershed characteristics and the potential environmental consequences of activities related to the proposed timber harvest activities. They will design the timber sale to include site-specific prescriptions for each area of water quality concern. |
| PSW Region BMP 1-2: Timber Harvest Unit Design | Earth scientists or qualified specialists will conduct a hydrologic and geologic survey of the area affected by proposed harvest activities. Mitigations or changes needed to stabilize slopes or improve streamcourses will be incorporated into the harvest unit design. |
| PSW Region BMP 1-3: Determination of Erosion Hazard Rating (EHR) for Timber Harvest Unit Design | Use the EHR System developed by the California Soil Survey Committee to evaluate the potential erosion hazard of proposed timber harvest units during the pre-sale planning process, and use this information to help design the timber sale and to select appropriate erosion control measures. |
| PSW Region BMP 1-4: Use of Sale Area Maps (SAMs) for Designating Water Quality Protection Needs | The Interdisciplinary Team (IDT) will identify and delineate water quality protection features, such as the location of streamcourses and riparian zones to be protected, wetlands to be protected, boundaries of harvest units, and roads where log hauling is prohibited or restricted, as part of the environmental documentation process. The Sale Preparation Forester will include them on the SAM at the time of contract preparation. |
| PSW Region BMP 1-5: Limiting the Operating Period of Timber Sale Activities | Limited operating periods will be identified and recommended during the TSPP by the IDT. Contractor must submit a general plan of operation which will identify planed periods for, and methods of road construction, timber harvesting, completion of slash disposal, erosion control work and other contractual requirements. The contractor will provide an annual schedule of anticipated activities. Limited operating period will be used to limit the contractor's operation to specified periods when adverse environmental effects are not likely. |

| Best Management Practice | Description |
|---|---|
| PSW Region BMP 1-6: Protection of Unstable Lands | The IDT will prepare plans and environmental documents, utilizing information provided from specialists trained and qualified to identify unstable areas. Where unstable lands are presently classified as suitable forest lands, the classification is changed to unsuitable forest lands, which will not be harvested until they can be harvested without irreversible adverse effects to soils, productivity, or watershed conditions. |
| PSW Region BMP 1-8: Streamside Management Zone Designation | Roads, skid trails, landings and other timber harvesting facilities will be kept at a prescribed distance from designated stream courses. Factors such as stream class, channel aspect, channel stability, sideslope steepness, and slope stability will be considered in determining the activities limited within Streamside Management Zones (SMZs). Aquatic and riparian habitat, beneficial riparian zone function, and their condition and estimated response to the proposed timber sale will also be evaluated in designating the SMZ. |
| PSW Region BMP 1-9: Determine Tractor Loggable Ground** | To minimize soil erosion and subsequent sedimentation and water quality degradation resulting from ground disturbance of logging systems. To determine tractor loggable ground, consider physical site characteristics such as steepness of slopes and soil properties. The Erosion Hazard Rating is one method that can be used. |
| PSW Region BMP 1-10: Tractor Skidding Design** | Watershed factors such as slope, soil stability, exposure, SMZs, meadows, and other factors that may affect surface water runoff and sediment yield potential will be considered when designing skidding patterns. 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 SMZs. |
| PSW Region BMP 1-12: Log Landing Location | Landing locations proposed by the contractor or their representatives must be agreed to by the Sales Administrator (SA). An acceptable landing will be evaluated according to a set of criteria that includes the following: the cleared or excavated size of landings should not exceed that needed for safe and efficient skidding and loading operations; landing locations that involve the least amount of excavation and the least erosion potential will be selected; landings will be located near ridges 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; landings will be located where the least number of skid roads will be required, and sidecast material can be stabilized without entering drainages; skid approach will be as nearly level as feasible; and the number of skid trails entering a landing will be minimized. |

