

PROPOSED ACTION
USDA Forest Service
Pine Creek Restoration Project
Eagle Lake Ranger District, Lassen National Forest
Lassen County, California
November 1, 2013

Introduction

The Pine Creek Restoration Project proposal stems from an evaluation of opportunities to increase the resiliency and overall function of the watershed by improving water quality and quantity, timing and duration of flows, and stream and riparian condition. As a result of the evaluation, the Eagle Lake Ranger District (ELRD) of Lassen National Forest (LNF) is proposing actions focused on decommissioned and unauthorized roads and railroad grades, diversions, and dug-out water holes on Pine Creek and tributaries to improve watershed function and address many areas of degraded aquatic and riparian habitat.

On March 27, 2013, a new final rule was published in the Federal Register creating a Pre-Decisional Administrative Review Process (36 CFR 218) that expanded the objection process to non-HFRA projects. This rule established a pre-decisional objection process for projects and activities implementing land management plans in lieu of the post-decisional appeal process (215) previously used by the agency. The Pine Creek Restoration Projects will be implemented under this new 36 CFR 218 rule.

The proposed action is consistent with the 1992 *Lassen National Forest Land and Resource Management Plan* (LRMP) and 1993 *Record of Decision* (ROD), the *Sierra Nevada Forest Plan Amendment* (SNFPA) FSEIS and ROD (2004), and the *SNFP Management Indicator Species Amendment* (2007).

Project Area

The project area consists of three areas along Pine Creek and associated tributaries within the Eagle watershed: Upper Pine Creek Valley, Lower Pine Creek Valley, and Burgess Meadow. Upper and Lower Pine Creek Valley are within the Campbell (MA 23) Management Area and Burgess Meadow within the Harvey (MA 12) Management Area, as identified in the LNF LRMP. The project areas are roughly 24 air miles northwest of Susanville, Lassen County, California, just east and southeast of the Blacks Mountain Experimental Forest. Included are portions of Township (T) 31 North (N), Range (R) 8 East (E), Sections (S) 1-4 and 11; T32N, R9E, S16, 29, 31-32; T33N, R8E, S36; and T33N, R9E, S31 of the Mount Diablo Meridian (Figure 1).

The Eagle watershed is a significant drainage basin on the Eagle Lake Ranger District (ELRD) located within the 4th field Honey-Eagle Lakes sub-basin (HUC¹: 18080003). It includes Upper Pine Creek (1808000301), Middle Pine Creek (1808000302), Lower Pine Creek-Eagle Lake (1808000303) 5th field

¹ Hydrologic Unit Code (HUC), a commonly-used system for defining drainage boundaries from the US Geological Survey's Watershed Boundary Dataset. Codes describe geographic location and level of the watershed unit.

watersheds, and three of LNF's 6th field priority watersheds identified in 2011 under the US Forest Service's watershed condition classification: Pine Creek Valley-Pine Creek (180800030103), Champs Flat-Pine Creek (180800030204), and Antelope Valley-Pine Creek (180800030301). The Eagle watershed covers 270,000 acres with the majority of it on ELRD (Figure 3). Eagle Lake is in a closed drainage basin with numerous seasonal streams providing surface inflows: Pine, Merrill, Little Merrill, Papoose, and Cleghorn creeks. Most are small ephemeral streams with the exception of Pine Creek. Pine Creek is the major tributary to Eagle Lake and its watershed comprises over 50% of the land area within the basin.

The main channel of Pine Creek is approximately 40 miles in length with a 1,200 ft. elevation gradient change from Leaky Louie's Pond (6,315 ft.) to Eagle Lake (5,100 ft.) Pine Creek is highly variable both seasonally and inter-annually. Pine Creek is perennial from the headwaters near Leaky Louie's spring to McKenzie Cow Camp (approximately 7 miles). The remaining reaches are intermittent and typically flow from mid-March to June depending on the water year. These lower reaches cross a sequence of four much larger, broad, nearly level, alluvial valleys separated by short, relatively steeper volcanic bedrock narrows before entering into Eagle Lake. Pine Creek Valley is the largest valley in the Upper Pine Creek watershed. The valley includes ten miles of Pine Creek flowing in anastomosing² channels. The vegetative communities in Pine Creek Valley are characterized by grass and grass like plants in both wet (*Juncus balticus*, *Carex nebrascensis*) and dry (*Carex filifolia*, *Deschampsia cespitosa*) habitats, as well as brush (*Artemisia tridentata*, *A. arbuscula*, *Purshia tridentata*, *Ericameria bloomeri*).

² Anastomosing channels are multithreaded stream channels, but are much more stable than braided channels and commonly have thick clay and silt banks and occur at lower stream bed gradients.

