Environmental Assessment
Eagle Lake Sewage Ponds Project

Eagle Lake Ranger District, Lassen National Forest
Lassen County, California

Legal Description: T31N, R10E, NE¼NE¼ Section 21, Mount Diablo Meridian (MDM)

Introduction

The Eagle Lake Ranger District of the Lassen National Forest (NF) is proposing the Eagle Lake Sewage Ponds (EL Facility) Project. The proposed action is designed to implement and be consistent with the 1992 *Lassen National Forest Land and Resource Management Plan* (LRMP) and 1993 *Record of Decision* (ROD) as amended by the *Herger-Feinstein Quincy Library Group Forest Recovery Act* (HFQLG), Final Environment Impact Statement (FEIS), Final Supplemental Environment Impact Statement (FSEIS) and RODs (1999, 2003), the *Sierra Nevada Forest Plan Amendment* (SNFPA) FSEIS and ROD (2004), and the *Sierra Nevada Forests Management Indicator Species* (SNF MIS) Amendment (2007).

The LRMP as amended gives specific direction on how to manage Lassen NF lands. The EL Facility lies entirely within Management Prescription (MP) B (Range/Wildlife Prescription) of Eagle Management Area 14 (Chapter 4, pp 4-42 to 4-43 and pp 4-136 to 4-140). Within the parcel there are the Little Merrill Flat wetlands (Merrill wetlands). Therefore, MP F (Riparian/Fish) also applies to how the area is managed (Chapter 4, 4-50 to 4-53). Both MPs emphasize fuels management and permit facility construction/reconstruction. MP F emphasizes limited timber management and MP B permits limited timber management. Additional documentation, including more detailed analyses of project-area resources and all cited references referred to in this EA, may be found in the project planning record located at the Eagle Lake Ranger District, 477-050 Eagle Lake Road, Susanville, CA 96130.

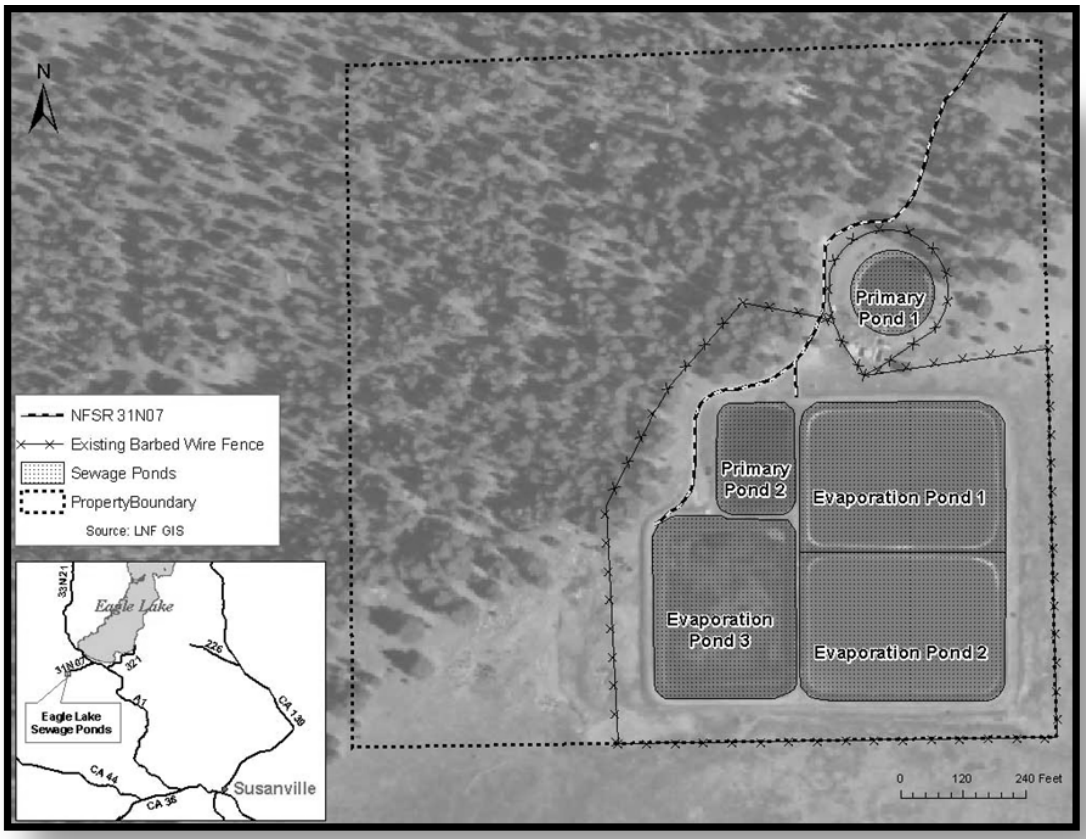
Note: Since the original scoping in June 2009, several clarifications have been made to the Proposed Action and Purpose and Need. Those changes to the original language are noted in italics; Genus and species names are also italicized.

Background

General Description of the Project Area

The 40-acre parcel is located approximately 20 miles northwest of Susanville, California and approximately two miles southwest of Eagle Lake on the Eagle Lake Ranger District of the Lassen NF (See Figure 1. EL Project Location Map). The project area is accessed via National Forest System Road (NFSR) 31N07 and located in T31N, R10E, Sec. 21 of Lassen County (Figure 2. Facility Project Vicinity Map).