| Best Management Practice | Description |
|---|---|
| PSW Region BMP 1-13: Erosion Prevention & Control Measures During Timber Sale Operations | Equipment will not be operated when ground conditions are such that excessive damage will result. 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 1-14: Special Erosion Prevention Measures on Disturbed Lands | Where required by the contract, the contractor will give adequate treatment by spreading slash, mulch, wood chips, or some other treatment (if agreed upon) on portions of tractor roads, skid trails, landings, cable corridors, or temporary road fills. This provision is to be used only for timber sales that contain special soil stabilization problems that are not adequately treated by normal methods. |
| PSW region BMP 1-15: Revegetation of Areas Disturbed by Harvest Activities | Where soil has been severely disturbed and the establishment of vegetation is needed to control accelerated erosion, the contractor will be required to establish an adequate ground cover of grass or other vegetative stabilization measures approved by the USFS. |
| PSW Region BMP 1-16: Log Landing Erosion Prevention and Control | Timber Sale Contract (TSC) requirements provide for erosion prevention and control measures on all landings, which will include provisions for proper drainage. After landings have served contractor's purpose, the contractor will ditch or slope the landings and may be required to rip or subsoil and make provisions for revegetation to permit the drainage and dispersal of water. |
| PSW Region BMP 1-17: Erosion Control on Skid Trails | To protect water quality by minimizing erosion and sedimentation derived from skid trails, erosion control measures are required on a skid trails, tractor roads, and temporary roads. Normally, such measures involve constructing cross ditches and water spreading ditches. The location of all erosion control measures are designated and agreed to on the ground by the SA. |
| PSW Region BMP 1-18: Meadow Protection | At a minimum, meadow protection requirements contained in Forest Land and Resource Management Plans must be identified and implemented. Unauthorized operation of vehicular or skidding equipment in meadows or in protection zones is prohibited by the TSC. Damage to designated meadows and/or their associated protection zones will be repaired by the contractor in a timely manner, as agreed to by the SA. Damage to a streamcourse or streamside management zone (SMZ) caused by unauthorized contractor operations will be repaired by the contractor in a timely manner and agreed upon manner. |

| Best Management Practice | Description |
|---|---|
| PSW Region BMP 1-19: Streamcourse Protection (Implementation and Enforcement) | Streamcourse protection principles including but not limited to the following will be carried out: location and method of streamcourse crossings must be agreed to by the SA prior to construction; all damage to streamcourses, including banks and channels, must be repaired to the extent practicable; all debris generated by the project will be removed from streamcourses in an agreed upon manner that will cause the least disturbance; equipment use in SMZs will be limited or excluded; water bars and other erosion control structures will be located to disperse concentrated flows and filter out sediments prior to entry into a streamcourse; and material from temporary road and skid trail streamcourse crossings will be removed and streambanks restored to the extent practicable. |
| PSW Region BMP 1-20: Erosion Control Structure Maintenance | During the period of the TSC, the contractor will provide maintenance of soil erosion structures constructed by contractor until they become stabilized, but not for more than 1 year after their construction. After 1 year, needed erosion control maintenance will be accomplished using other funding sources under TSC provisions B6.6 and B6.66. |
| PSW Region BMP 1-21: Acceptance of Timber Sale Erosion Control Measures Before Sale Closure | "Acceptable" erosion control means only minor deviation from established objectives, so long as no major or lasting damage is caused to soil or water. SAs will not accept erosion control measures that fail to meet these criteria. |
| PSW Region BMP 1-22: Slash Treatment in Sensitive Areas | Special slash treatment site preparation will be prescribed in sensitive areas to facilitate slash disposal without the use of mechanized equipment. |
| PSW Region BMP 1-25: Modification of Timber Sale Contract | Once timber sales are sold, they are harvested as planned in the TSC. Occasionally, however, it will be necessary to modify a TSC due to new concerns about the potential effects 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 | Location, design and construction of roads will be agreed upon by the IDT in order to result in minimal resource damage. |

| Best Management Practice | Description |
|---|---|
| PSW Region BMP 2-2: Erosion Control Plan | Within a specified period after the award of a contract (currently 60 days prior to the first operating season), the contractor will submit a general plan that, among other things, establishes erosion control measures. Operations cannot begin until the Forest Service has approved the plan in writing. |
| PSW Region BMP 2-3: Timing of Construction Activities | Temporary road construction and road re-construction activities will be conducted during the dry season, when rain and runoff are unlikely and weather and ground conditions are such that impacts to soils and water quality will be minimal. Construction of drainage facilities and performance of other contract work to control erosion and sedimentation is required in conjunction with earthwork projects. The operator shall limit the amount of area being graded at a site at any one time, and shall minimize the time that an area is left bare. |
| PSW Region BMP 2-7: Control of Road Drainage | Used alone or in combination, methods such as the construction of properly spaced cross drains, water bars, or rolling dips; installation of energy dissipaters, aprons, downspouts, gabions, or flumes; armoring of ditches and drain inlets and outlets; and removing or adding berms can be used to control unacceptable effects of drainage. |
| PSW region BMP 2-9: Timely Erosion Control Measures on Incomplete Roads and Stream Crossing Projects | Apply protective measures to all areas of disturbed, erosion-prone, unprotected ground that is not to be further disturbed in the present year. Affected areas can include roads, road fills, skid trails, landings, stream crossings, bridge excavations, and firelines. Preventative measures include removal of temporary culverts, culvert plugs, diversion dams, or elevated stream crossings; installation of temporary culverts, side drains, cross drains, diversion ditches, sediment basins, berms, or other facilities needed to control erosion; removal of debris, obstructions and spoil material from channels and floodplains; and planting vegetation, mulching, and/or covering exposed surfaces with jute mats or other protective material. |
| PSW Region BMP 2-10: Construction of Stable Embankments | To construct embankments with materials and methods which minimize the possibility of failure and subsequent water quality degradation. Design and construct the roadway with a proper slope ratio and with adequate strength to support the treadway, shoulders, subgrade and the roads traffic loads. Construct embankments using one of the following methods: sidecasting and end-dumping, layer placement, controlled compaction, and/or using retaining walls, confinements systems, plantings, or combination. |