Pine Creek Watershed Restoration Project

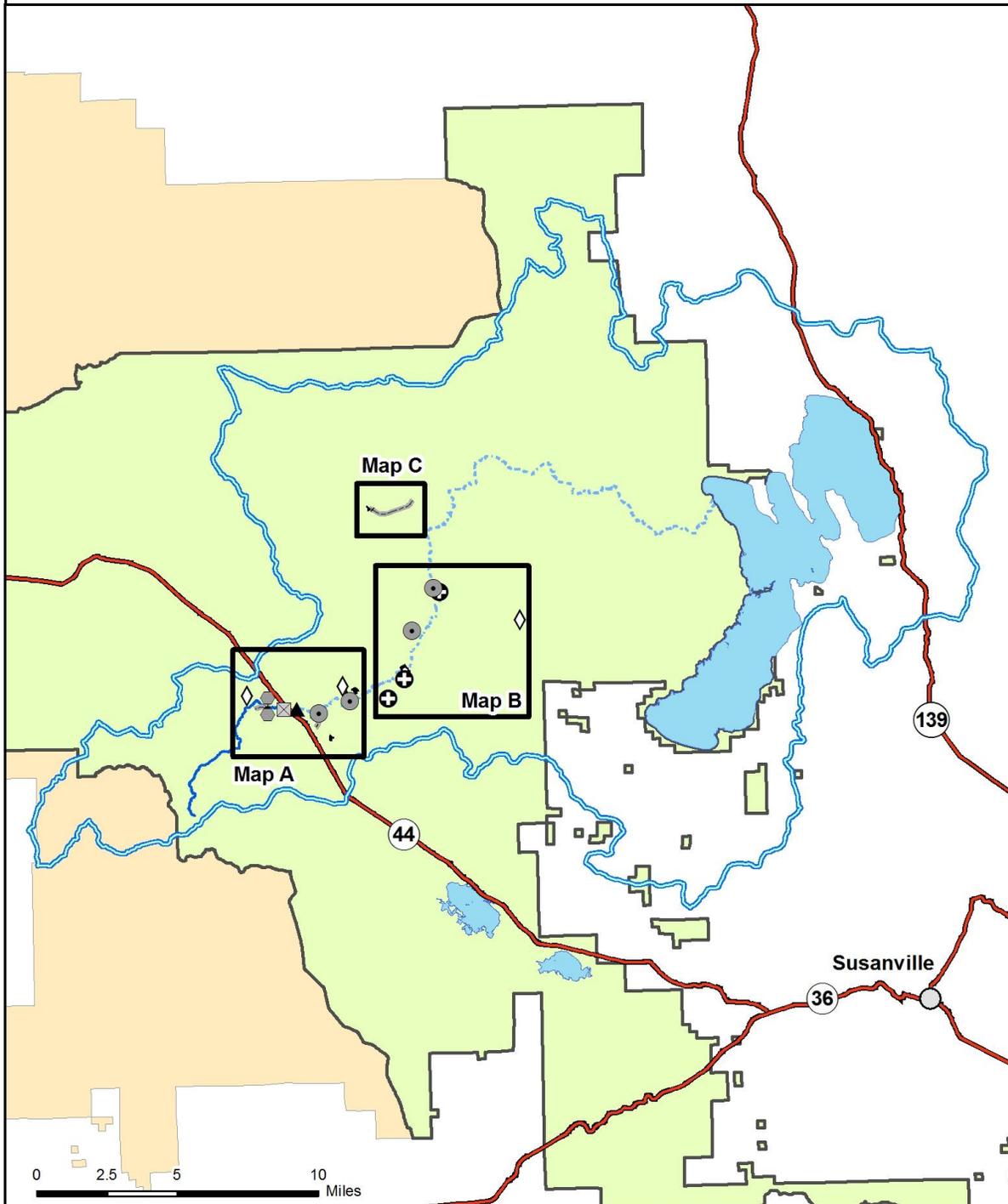


Figure 1. Vicinity map showing project locations.