Figure 1. EL Facility Project Location Map



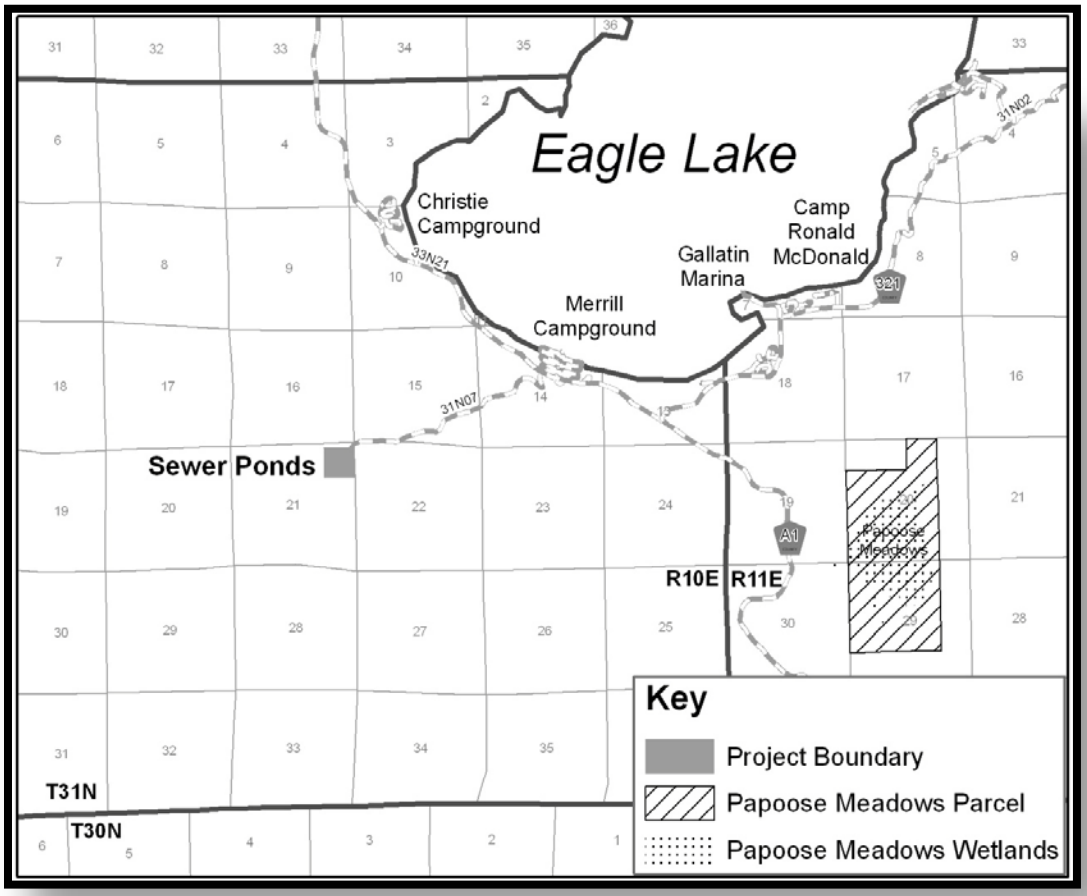
The EL Facility Project involves a 40-acre National Forest System parcel that is completely surrounded by private land. The site is located on the geomorphic province of the Modoc Plateau that is an undulating plateau. Most of the area consists of basalt lava flows and volcanic ash deposits. Average annual precipitation is about 30 inches, most of which occurs as snow in the fall, winter, and spring months. The EL Facility is located on an alluvial terrace, Little Merrill Flat, underlain by fractured volcanic rock. Soils of the alluvial terrace are silty clay, with permeabilities between 1 x 10-05 and 1 x 10-07 cm/sec.

The natural environment of the EL Facility Projects consists of slopes that are generally less than 20 percent, with elevations ranging from approximately 5,393 feet to 5,420 feet. Uplands are covered by an eastside pine forest with very little understory. The uplands lead down to an altered seasonal wetland (Merrill wetlands) and meadow, at the edge of which the existing EL Facility is located. The altered seasonal wetland and adjacent meadow occupies a basin nearly closed, except in the southeastern corner where it is drained by Merrill Creek flowing northeast into Eagle Lake. Common wildlife species such as mule deer (*Odecoileus hemionus*), black bear (*Ursus americnus*), common raven (*Corvus corax*) and coyote (*Canis latrans*) inhabit the area. Water resources in this area consist of seasonal streams, seasonally saturated wetlands, and small depressional seasonal wetlands areas that are closely associated with seasonal runoff and that supports hydric soils and plant species of moist to wet, open flats, such as

Ranunculus alismifolius, *Castelleja lacera*, *Polygonum polygaloides* ssp. *confertiflorum*, and *Juncus hemiendytus* var. *hemiendytus*. Additionally, water resources in the project area support common aquatic species adapted to seasonal waters such as chironomids, damselfly larvae, may fly larvae, and Pacific tree frogs, (*Pseudacris regilla)*.

The Papoose Meadows Wetlands Restoration Project (PMWR) was identified as a mitigation site for the altered Merrill wetlands that would be lost by the EL Facility Project under Alternative 1, the Proposed Action. Papoose Meadows is a large seasonal wetland and marsh within the same 5th field watershed as the Merrill wetlands. The Papoose Meadows wetland is drained by Papoose Creek flowing north into Eagle Lake. Papoose Meadows was once fed by four springs, three of which are perennial even in drought years. The eastern and northern portions of the Papoose wetland are ponded with the extent of ponding depending on the water year. Water from three of the four springs is currently intercepted by multiple ditches leading to Papoose Creek, which were created to drain the meadow when it was homesteaded in the 1800's. The PMWR includes using barriers and fill to redirect water from the ditches into the main wetland, potentially increasing the size and duration of inundation within the wetland.