| Best Management Practice | Description |
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| PSW Region BMP 2-12: Servicing and Refueling Equipment | If the volume of fuel exceeds 660 gallons in a single container, or if total storage at a site exceeds 1,320 gallons, 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 2-13: Control of Construction and Maintenance Activities Adjacent to SMZs | Construction and maintenance fills, sidecast, and end-hauled materials are kept out of SMZs except at designated sites to minimize effects on the aquatic environment. It is also necessary to stabilize fill slopes to prevent sediment accumulations in the streamside zone. |
| PSW Region BMP 2-14: Controlling In-Channel Excavation | When necessary in the construction or removal of culverts, bridges, and other facilities, heavy equipment is permitted to cross or work in or near streams or lakes during construction under specific protection requirements. Excavation during the installation of instream structures must follow all of the following minimum water quality protection requirements: 1) Unless otherwise approved, no excavation will be made outside of caissons, cribs, cofferdams, or sheet piling; 2) the natural streambed or lake bottom adjacent to the structure will not be disturbed without prior approval of the ER or COR; 3) If any excavation or dredging is made at the site of the structure before it is sunk in place, all excavations will be restored to the original surface and the streambed or lake bottom must be protected with suitable material; 4) material deposited within the stream or lake area from foundation or other excavation will not be discharged into live streams or lakes, but will be put into settling areas as shown in plans or approved by the ER or COR; 5) If the channel or lake bottom is disturbed during construction, it must be restored to its original configuration while minimizing any additional disturbance; and, 6) disturbance of stream or lake banks are kept to a minimum. Disturbed banks are stabilized. |
| PSW Region BMP 2-15: Diversion of Flows Around Construction Sites | Streamflow must be diverted around construction sites such as bridges, culverts, and dams for all live streams. The diverted flows are returned to their natural streamcourse as soon as possible after construction or prior to the rainy season. All disturbed areas are stabilized prior to the rainy season or as needed. |
| PSW Region BMP 2-16: Stream Crossings on Temporary Roads | Stream crossing structures are required on all temporary roads where it is necessary to cross designated channels. Such crossings are designed to provide for unobstructed flows and the passage of fish, and to minimize damages to stream channels and water quality. The number of crossings will be kept to the minimum needed for access and will be as perpendicular to stream courses as possible. Temporary crossing facilities will be removed and the site stabilized prior to the rainy season |

| Best Management Practice | Description |
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| | each year or when the facility is no longer needed. |
| PSW Region BMP 2-17: Bridge and Culvert Installation | Spoil material from excavation during construction of in-channel structures should neither obstruct the stream course or natural floodplain nor impair the efficiency of the installed structure. Excavated material should be kept out of stream channels, stockpiled material on floodplains should be removed prior to a storm event, and flowing water should be diverted around work sites. |
| PSW Region BMP 2-21: Water Source Development Consistent with Water Quality Protection | Water source development to supply water for road construction and maintenance, dust control, and fire control shall avoid use of earth fill and dam construction. Cofferdams and water holes will be built out of sandbags filled with clean sand or gravel. Downstream water flow will not be reduced to a level that will be detrimental to established uses. |
| PSW Region BMP 2-22: Maintenance of Roads | Provide the basic maintenance required to protect the road and to ensure that damage to adjacent land and resources is prevented. This is the normal prescription for roads closed to traffic and often requires an annual inspection to determine what work is needed. At a minimum, maintenance must protect drainage facilities and runoff patterns. Additional maintenance includes surfacing and resurfacing, outsloping, clearing debris, etc. |
| PSW Region BMP 2-23: Road Surface Treatment to Prevent Loss of Materials | When necessary, contractors, special users, and Forest Service project leaders will undertake road surface treatment measures such as watering, sealing, aggregate surfacing, or paving to minimize loss of road materials. |
| PSW Region BMP 2-24: Traffic Control during Wet Periods | Roads that must be used during wet periods should have a stable surface and sufficient drainage to allow use while also maintaining water quality. Rocking, paving, and armoring are measures that protect the road surface and reduce soil loss. Where wet season field operations are planned, roads may need to be upgraded, use restricted to low ground pressure vehicles or frozen ground conditions, or maintenance intensified to handle the traffic without creating excessive erosion and damaging the road surface. |
| PSW Region BMP 2-25: Snow Removal Controls to Avoid Resource | Where Forest Roads are used throughout the winter, the contractor will be responsible for snow removal that will protect roads and adjacent resources. Rocking or other special surfacing will be necessary before the operator is allowed to use the roads. Snow berms will be removed |