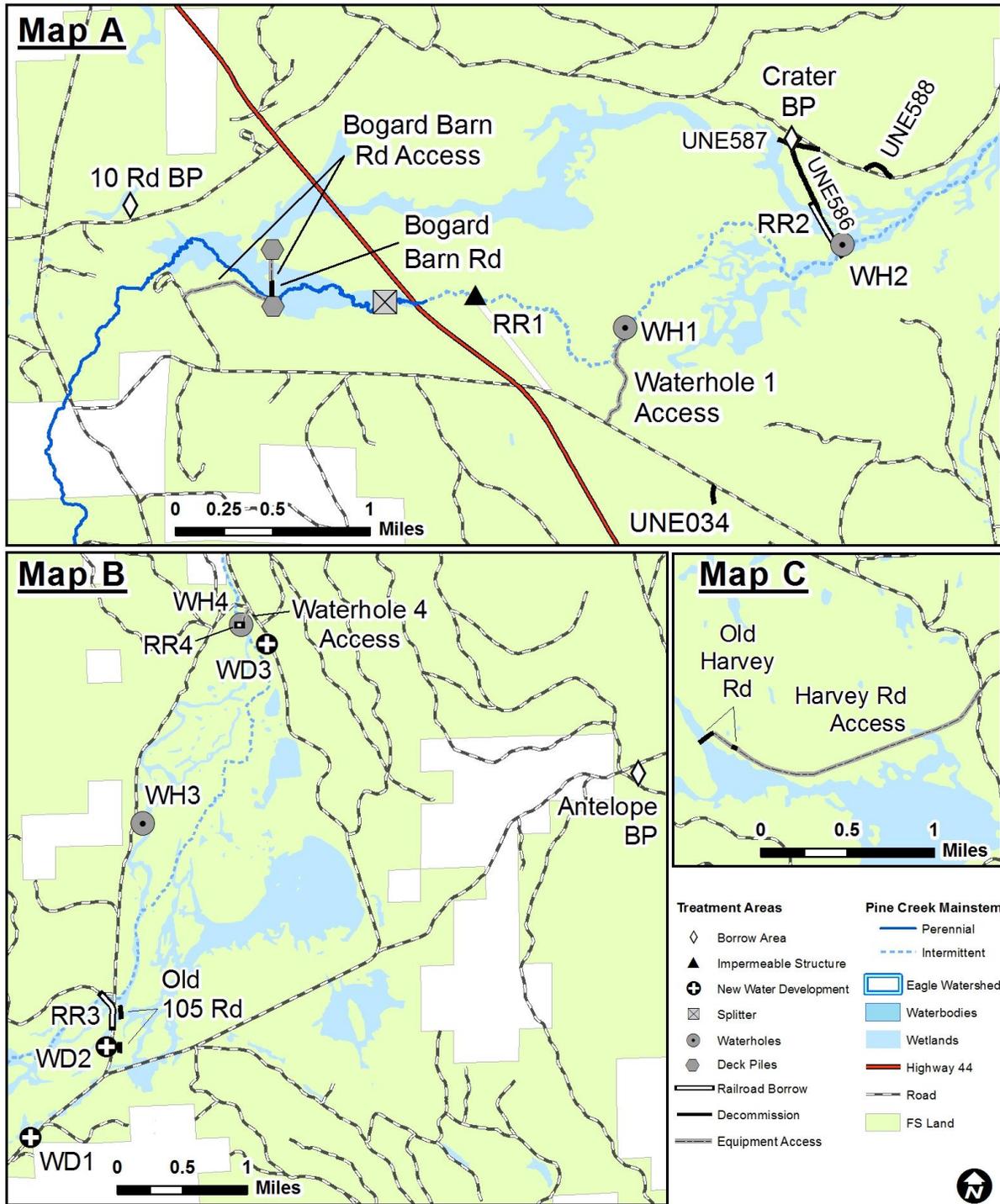


Figure 2. Zoomed-in areas of maps identified in vicinity map showing exact locations of dug-out waterholes, railroads, and roads that were identified to improve watershed function (e.g. hydrologic connectivity and water quality) in Pine Creek Valley and associated tributaries.