Figure 2. EL Facility Project Vicinity Map



History of the Facility

In the 1970's the EL Facility was constructed with a pond (Primary Pond 1) that covered approximately one acre and spray fields under an operating permit with what is today known as the State of California's Lahontan Region Water Quality Control Board (Lahontan). A spray field for onsite wastewater treatment is similar to a lawn sprinkler system. (The wastewater is sprinkled over the surface of the field.) Over the years, Lassen NF's method of operating the facility has changed. In the 1980's Lassen NF stopped using the spray fields and created a no discharge facility as directed by the Lahontan. To create the facility, two Ponds (Evaporation Ponds 1 & 2) were constructed that covered approximately five acres. In the early 1990's, the storage capacity of the facility was increased so that the facility could withstand a 100-year storm event without overtopping the banks of the ponds. (A 100-year storm event is based on a statistical technique used to estimate the probability of the occurrence of a given precipitation event. For example, assume there is a 1/100 chance that 6.60 inches of rain would fall in a certain area in a 24-hour period during any given years. Thus, a rainfall total of 6.60 inches in a consecutive 24-hour period is said to have a 100-year recurrence interval and is also referred to as a 100-year storm event.) This increase was created by constructing Primary Pond 2 and Evaporation Pond 3. The expansion resulted in the EL Facility covering approximately 11 acres. Since that time, the footprint of the EL Facility has not changed. However, in the late 1990's, as a result of above average snowfalls, this capacity became a concern; in response, in 2000, the Lassen NF raised the banks of Evaporation Pond 3, to match the height of Evaporation Ponds 1 and 2. See Figure 1 for the current facility.

Since the inception of the EL Facility the Merrill wetlands have been altered. Alterations, in consultation with Lahontan included; 1) installation and removal of spray field piping in the Merrill wetlands, 2) hauling excess materials from the construction of the Evaporation Ponds across the Merrill wetlands, 3) having an excess materials area within 75 feet of the Merrill wetlands, 4) constructing berms for the Evaporation Ponds adjacent to the Merrill wetlands, 5) using the Merrill wetlands as a borrow source. In the fall of 2008, field work was begun for a wetlands delineation study of the Merrill wetlands on Lassen NF. In January 2009 the wetlands delineation study of the Merrill wetlands on Lassen NF was completed.

Currently, Lassen NF's operation permit with Lahontan allows approximately 2.6 million gallons of effluent water to be pumped into the facility yearly. For the past ten years Lassen NF has pumped approximately 1.6 million gallons of effluent water into the facility yearly. The facility's function is to service the Lassen NF's Eagle Lake Recreation Area (ELRA). The ELRA consists of five campgrounds with 318 campsites, two group campgrounds: one 100-person site and one 75-person site, two day use areas, two boat launching facilities, a marina (that includes a store, showers, laundry facilities and fish cleaning stations), Camp Ronald McDonald, a research facility and hiking and biking trails. Per data provided by the ELRA concessionaire (LCF 2009), approximately 80,000 people camped in the campgrounds from May to October of 2009. Additionally, according to the front page of Camp Ronald McDonald's® at Eagle Lake website (http://www.campronald.org/home.php, accessed on December 10,

2009) their “35 acre, fully handicap-accessible, camp welcomes nearly 1,000 disabled and disadvantaged campers” yearly.

Existing System

On April 23, 2009, the Forest Supervisor received a Notice of Violation from the Lahontan requiring a leak location survey to be performed on the non-visible portions of the liners. This survey was completed and a report of findings submitted to the Board in October 2009. On June 16, 2009, the Forest Supervisor received another Notice of Violation requiring a soil and groundwater investigation be performed to determine the hydrogeology of the area and to determine whether any contaminants are present in the surrounding soils. A contract was awarded for this investigation in September 2009. The contract was completed and a draft report of findings submitted to Lahontan on December 16, 2009. No water was found in three of the four newly drilled groundwater monitoring wells. Although water was found in the remaining well, not enough volume was produced to perform proper sample analysis nor can definitive conclusions be drawn from these tests. The draft report further stated “Since no fecal coliforms were detected in the water samples, it is likely that the wastewater ponds are not the source of water in MW-4.”

The existing wastewater collection and treatment system layout provides the following path:

1. Sewage is collected from ELRA and pumped to the treatment facility.
2. Sewage is directed to either Primary Pond 1 or Primary Pond 2 by a manually operated valve.
3. Once sewage is deposited into the primary ponds, the heavier solids settle out to the bottom. When the level of material in the primary ponds reaches a set elevation, the suspended solids and fluids are allowed to gravity flow through spill pipes to the evaporation ponds. Primary Pond 1 flows directly into Evaporation Pond 1only; Primary Pond 2 flows into Evaporation Pond 1 or 3. There is no direct link between Evaporation Pond 3 and Primary Pond 1.
4. The fluids flowing into Evaporation Pond 1 are then intended to be controlled by a gate valve in the middle of the lower berm between Evaporation Pond 1 and 2. Currently this valve is frozen in the open position resulting in equalization of the pond levels in these two ponds. Fluids freely flow through the 18” corrugated steel pipe and cannot be controlled.
5. Evaporation Pond 3 is used as an emergency overflow pond in the event that levels in Evaporation Ponds 1 and 2 reach the required 2 feet of freeboard. In 4 of the past 15 years overflow fluids have flowed into Evaporation Pond 3. Additionally, even with the additional capacity added to Evaporation Pond 3 in 2000, it was within 2.5 feet of exceeding the required 2 feet freeboard limit after the heavy snowfall year of 2006.