| Best Management Practice | Description |
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| Damage | where they result in accumulation or concentration of snowmelt runoff on the road and erosive fill slopes. Snow berms will be installed in places that will preclude concentration of snowmelt runoff and that will serve to rapidly dissipate melt water. |
| PSW Region BMP 2-26: Decommission of roads | Temporary roads will be obliterated or decommissioned following their intended use. Obliteration/decommissioning may include re-contouring or outsloping to return the road prism to near natural hydrologic function, blocking the road to vehicle access, removing crossings and restoring natural drainage, and stabilizing road surfaces with ripping and/or revegetation. |
| PSW Region BMP 5-2: Slope Limitations for Mechanical Equipment Operations | Ground based equipment operation will be limited to slopes where corrective measures such as water bars can be effectively installed to reduce gully and sheet erosion and associated sediment production. |
| PSW Region BMP 5-3: Tractor Operation Limitation in Wetlands and Meadows | Mechanical equipment will be excluded from wetlands and meadows except for the purpose of restoring wetland and meadow function. The target areas will be protected from mechanical operations except when they are identified for treatment by trained and qualified personnel on the IDT. Specific protection measures will be established for each area that could incur adverse water quality impacts. |
| PSW Region BMP 5-4: Revegetation of Surface Disturbed Areas | On unstable soil surfaces resulting from project activities, revegetation with native seed and/or application of mulch may be required to protect water quality and minimize soil erosion. The onsite factors evaluated will include soil productivity, topography, EHR, and soil water holding capacity. |
| PSW Region BMP 5-5: Disposal of Organic Debris | The project IDT will determine the methods of debris disposal and/or placement of debris after treatment. Methods of disposal include: prescribed burning, chipping, mastication, lop and scatter, and mechanical harvesting/collection. |
| PSW Region BMP 5-6: Soil Moisture Limitations for Mechanical Equipment Operations | To prevent compaction, gullying and rutting, mechanical equipment operations will be limited or excluded during wet soil conditions. |