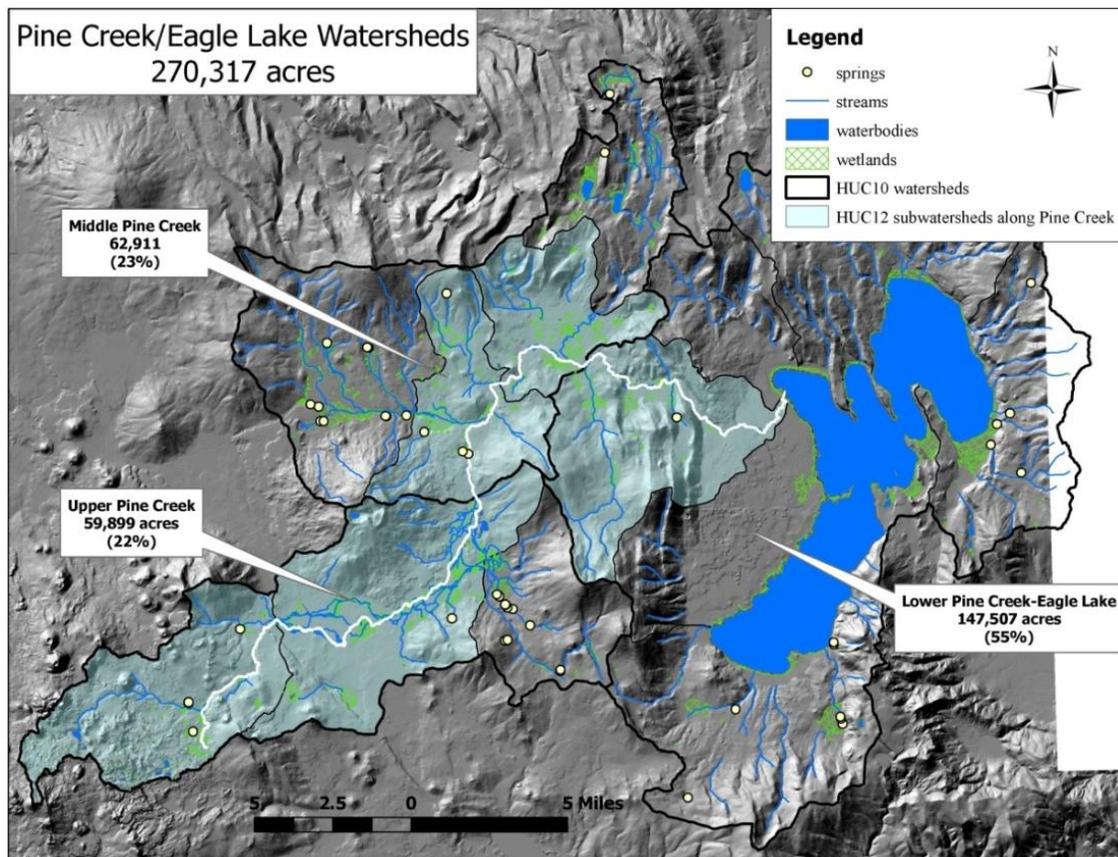


Figure 3. Aerial view of the Eagle watershed (HUC 10) and sub-watersheds (HUC12).

Purpose and Need

The proposed treatments in the Pine Creek Watershed Restoration Project are based on watershed and range management objectives, as per the LRMP as amended by the Sierra Nevada Plan Amendment (SNFPA). Water and riparian management direction in the LRMP is to maintain or improve riparian-dependent resources in and around wetlands, stream corridors, lakes, seeps, springs, and wet meadows. The riparian and fish prescription specifically emphasizes road obliteration, watershed restoration and improvement, and fish habitat management with permitted activities that include range administration and management, road closure, and range structural improvement and maintenance. The LRMP also directs management to provide for long-term rangeland productivity for fisheries, wildlife, soil, water, timber, and livestock forage values. Management objectives focus on distribution of livestock use over rangelands using structural improvements.

The SNFPA management intent for aquatic, riparian and meadow ecosystems include but are not limited to the following:

- maintain and restore the hydrologic connectivity of streams, meadows, wetlands and other special aquatic features by identifying roads and trails that intercept, divert, or disrupt natural surface and subsurface water flow paths,

- maintain and restore spatial and temporal connectivity for aquatic and riparian species within and between watersheds to provide physically, chemically, and biologically unobstructed movement for their survival, migration, and reproduction,
- maintain and restore the physical structure and condition of stream banks and shorelines to minimize erosion and sustain desired habitat diversity, and
- maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows, wetlands, and other special aquatic features.

This project is also aligned with both regional and national goals for watershed restoration, including the Region 5 Ecological Restoration Goal to make land and water ecosystems more sustainable, more resilient, and healthier under current and future conditions.

Pine Creek is the primary spawning tributary for the Eagle Lake rainbow trout (ELRT), a subspecies of rainbow trout endemic to the Eagle Lake watershed. The ELRT is under a 12 month review for federal listing due to concerns over its ability to naturally reproduce under current conditions. Portions of its migration and spawning habitat along Pine Creek are degraded as a result of past land management practices that included extensive logging, heavy grazing, stream channelization, and construction of railroads and roads across meadows and streams. Degraded habitat conditions, along with historic commercial fishing and poaching, led to a drastic decline in the population of ELRT by the 1930s. A fish trap and barrier were built near the lake on Pine Creek and ELRT began to be reared entirely in a fish hatchery in the 1950's to prevent possible extinction. Efforts to restore natural spawning started in the late 1990's with improvements to aquatic passage. Although most fish passage concerns have been addressed by collaborative restoration efforts in the past two decades, there is still a need to improve watershed function to enhance the aquatic and riparian habitat along many reaches of Pine Creek to increase the chances of successful re-establishment of a wild population of ELRT. Current work on the spawning run indicates that extending duration of flow may help reestablish natural reproduction. This proposal would address many areas of degraded aquatic and riparian habitat and could contribute towards restoring longer flow duration.

The proposed projects are consistent with key watershed issues related to flow characteristics, channel shape and function, and vegetative condition identified in the USDA Forest Service Watershed Condition Framework FY2011. These projects were identified as opportunities to increase the resiliency and overall function of the watershed by improving water quality and quantity, timing and duration of flows, and stream and riparian condition.

Railroads and Roads

Pine Creek's main channel has been affected by construction of roads and railroads. These railroads and road decrease watershed function by:

- 1) impeding hydrologic connectivity, especially when they cross valley floors,

- 2) confining flows to designated crossings, which prevents streams from meandering through the valley bottom, reducing sinuosity and increasing stream power, leading to channel incision. This lowering of the stream bed through the process of channel incision results in less surface flow access to the floodplain during ordinary high flows,
- 3) re-directing flows and capturing water in borrow ditches, which alters water retention patterns, collectively lowers water table levels and decreases water storage, alters channel morphology and stream flow patterns, and changes vegetative cover and composition.