Purpose and Need for Action

The Eagle Lake sewage ponds were lined in the 1980’s *and the liners* are beginning to deteriorate. The number of patches required to maintain functionality of the sewage treatment facility have increased considerably the past few years due to the age of the existing lining which has reached its life expectancy. The banks on which the liners were originally placed have crusted over, which are now puncturing the liner. In addition, water fowl of various types use the ponds and are damaging the lining; hunters using the area shoot at the liner, resulting in lining punctures.

The patches are considered temporary fixes to mitigate the *potential* immediate safety hazard of small leaks in the lining. Complete replacement of the liners is needed to prevent *widespread* failure of one or more of the ponds' linings. Without the proposed expansion of the facility, draining the ponds and replacing the liners would require closure for at least one season of the Eagle Lake campgrounds, marina and Camp Ronald McDonald. Closure of these recreation facilities would have a negative impact – political and/or economic – on the public, surrounding communities, and the Lassen National Forest. Finally, the existing storage capacity of the evaporation ponds may be inadequate to handle future capacity increases to the Eagle Lake campgrounds and marina. *The possibility of inadequate storage capacity is based on three facts. First, the Lassen NF permit allows approximately 1 million gallons more than we are currently treating to be treated at the facility. Increasing the number of gallons treated at the facility may exceed the two foot freeboard limit. Second, multiple years of above average snow fall may result in Lassen NF exceeding the two foot freeboard limit at the facility. Third, in the event of a biological treatment process issue there may not be adequate capacity to operate the facility in the short term.*

Under the proposed action, impacts *would occur* to *0.77 acres of* the 0.89 acres of wetlands on National Forest System (NFS) land as a result of the existing sewage treatment facility expansion. The 0.89 acres of Merrill wetlands located on NFS lands are only a small fraction of the greater Merrill wetlands which is located on private lands. The *PMWR project would be used as a mitigation bank for the EL Facility project*. This mitigation would at a minimum, create the required one and one-half times more wetlands habitat than would be impacted by the Proposed Action.

The integrated design features pertaining to the wetlands and its *300 foot riparian conservation area* (RCA) are intended to minimize impacts to and protect the functionality of the greater Merrill wetlands on private lands, and to maximize the time in which the wetlands area on NFS lands can serve as functional habitat.

To reduce the risk of a wildfire damaging the EL Facility, thinning activities are needed to *initiate structural changes that would* increase crown base height and remove ladder fuels throughout the stand. Thinning *is also needed to maintain individual tree growth, reduce mistletoe infection, decrease the risk of tree mortality due to insects attacking overstocked stands and reduce the risk from wildfire to surrounding timber*.

The site clearing activities are needed to provide an area from which the borrow site could be established on NFS lands, and to make room for the expansion of the smaller evaporation pond. The available NFS lands are limited on the parcel. The 40-acre parcel is already highly developed by the existing sewage treatment facility, and using a borrow site adjacent to this facility would therefore restrict the disturbance caused by this project to a compact, contiguous area.

Proposed Action

The Proposed Action is divided into four phases as described below. Each phase outlines the work to be completed before the next phase can begin. *In summary, as shown in Figure 3, Evaporation Ponds 1 and 2 would become one pond by removing the center berm that currently divides them, while Evaporation Pond 3 would be enlarged to double its capacity. Material for construction would be removed from the borrow site and thinning would occur throughout the remaining 40-acre parcel to reduce hazardous fuels.*

It should be noted that during Phases II and III, material in the existing ponds would be transferred to other ponds as necessary, to allow for removal and relining of each pond[1]. *Liner selection and design would occur during the EL Facility design process and under consultation with Lahontan.* All replaced liners would be removed off National Forest System land and disposed of according to existing regulations[2]. *Figure 3* displays the location of the newly constructed site, the site where soil material would be used to build the new pond (borrow site), and the area where tree thinning would occur to reduce hazardous fuels to protect this site.

Heritage Site Evaluation

Heritage Site FS05-06-58-499, adjacent to what is currently Pond 3 cannot be avoided or protected by the application of standard protection measures. *The site was evaluated for inclusion in the National Register of Historic Places (NHRP). The LN Forest determined the site not to be eligible for inclusion in the NHRP and requested concurrence with this finding from the California State Historic Preservation Office (SHPO). On February 11, 2010, SHPO concurred with the LN Forest that the site is not eligible for listing on the NRHP.*

Phase I – Site Preparation

- Remove existing barbed wire and above ground sprinkler heads from the old spray field area.
- Remove 3,100 feet of existing barbed wire fence from the perimeter of the sewage treatment facility site, and construct a temporary fence around the entire project area. Construct a cattle guard at the entrance gate to the project area. Unused fence material would be removed off National Forest System land.
- Clear the 12-acre[3] borrow site and pond expansion areas; leave stumps in place.
- Thin from below approximately 14-acres[4] of forested land, as described in the thinning prescription.

1 . Per the Hydrogeologic Investigation Draft Report, Cascade Earth Sciences, December 8, 2009, clay soil found at the site at a depth of 8-10 ft below the berm, which appears to be at least 10 feet thick throughout, had permeability of about 10-7 cm/sec. This clay presence should greatly limit infiltration of any wastewater from the ponds, as 10-7 cm/sec is often the design specification for clay pond liners. The depth to groundwater at this location is approximately 250 ft. The clay layer and additional clays at the surface of the deep aquifer would prevent leakage from the upper soils to the ground water below.
2 Federal Acquisition Regulations that would be included in the contract involving replacement of liners include standard language that contracted work is to be in conformance with all local, State and Federal requirements.
3 In the scoping document the acreage was incorrectly listed as 16 acres.
4 In the scoping document the acreage was incorrectly listed as 10 acres.