| Best Management Practice | Description |
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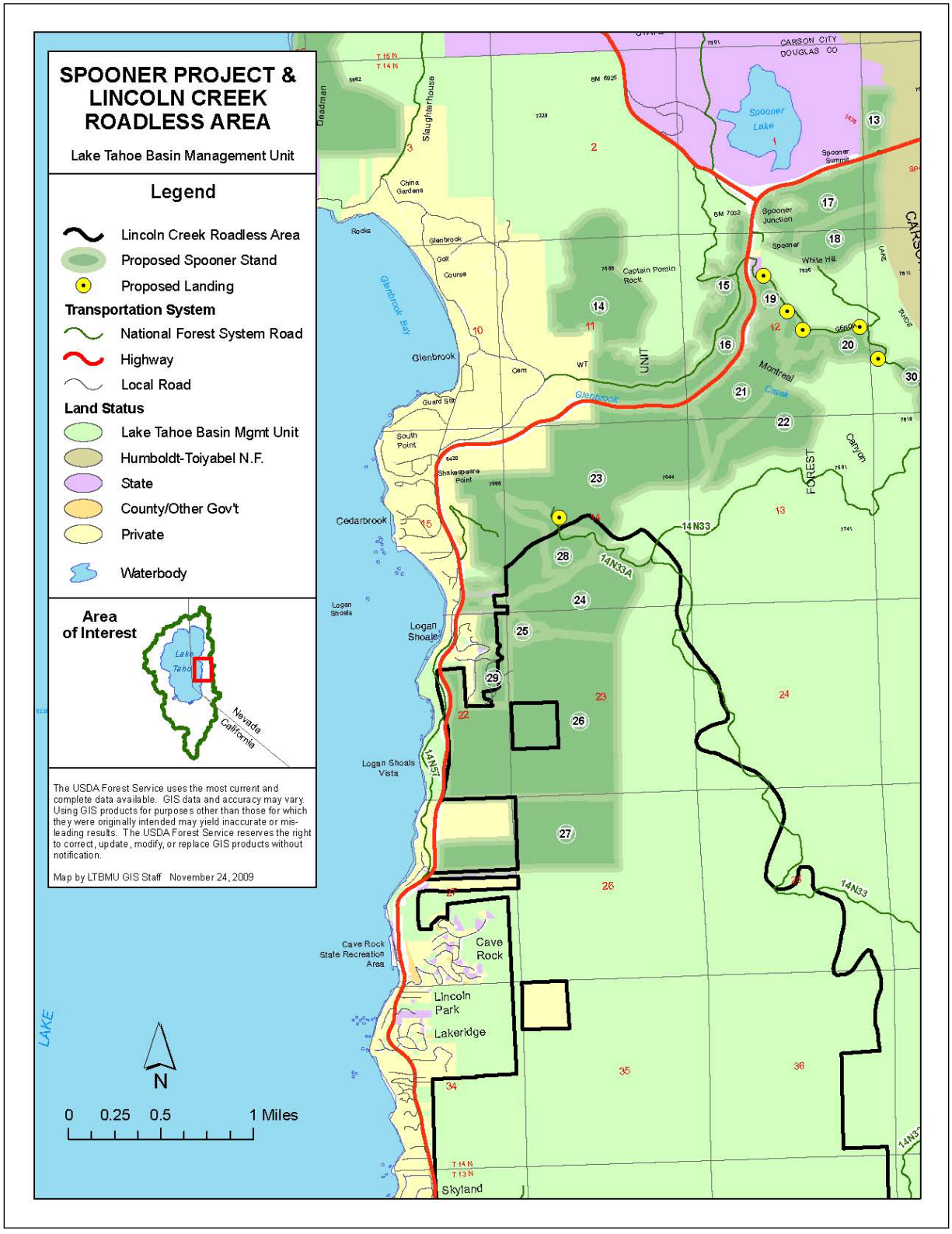
| PSW Region BMP 6-1: Fire and Fuel Management Activities | To reduce public and private losses and environmental impacts that result from wildfires and/or subsequent flooding and erosion, measures including the use of prescribed fire or mechanical methods will be used to achieve defensive fuel profile zones, fuel reduction units, and fire suppression activities. |
| 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 prescribed fires, 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, acceptable disturbance for contiguous and aggregate length for the riparian/SMZ, and maximum expected area covered by water repellent soils. |
| PSW Region BMP 6-3: Protection of Water Quality from Prescribed Burning Effects | Implementation of techniques to prevent water quality degradation, maintain soil productivity, and minimize erosion from prescribed burning. These techniques include: constructing water bars in fire lines, reducing fuel loading in drainage channels, and retaining or re-establishing ground cover as needed to keep erosion of the burned site within the limits of the burn plan. |
| PSW Region BMP 7-3: Protection of Wetlands | Activities and new construction in wetlands will not be permitted whenever there is a practical alternative. Factors relevant to the survival and quality of the wetlands, such as water supply, water quality, recharge areas, habitat diversity and stability, and hydrologic function of riparian areas will be considered when evaluating proposed actions in wetlands. Replacement in kind of lost wetlands should be evaluated to apply a “no net loss” perspective to wetland preservation. |
| PSW Region BMP 7-7: Management by Closure to Use | If the Forest Supervisor determines that a particular resource or improvement needs protection from use to preclude adverse water quality effects, activities that could result in damages to those resources or improvements may be excluded. |
| PSW Region BMP 7-8: Cumulative Off-Site Watershed Effects | Cumulative Watershed Effects (CWE) analyses are used to protect identified beneficial uses of water from the combined effects of multiple management activities. |

Attachment 3 to Spooner Project Decision Memo
Map of Spooner Project treatments and the Lincoln Creek Roadless Area



Attachment 4 to Spooner Project Decision Memo
Table of Spooner Project treatments within or partially within the Lincoln Creek Roadless Area

| Unit # | Within Lincoln Creek Roadless Area | | Outside of Lincoln Creek Roadless Area | |
|---|---|---|---|---|
| | Acres Hand Treatment | Acres Mechanical Treatment | Acres Hand Treatment | Acres Mechanical Treatment |
| 23 | 59 | 0 | 384 | 0 |
| 24 | 125 | 0 | 1 | 0 |
| 25 | 13 | 0 | 0 | 0 |
| 26 | 440 | 0 | 1 | 0 |
| 27 | 180 | 0 | 0 | 0 |
| 28 | 33 | 0 | 0 | 18 |
| 29 | 20 | 0 | 26 | 0 |