Sections of abandoned railroads and roads within the flood plain need to be re-contoured and the associated borrow ditches filled to allow Pine Creek to migrate across the valley floor, improving hydrologic connectivity and water retention patterns. Additionally, filling in the borrow ditches that hold water would remove the attractants for cattle so they do not concentrate on the stream channel, which should increase the likelihood of meeting riparian and stream channel standards.

The following four railroad grades cross Pine Creek Valley, of which one is active.

Burlington Railroad - Railroad - 1 (T31N, R8E, S3)

The stream channel of Pine Creek on the northeast side of the railroad is higher in elevation than the borrow ditch allowing water to flow into the borrow ditches. As stream flows decrease, water recedes and becomes trapped in the borrow ditches. An impermeable berm is needed to prevent water from flowing down the borrow ditch where it is subjected to high evaporative losses.

Abandoned Railroad - 2 (T31N, R8E, S1)

Abandoned railroad 2, downstream of the Burlington railroad, extends across Pine Creek Valley with a narrow cut-out where Pine Creek crosses. The railroad grade within the floodplain needs to be re-contoured and associated borrow ditches filled to allow stream sinuosity and improve hydrologic connectivity. Filling in the borrow ditch on the northwest side of the grade would prevent surface flows from moving away from the channel and retaining water following the recession of spring thaw flows. This proposed area is approximately 0.45 mile long and 25 ft. wide.

Abandoned Railroad - 3 (T32N, R9E, S32)

Abandoned railroad 3 is located off of Lassen County Road 105. The elevated railroad grade and associated borrow ditch connect to the 105 road. The abandoned railroad needs to be re-contoured within the floodplain to allow stream sinuosity and improve floodplain connectivity. The associated borrow ditch would also need to be filled. This would prevent water from being diverted and stored away from the main channel of Pine Creek, where it provides an attractant for cattle to use as a water source. This railroad impacts an area approximately 0.3 mile long and 35 ft. wide.

Abandoned Railroad - 4 (T32N, R9E, S16)

Abandoned railroad 4 crosses Pine Creek Valley where the valley narrows. This railroad grade has a limited effect on channel movement, but the associated borrow ditches divert water from the main

channel where it is stored and used by cattle as a waterhole. The borrow ditches need to be filled to remove the livestock attractant from the stream bank. The impacted area is approximately 0.2 mile long and 25 ft. wide.

Bogard Barn Road (Decommissioned Road 31N19) (T31N, R8E, S4)

The Bogard Barn road transects the floodplain of Pine Creek where several braided channels are intersecting the road. Two sections of the road were removed to allow flows to cross, but these crossings are located on secondary channels. The primary channel has no stream crossing through the road bed, and flows from this channel are diverted laterally along the borrow ditch, away from the main channel of Pine Creek. The road bed within the floodplain needs to be re-contoured to improve surface and subsurface flow and allow stream sinuosity.

Old 105 Road (T32N, R9E, S32)

The old 105 road is adjacent and east of the active Lassen County Road 105. Several channels cross the previous road bed. The road bed needs to be ripped and re-contoured where the stream crossings occur to improve surface flows and allow stream sinuosity.

Harvey Road (T33N, R8E S36 and T33N, R9E, S31)

Burgess Meadow drains to Pine Creek. The Old Harvey Road transects the meadow at the base of Burgess Meadow and then wraps around on the northeast side of the meadow. The section of road transecting Burgess Meadow is an elevated road bed. When this section of the road was decommissioned, notches were cut through the road bed to allow surface flows to cross the road. These notches are channelizing water, causing increased velocity that may be contributing to downstream channel degradation in the meadow south of the road. The elevated road bed within the meadow needs to be re-contoured to spread surface flows and improve subsurface flows within the meadow.

An additional section of the Old Harvey Road on the northeast side crosses a seep area flowing into Little Harvey Valley. This section of road is essentially at grade with the meadow, but the compacted road bed is impeding subsurface flow. The road bed needs to be ripped to improve subsurface flows.

Unauthorized Routes

UNE586, UNE587, UNE588, UNE034 are unauthorized routes that are dead-ends or identified as not necessary for our transportation system. These routes are located within or adjacent to Pine Creek Valley and contribute to sedimentation, alter surface/subsurface flow interactions, and channel morphology. There is a need to decommission these routes to decrease road density, reduce potential sediment sources, and improve surface and subsurface flows within the watershed.