- *Prior to commencing any thinning and or clearing operations the Lassen NF would obtain a 2009 Timber Waiver Permit from Lahontan. (Where thinning and clearing operations are mentioned in the remainder of this document this statement shall apply)*

Phase II – Pond Expansion

- The construction contractor would remove stumps and, if necessary, slash piles and any remaining vegetation. Stumps could be temporarily stored on site.
- Develop the *7*-acre[5] borrow site by retaining and storing the topsoil to be used during Phase IV.
- The area west of Evaporation Pond 3 would be leveled to the same depth of the existing pond and an earthen berm would be created to form the new perimeter. Most of the leveling would be done by adding fill material obtained from the borrow site, although some excavation is possible. About 28,000 cubic yards of borrow material would be excavated from the borrow site. This would expand the surface area of Evaporation Pond 3 from approximately two acres to five acres, and expand its capacity to approximately *13* million gallons.
- Evaporation Pond 3 would then be expanded from approximately two acres to five acres, and relined. *The sub-grade preparation, compaction and final inspection prior to installing of the synthetic liner would at a minimum meet the liner's manufacturer's specifications.*
- Lysimeters would be installed *for early detection of leaks and to sample water quality in the unsaturated soils surrounding the ponds. At a minimum the lysimeters would be capable of collecting and storing enough groundwater/fluid for analysis to assure that groundwater contamination is not occurring and would support the requirements of the Monitoring and Reporting Program attached to the Lassen NF Permit from Lahontan to operate the EL Facility. Location, quantity and design of the lysimeters would be determined in the wastewater facility design. (Where lysimeter installation is mentioned in the remainder of this document the above statements about what the lysimeters would be used for and how they would be designed and installed shall apply).*

Figure 3. Alternative 1- Relining Layout of EL Facility

5 In the scoping document the acreage was incorrectly listed as 8 acres.

Phase III – Pond Reconstruction

- Remove the 12,000-cubic-yard dike between Evaporation Ponds 1 and 2, creating a single rebuilt pond to be called Evaporation Pond 1, approximately four acres in size.
- Place the 12,000 cubic yards of material from the dike in the borrow site.
- Lysimeters *would be installed for early detection of leaks and to sample water quality in the unsaturated soils surrounding the ponds.*
- Remove stumps from National Forest System lands.

Phase IV – Reclamation

- Remove cattleguard and temporary fencing from perimeter of project area.
- Construct approximately 4,250 feet of 8-foot-high chain-link fence around the sewage treatment facility perimeter.
- Re-spread retained topsoil in the borrow site.
- Revegetate approximately 16 acres, including the borrow site and any areas disturbed during construction *(see CEQA Appendix 1).*
- Construct a temporary fence around the borrow pit to exclude cattle from the re-vegetated area post-project, until such time as reclamation is complete and grazing can resume.

Thinning Prescriptions

Within the timbered stand, there are two aggregates. Aggregate 1 encompasses the majority of the stand. Trees range in size from 3 to 30 plus inches. The aggregate has a homogeneous structure with approximately 200 trees per acre (TPA). The trees are evenly distributed with crowns that touch. Existing basal area (BA) was calculated at approximately 170 square feet. .

Aggregate 2 is located in the northwest corner of the stand and is approximately 3 acres. The larger trees are generally found at a wider spacing than aggregate 1 with clumps of smaller trees between. Existing BA was calculated at approximately 80 sq ft.

Both aggregates have heavy mistletoe pockets throughout. A majority of the understory trees show evidence of infection. The Hawksworth 6-Class Dwarf Mistletoe Rating System rates the severity of dwarf mistletoe infection on a scale from 0 (no visible infection) to 6 (highest possible infection). In both *timbered aggregates* the largest, healthiest conifer trees would be designated as leave trees. All conifers that are 30 inches diameter at breast height (dbh) and greater would be marked as leave trees regardless of tree health, vigor, or species. All snags greater than 15 inches dbh would be retained regardless of species, unless they pose a safety or operational concern. All conifer stumps greater than 14 inches in diameter would be treated with SPORAX® (Sporax). Activity-generated fuels would be mechanically and/or hand piled and burned, removed, or chipped to provide organic matter.

In Aggregate 1, the prescription would thin from below to 100-110 square feet of basal area per acre. All pine 30 inches dbh and greater would be leave trees unless they have Hawksworth mistletoe rating greater than 3. *In Aggregate 2, the prescription* would thin from below to 50-70 square feet of basal

area per acre. All pine of 14 inches dbh and greater would be leave trees unless they have a Hawksworth rating greater than 3.

Wetlands Mitigation

An area of the existing Merrill wetlands (*0.77 acres of the* 0.89 acres *of wetlands located on National Forest System land*) would be eliminated when Evaporation Pond 3 is expanded. The eliminated wetlands would be mitigated by creating at least 1.34 acres of other wetlands; the *PMWR* Project would be used as mitigation for this project. Papoose Meadows is located approximately 4.5 miles east of the Eagle Lake sewage ponds and is in the same 5th-field watershed. The Decision Notice and Finding of No Significant Impact for the PMWR Project were signed in 2008, under the South Eagle Lake Grazing Allotment decision.

Papoose Meadows is a large, 270-acre meadow located south of Eagle Lake in T. 31 N., R. 11 E., Sections 20 and 29, MDM. At present, approximately 160 acres are a seasonally flooded wet meadow and marsh system. Historically, this wetland complex was ditched to dry it out to improve hay production for livestock. The ditches would be filled or successively plugged. Cursory analysis indicates that between 30 and 110 acres could be restored.

Integrated Design Features (IDFs) for the Proposed Action

Integrated Design Features are elements of the project design that are applied in treatment areas and are developed to reduce or avoid adverse environmental effects of the proposed action to forest resources. The following features are generally listed in phases. For those features that overlap phases, this overlap is noted. The Riparian Conservation Area (RCA) is designated as a 300 feet buffer surrounding Merrill wetlands.

Aquatics

1. A “75 foot” no mechanical equipment” buffer would be designated around the delineated wetlands within Little Merrill Flat during Phase I timber removal [Phase I}.

The following would *apply within the RCAs for the Merrill wetlands*:

2. Landings would be located outside the seasonal wetlands and the RCA.
3. Conifers would be removed with feller-bunchers that have 24-inch or greater track widths.
4. Skid trails would be kept to a minimum *(no more than one every 100 feet)* and no water bars would be installed after treatment *on slopes that are gentle (1-2%).* Where slopes are gentle, water bars are more likely to interfere with natural flow paths than *serve* their intended purposes, which, is to disperse concentrated flows away from skid trails.
5. Ground-based equipment would be used to remove timber using one-end suspension.
6. Skid trails within the RCA of Little Merrill Flat would require 90 percent of existing ground cover[6] on bare soil on the trails; slash would be spread over these open areas.

6 Using “existing cover” rather than a predefined quantity allows site-specific application of this IDF to better approximate pre-activity conditions across a heterogeneous landscape.

7. Slash piles within the RCA would be hand-piled and burned in the outer 225 feet of the RCA of Little Merrill Flat. Machine piles would be located completely outside the RCA.

Botany

8. Deleted[7]
9. New occurrences of *Threatened and Endangered* and *Forest Service Region 5 Sensitive* (TES) plant species, discovered before or during ground-disturbing activities within the *14*-acre thinning unit, would be protected through flag and avoid methods. *Avoidance buffer widths would be based on the requirements of the TES species present* [Phase I].

9a. All fence work in the south and east margins of the project area, including the installation of permanent chain-link fence around the treatment facility, would occur when soils are dry, so that plants of Mimulus pygmaeus would have completed their annual life cycle [Phases I and IV].[8]

10. All equipment would be weed-free prior to entering the Forest. Staging of equipment would occur in weed-free areas [Phase I].
11. Certified weed-free mulches or fill would be used in all phases as necessary [Phase I].

11a. If, prior to ground-disturbing activities, new noxious weed infestations are identified within thinning units or on access roads, the infestations would be evaluated, then dug up or pulled by hand and avoided by project activities [Phase I].

12. *If, prior to ground-disturbing activities, new noxious weed infestations are identified outside of thinning units or on access roads, and they cannot be eliminated through hand-pulling, tarping, or other cultural methods such as seeding with competitive native species, topsoil infested with these weeds would not be re-spread into impacted areas of the project* [Phase IV].[9]
13. Post-project monitoring for implementation and effectiveness of weed treatments, control of new infestations and borrow site re-vegetation would be conducted as soon as possible and as needed [post Phase IV].

Silviculture – Thinning Area

14. All conifer stumps greater than 14 inches in diameter would be treated with SPORAX® within the thinning area. No Sporax would be applied within 25 feet of known Sensitive and Special Interest Plants or applied within 25 feet of the RCA [Phase I].

Soils – Thinning Area

15. Deleted and addressed by a Forest Plan Amendment. (See Decision to be Made)[10.]
16. Existing landings and skid trails would be used as much as possible to minimize new disturbance [Phase I].
17. Deleted for the following reason. *Subsoiling would not be used in this area as the soil texture type is prohibitive to ripping activities – i.e. high percentage of rock fragments in soils. Furthermore, detrimental soil compaction is not anticipated to be permanent in the project area due to the presence of coarse textured soils and high amounts of rock fragments. Past timber operations in the area have not had permanent negative impacts on soil compaction (i.e. these soils recover naturally as a result of bioturbation.*
18. Outside the RCA, Lassen NF Wet Weather Operations and Wet Weather Haul Agreement, *and Lassen NF Timber Waiver permit from Lahontan* would be followed during all operations. *When*

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7 Original IDF 8 deleted and replaced with IDF 11a.
8 In the original scoping document 9a was inadvertently omitted.
9 IDF 12 was modified to work in conjunction with IDF 11a.
10 The areal extent of detrimental soil disturbance would not exceed 15 percent of the area dedicated to growing vegetation [Phase I].

a conflict exists between the Wet Weather Operations and Wet Weather Haul Agreement, and the Lassen NF Timber Waiver permit the most stringent requirements would apply. [All phases].