Dug-out waterholes

There are two dug-out waterholes located directly on Pine Creek's channel in addition to two waterholes associated with railroad grades 2 and 4. These waterholes decrease hydrologic function, in a small confined area, exposing more water to evaporative loss, altering stream channel morphology, and

lowering the water table, which changes riparian vegetation composition downstream of the waterhole along the stream channel. These waterholes are also a livestock attractant, which has a more extensive effect by concentrating cattle on the stream channel, resulting in stream bank degradation and high utilization of riparian vegetation. These water holes need to be filled and re-contoured to decrease evaporative losses, decrease sedimentation and poor local water quality associated with livestock concentrating in the channel, and enhance stream bank stability through improvement in vegetative cover.

Waterhole 1 (T31N, R8E, S2)

Waterhole 1 is located east of Highway 44 in an enclosure and is no longer needed for cattle. This waterhole is 205 feet long by 30 feet wide. The waterhole was created by excavating the stream bed and placing the material in the stream channel on the upstream side. This created a plug that Pine Creek flows around before returning to the channel where the waterhole is located. The plug material needs to be pushed back into the excavated waterhole to improve the surface flow path.

Waterhole 2 (T31N, R8E, S1)

Waterhole 2 is located downstream of abandoned railroad grade 2. This is the largest waterhole in Pine Creek Valley and is 215 feet by 135 feet in size. The dug-out waterhole was built by removing fill from the left stream bank and placing the material on the far side of the waterhole resulting in widening the channel. This waterhole needs to be filled and re-contoured to decrease evaporative loss, improve stream bank condition, decrease sedimentation, improve local water quality, and remove a livestock attractant adjacent to the stream channel.

Waterhole 3 (T32N, R9E, S29)

Waterhole 3 is located approximately 1 mile downstream from the upper 105 road crossing and is 130 feet by 135 feet in size. The waterhole was built by excavating the channel bottom and placing the material on either side of the stream channel. This waterhole needs to be filled and re-contoured to decrease evaporative loss, improve stream bank condition, decrease sedimentation, improve local water quality, and remove a livestock attractant located on the stream channel.

Waterhole 4 (T32N, R9E, S16)

Waterhole 4 is located on the north side of abandoned railroad grade 4 and is 175 feet by 115 feet in size. The borrow ditch on the same side of the abandoned railroad grade was excavated to extend exposure of water for cattle in the late season. This waterhole needs to be filled and re-contoured to decrease evaporative loss, improve stream bank condition, decrease sedimentation, improve local water quality, and remove a livestock attractant adjacent to the stream channel.

Replacement Waterholes

In order to maintain grazing in active allotments, two to three waterholes are needed to replace the four waterholes that are proposed to be removed as well as the water held along the borrow ditch

associated with railroad 3. Two waterholes are needed in the Upper Pine Creek Valley Allotment (west of where 32N28Y road crosses the valley) and one waterhole is needed in the Lower Pine Creek Valley Allotment (east of 32N28Y road). Waterholes are a livestock attractant and the replacement waterholes would be located away from the stream channel to improve livestock distribution and reduce stream bank instability, utilization, and bank alteration.

Check Dam/Splitter

In the 1950's, a ditch, referred to as the "super ditch", was built on the east side of Highway 44 from Pine Creek to direct all flows into a single channel to cross Highway 44 and the active railroad. In 1999 a check dam and splitter were built at the beginning of the super ditch on the west side of Highway 44 to redirect partial flows from the super ditch to one of the original channels of Pine Creek to restore the natural hydrology in this section of Pine Creek. This design was used to control the amount of water going into the original channel until riparian vegetation recovered and the functional condition of the channel could receive increased flows without negative effects. Monitoring has demonstrated that rhizomatous vegetation has recovered to approximately 50 percent aerial cover and can receive increased flows. Therefore, a new structure is needed that would divert all but flood event flows into the original channel. This would allow the restored channel to develop better channel morphology and increase water efficiency along Pine Creek because surface flows would not be spread across two areas.

Borrow Pits

Additional material is needed to re-contour and fill abandoned borrow ditches adjacent to railroad grades, roads, and dug-out waterholes. Approximately thirty percent of the on-site material used to create the abandoned railroad grades, roads, and waterholes has been lost through time via wind and water erosion. This material would be excavated from three existing borrow areas on the forest to provide additional fill. These borrow areas would provide local soil and also would reduce the haul length and associated transportation cost to implement the proposed actions.

Fencing

The restoration improvement sites are located within active allotments. Following implementation, these sites would be disturbed and bare soil would be exposed. If monitoring indicates, temporary fencing or rest would be needed to protect the disturbed areas from livestock grazing until vegetation recolonizes the area and the sites are stable.

Proposed Action

Railroads and Roads

Railroad 1

Along the Burlington railroad (Railroad 1), an impermeable mound of fill dirt would be placed on an existing rock barrier on the northeast side of the railroad, northeast of the box culverts. The

impermeable mound would prevent the diversion of water from Pine Creek into the borrow ditch, which occurs due to the streambed being higher in elevation on the downstream side of the railroad grade. Mechanical equipment would be used to transport fill and create the impermeable mound. Access to this location would be along the utility road adjacent to and east of the railroad. This would reduce evaporative losses and increase the volume of water that gets transported downstream. Because this is an active railroad, the ditch would be retained to allow for overflow during flood events.