19. Soil would be dry to a depth of 12 inches prior to mechanical work commencing in *the outer RCA boundary (75-300 ft)*, and work would occur when risk of precipitation is minimal. This period is usually between May 1 and October 15. *Work in the RCA would temporarily halt when the National Weather Service forecasts a 30 percent or more chance of precipitation, and then continue again once soils are dry to 12 inches.* (BMP 2-3 Timing of Construction Activities) [Phases I, II and III]
20. Landings constructed for timber operations supporting borrow site development would be located within the perimeter of the borrow site [Phase I].
21. Any activity-generated surface fuels would be piled *and burned on project landing areas in order to limit the distribution of the sterilizing effects of fire on soil microbiota*.[11] [All phases].
22. If trees are pushed over in the pond expansion area and borrow area to facilitate stump removal, then soil would be dislodged on site [Phase I].
23. Runoff from source areas would be diverted away from the project site, including spoil sites. Before ground-disturbing activities, site-specific erosion and sediment control devices would be installed to prevent sediment movement. These devices would include, one of the following at a minimum, silt fencing, straw bales, coir logs (i.e., straw waddles), plant cover, and mulch. (BMP 2-11 Control of Side-Cast Material During Construction and Maintenance; BMP 2-13 Control of Construction; BMP 2-19 Disposal of Right of Way and Roadside Debris; BMP 2-15 Diversion of Flows around Construction Sites; BMP 2-18 Regulation of Borrow Areas) [All Phases].
24. Provide visible delineations around construction and borrow sites. Also delineate wetlands areas that would remain free of machinery operations and materials storage. Materials would be stored on flat slopes at least 100 feet from the Merrill wetlands on private lands. (BMP 2-18 Regulation of Borrow Areas) [Phases II and III]
25. The size of the borrow site would be designed to be the minimum area necessary to complete the sewer pond construction such that soil productivity would be maximized. Excavation would not occur below the water table. *Monitoring Well #4, developed in October of 2009, would be used to verify groundwater level before excavation.* (BMP 2-18 Regulation of Borrow Areas) [Phases II and III
26. Mulch, chips, and/or organic material would be spread in the borrow site area to provide a minimum of 50 percent surface coverage, to reduce soil erosion and overland flow, and to maintain soil moisture. *Fifty percent ground cover has been demonstrated to provide adequate cover for minimizing erosion, for allowing vegetative understory recovery and for minimizing fuel accumulation in thinning operations in the eastside pine ecotype.* [Phase IV].
27. *R*etain up to three logs per acre of downed large woody material during borrow site development for surface replacement after the borrow site is no longer needed [Phase IV].

Transportation System

28. Develop and implement a dust abatement plan along the road in the project area. Logging and vegetation management activities would be dust abated where rubber-tired vehicles are operating on haul routes. Water for dust abatement would be trucked-in, or a dust palliative may be approved which may include magnesium chloride, calcium chloride, lignin sulfate, or an approved equal. Dust palliatives would not be used within 25 feet of the RCA. Dust palliatives would be stored and mixed outside of the RCA [Phases I and II].

11 The following was deleted from IDF 21. "….such that the intensity and duration of the fire minimizes soil sterilization.)

Water Quality

29. Applicable Best Management Practices (BMPs) as described in Water Quality Management for Forest System Lands in California would be implemented. *All applicable BMPs are listed in the Hydro Report* [All Phases].
30. *At a minimum the contractor would have on site at all times sufficient absorption materials and tools to cleanup and properly dispose of any size oil or oil products spill. Additionally the c*ontractor would maintain storage facilities for oil or oil products in the project area and would take preventative measures to ensure that any spill would not enter the Merrill wetlands or groundwater. If the total oil products storage exceeds 1,320 gallons in containers of 55 gallons or greater, then the contractor would prepare a Spill Prevention Control and Countermeasures Plan. In addition, these BMPs would be followed: BMP 2-12 Servicing and Refueling of Equipment; BMP 7-4 Forest and Hazardous Substance Spill Prevention Control and Countermeasure (SPCC) Plan [All Phases].
31. Berms would be constructed with slopes less than 25 percent, unless sound structure cannot be achieved. *In the event a sound structure cannot be achieved, a design would be prepared and approved during the wastewater facility contract for a slope that would have a sound structure.* (BMP 2-4 Stabilization of Slope Surfaces and Spoil Disposal Areas; BMP 2-28 Surface Erosion Control at Facility Sites) [Phases II and III]
32. To the extent practicable, use organic materials and rocks generated from the project to back fill the borrow site. (BMP 2-27 Restoration of Borrow Pits) [Phase IV]

Wildlife

33. To the extent practicable, disturbed areas would be seeded, with a variety of locally adapted native plants. These plants should provide food value to wildlife in the form of browse, fruits and seeds, possibly including but not limited to such plants as elderberry, serviceberry, chokecherry, Scouler's willow, and native grasses. *Any substitute locally-adapted plants would be similar or better than those listed plants at providing food value*. Newly constructed or reconstructed berms around the sewage ponds would be stabilized with a mix of native grasses (possibly including but not limited to *Poa secunda*, one-sided bluegrass; *Elymus glaucus*, blue wild rye; and *Bromus carinatus*, California brome, or *any substitute locally-adapted native plants that would be similar or better than those listed plants at preventing wind and soil erosion*) to prevent wind and soil erosion. (BMP 2-4 Stabilization of Slope Surfaces and Spoil Disposal Areas; BMP 2-28 Surface Erosion Control at Facility Sites). [Phase IV]

Decision to be Made

The responsible official for this project is the Lassen NF Forest Supervisor. Given the purpose and need, the responsible official would review the proposed action, alternatives, issues, and environmental consequences analyzed in this Environmental Assessment in order to make a decision for implementing the proposed project.

The decision to be made is: 1) whether to implement the Proposed Action as described above, 2) whether to implement an alternative which better responds to the Purpose and Need for Action, as well as significant issues, or 3) whether the No Action Alternative should be implemented.

Additionally, the decision to be made would include one amendment to the management direction contained in the *LRMP*, as amended.

Non-significant Forest Plan Amendment: This is a project specific plan amendment to deviate from the following soils standard and guideline which states "*The areal extent of detrimental soil disturbance would not exceed 15 percent of the area dedicated to growing vegetation*" so that the Eagle Lake Sewer Ponds Project can be implemented, regardless of the alternative chosen. The 40-acre parcel, where the EL Facility is located, has been managed as an administrative site, since its construction. The administrative use of this 40-acre parcel for the EL Facility is consistent with the Forest Plan goals to manage the ELRA.