Railroad 2 and 3

The abandoned railroad grades 2 and 3 would be re-contoured and the associated borrow ditches filled within the floodplain of Pine Creek Valley. This would reduce flow barriers, restore natural surface water flow paths, decrease evaporative losses, and increase water storage leading to longer duration base flows. Material from the railroad grade and additional fill from the nearby borrow pits would be used. Mechanical equipment would be used to re-contour the railroad grades and transport fill. UNE585 would be used by equipment to access the project areas for railroad 2 and the existing railroad grade would be used to access the project location for railroad 3. The disturbed area along the stream channel and bed would be armored to protect the stream channel from erosion until it stabilizes with riparian vegetation.

Railroad 4

Railroad 4 is located where Pine Creek Valley is narrowing and does not negatively influence hydrologic function. However, the associated borrow ditches hold water and cattle utilize these ditches as a watering hole. A section of the railroad grade on the west side of Pine Creek would be re-contoured using mechanical equipment to fill the borrow ditches to prevent water from being held and used for watering by livestock. An existing access route would be used to access railroad 4 from 33N07.

Bogard Barn Road

Approximately 0.11 mile of the Bogard Barn road (31N19) located within the floodplain of Pine Creek would be re-contoured and the adjacent borrow ditches would be filled with on-site material from the decommissioned road fill as well as additional fill. Mechanical equipment would be used to re-contour the road bed and transport fill. 31N19 would be used to access this area. Stream crossings would be re-contoured to grade and the bank on the middle stream crossing would be sloped back. Trees that have grown on the elevated road bed would be removed using an excavator, so that the entire tree is removed (bole, stump, and roots), and piled in designated locations. This material would be sold, chipped, and/or burned.

Old 105 Road

Two sections of the Old 105 road, (parallel and east of 32N28Y), totaling approximately 0.19 mile, would be ripped and re-contoured to grade using mechanical equipment to improve surface and subsurface flow. Mechanical equipment would access the southern section using the Old 105 road from 32N28Y. A short access route would be used to access the northern section by crossing a sagebrush flat from

32N28Y. These areas would be armored if needed, and/or seeded with native vegetation to stabilize the soil.

Old Harvey Road

Approximately 0.10 mile of the Old Harvey Valley Road crossing Burgess Meadow would be re-contoured to grade with existing road fill as well as additional fill to reduce channelization and improve sub-surface flow. In the area where a seep is crossing the Old Harvey Valley Road, approximately 0.035 mile of road would be ripped to improve subsurface flow. The Old Harvey Road would be used to access this area from 33N47. These areas would be armored if needed, and/or seeded with native vegetation to stabilize the soil.

Unauthorized Routes

UNE586, UNE587, UNE588, UNE034 are unauthorized routes in Pine Creek Valley totaling 1.2 miles in length. These roads would be decommissioned by ripping and/or recontouring to reduce potential sediment sources and overall road density in the Upper Pine Creek watershed.

Dug-out waterholes

Waterhole 1, 2, 3, and 4

The four waterholes would be filled and re-contoured to match the natural channel morphology immediately upstream and downstream at each site. The on-site fill material that was removed to create the waterholes as well as additional fill would be used. Mechanical equipment would be used to re-contour the waterholes and transport fill. The bare material along the stream channel would be armored to protect the area from eroding before vegetation stabilizes the area. Native vegetation would be seeded if the disturbed areas do not naturally re-vegetate.

An access route was designated from 31N06 along the sagebrush flat to waterhole 1. A bulldozer would be used to re-contour the existing waterhole. No additional fill is needed for this waterhole. The same access route for railroad 2 (UNE586) and 4 would be used to access waterhole 2 and 4 respectively. Access to waterhole 3 would be 0.04 mile across a sagebrush flat from 32N28Y.

Replacement Waterholes

The replacement waterholes would be developed prior to closing and restoring the dug-out waterholes. In the Upper Pine Creek Allotment two water developments are needed. The replacement location for water development 1 would be located adjacent to the 21 road, and water development 2 would be located on an existing borrow ditch along 32N28Y. These borrow ditch areas would be further excavated using mechanical equipment to extend water exposure throughout the grazing season. If needed, a solar pump would be used to pump water from water development 1 to a trough to control the timing of water use to improve livestock distribution. In the Lower Pine Creek Allotment, replacement waterhole 3 would be located near 32N02 on the existing borrow ditch on the southeast side of railroad 4, 0.07

mile from waterhole 4. This borrow ditch would be excavated using mechanical equipment to extend water exposure throughout the grazing season to replace waterhole 4.

Check Dam /Splitter

An in-stream structure would be built to replace the splitter at the existing location. This new structure would direct all but flood event flows into the original restored channel. The super ditch would be maintained as an overflow channel during flood events to protect the existing highway and active railroad infrastructure.

Borrow Pits

Fill would be taken from three existing borrow pits on the District. Approximately 10,000 cubic yards of fill would be excavated from the 10 Road borrow pit to provide fill for the proposed Bogard Barn Road area. Approximately 15,000 cubic yards of fill would be excavated from the Crater borrow pit to provide fill for the proposed railroad grades 2 and waterhole 2. Approximately 10,000 cubic yards of fill would be excavated from the Antelope borrow pit to provide fill for the proposed areas for waterhole 3 and 4 and the borrow ditches at Railroad 4.

Fencing

Treatments that occur within active allotments would be monitored to ensure that grazing does not impede recolonizing vegetation or cause damage to the restored site. If monitoring indicates that protection is needed, temporary fencing or rest would be implemented until the treatment area is stable.

Integrated Design Features

The following are the integrated design features (IDF) that would be incorporated as part of the proposed action to minimize any possible negative effects of this proposal.

Cultural Resources

1. All historic properties eligible or potentially eligible for listing on the National Register of Historic Places (i.e., Class I and Class II properties) within treatment areas would be protected by employing Standard Resource Protection Measures (SRPM) as defined in the Regional Programmatic Agreement and Interim Protocol. Cultural site boundaries would be flagged as non-entry zones for project activities (flag and avoid).
2. If cultural resources are encountered during project activities, all work would immediately stop in the vicinity of the find until an assessment of the situation is made.
3. To avoid any subsurface disturbance, no decommissioning of roads via ripping is allowed through sites; ripping is allowed on road segments not within sites. Decommissioning of roads could also be achieved through placement of barriers, as long as they are not ground disturbing and outside site boundaries.

Invasive Plants

4. All off-road equipment would be weed-free prior to entering the Forest. Staging of equipment would be done in weed-free areas.
5. Known noxious weed infestations would be identified, flagged where possible, and mapped for this project. Identified noxious weed sites within or adjacent to the project area containing isolated patches with small plant numbers would be treated (hand pulled or dug) prior to project implementation. Any larger or unpullable infestations would be avoided by equipment to prevent spreading weeds within the project.
6. New small infestations identified during project implementation would be evaluated and treated according to the species present and project constraints and avoided by project activities. If larger infestations were identified after implementation, they would be isolated and avoided by equipment, or equipment used would be washed after leaving the infested area and before entering an uninfested area.
7. Post-project monitoring for implementation and effectiveness of weed treatments and control of new infestations would be conducted as soon as possible and for a period of two years after completion of the project.
8. If project implementation calls for mulches or fill, it would be certified weed-free. Seed mixes used for revegetation of disturbed sites would consist of locally adapted native plant materials to the extent practicable.

Riparian Conservation Areas and Water Quality Protection Measures

9. For in-channel work below the active railroad grade, work would not take place until after flows from Pine Creek ceased flowing into Eagle Lake. Surveys for fish would be conducted prior to operation and if fish are present the California Department of Fish and Wildlife would be consulted for potential transfer of the fish prior to commencing operations.
10. For in-channel work at the active railroad grade and upstream, once Pine Creek flow begins entering into Eagle Lake, work would not start until June 15. Additionally surveys for fish and/or redds within or 3000 ft. downstream would be conducted before work begins. No work would

be conducted while ELRT redds are present until fry have fully emerged. If work should become necessary while fish are present, transfer of the fish would be conducted in coordination with the California Department of Fish and Wildlife.

11. Soils will be dry at the 12-in. (15-bars of tension) depth along the temporary access routes that are not restoration project sites.
12. Equipment will cross stream channels when the streams are dry and at designated locations.
13. Soil erosion controls such as coconut coir mats, weed-free straw wattles, rock slope protection (rip-rap), and/or other appropriate material would be installed to help stabilize slopes, protect stream channel banks, preserve water quality, and prevent sediment from entering the stream while vegetation is re-establishing.
14. Where needed, temporary fencing would be installed to exclude grazing to protect watershed improvement projects and facilitate healing of vegetation adjacent to stream channels.

Threatened, Endangered, or Sensitive (TES) Plant Species

15. New occurrences of TES plant species discovered before or during ground-disturbing activities would be protected through flag-and-avoid methods.
16. Decommissioning of roads would avoid any occurrence of *Astragalus pulsiferae* var. *suksdorfii* to the extent practicable
17. No staging, parking, or blading will be done within any occurrence of *Astragalus pulsiferae* var. *suksdorfii*, nor will any fill be deposited in any of these occurrences.

Decision to be Made

The decision to be made is whether to implement the Proposed Action as described above, an alternative that better responds to the Purpose and Need, or the No Action Alternative.

All permits would be obtained prior to implementation.