The Lahontan Water Board is the Lead Agency under CEQA. In cooperation with Lahontan, included as Appendix 1 to this document is the California Environmental Quality Act Eagle Lake Sewage Ponds Project Environment Checklist Form (the CEQA document). This Checklist serves as the CEQA Initial Study (CEQA IS). The CEQA is included to provide a single joint document to affected and interested parties and other agencies. This joint EA/IS document was circulated to initiate both the Forest Service (NEPA) and CEQA 30 day comment periods.

In a decision independent of the Forest Service's Decision Notice the Lahontan Water Board will decide whether or not to adopt a Mitigated Negative Declaration (MND) for the Eagle Lake Sewage Ponds Project. In determining whether or not to adopt a MND the Lahontan Water Board will consider whether sufficient mitigation measures have been provided in the EA/IS to reduce any potential significant effects (pursuant to CEQA) on the environment to a level of insignificance.

Public Involvement

The Eagle Lake Sewage Ponds Project was first published in the Lassen NF Schedule of Proposed Actions (SOPA) on October 1, 2008 and quarterly thereafter.

Public Scoping

The Proposed Action and maps were provided to affected and interested parties and other agencies for external comment on April 27, 2009 with a request for responses to be submitted by May 8, 2009. The scoping package was mailed to 11 individuals and organizations with interest in the EL Facility Project and to nine tribal representatives.

Two letters and one phone call to review draft comments were received during the scoping period. Scoping comments were analyzed by Forest Service personnel. Copies of the letters received and draft comments may be found at the Eagle Lake Ranger District, 477-050 Eagle Lake Road, Susanville, CA 96130 in the project record.

Consultation with Tribes

On April 1, 2009 a consultation meeting was held with the Pit River Tribe (PRT) at the Hat Creek Ranger Station in Fall River Mills to discuss the EL Facility Project. A formal consultation letter was sent to the PRT and Anna Barnes, Aporige Band representative, regarding the project On April 27, 2009. Preliminary findings from the excavation of sites 05-06-58-499 and 05-06-58-982 were discussed at the

quarterly consultation meeting with the PRT on July 1, 2009, and Susanville Indian Rancheria Tribe on October 13, 2009. On October 30, 2009, the agency initiated consultation with the California State Historic Preservation Office (SHPO) requesting concurrence with a finding of “no historic properties affected.”

Public Meetings

Three meetings and one teleconference were held to discuss the EL Facility Project. The first collaborative meeting was held on May 1, 2009 at the facility. The phone call was held on May 13, 2009 with an Engineering Geologist and a Water Resource Control Engineer both from Lahontan. The second meeting was held on October 6, 2009 at the Eagle Lake Ranger District office. The third and final collaborative meeting was held on October 7, 2009 in Reno, Nevada.

Issues

The Forest Service identified one significant issue raised during scoping:

Issue 1: The state of California is losing wetlands at a high rate, small portions at a time. By destroying the 0.77 acres of Merrill wetlands, the EL Facility Project would contribute to this loss.

Issue Measure: Number of wetland acres destroyed.

Alternatives

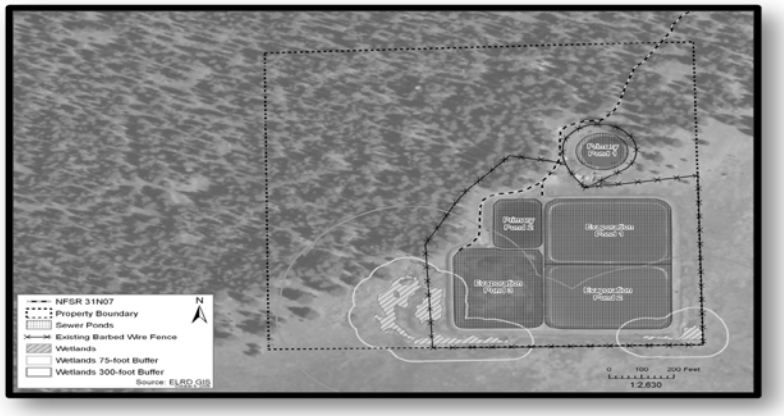
Alternative 1 -The Proposed Action

Alternative 1 is the Proposed Action, as described starting on page 7.

Alternative 2 - No Action

Under the No Action alternative no proposed replacement of the liners, associated improvements to the facility, or thinning would be implemented. Figure 4 displays the layout of the EL Facility for the No Action Alternative.

Figure 4. Alternative 2 - Sewage Ponds for Eagle Lake



Alternative 3

In this alternative existing Primary Pond 2 would be expanded and converted into Evaporation Pond 4. A new Primary Pond 2 would be relocated to the north of its existing location. The bank between Evaporation Pond 1 and 2 would be raised so that the ponds function as two separate ponds. Evaporation Ponds 1, 2 and 3 and Primary Pond 1 would be relined. A sludge drying bed would be constructed north of the new Primary Pond 2. Additionally, one water well would be developed east of Primary Pond 1.

This alternative is divided into five phases as described below. Each phase outlines the work to be completed during that phase. Work from multiple phases may occur concurrently. During Phase I through IV material in the existing ponds may be transferred to other ponds as necessary, to allow for removal and relining of each pond. All replaced liners would be removed off NFS land. Figure 5 displays the location of the newly constructed sludge drying bed, primary and evaporation ponds, the site where soil material would be spread from newly constructed features, the boulder stockpile area, approximate location of the new water well and the area where tree thinning would occur.

Phase I – Site Preparation

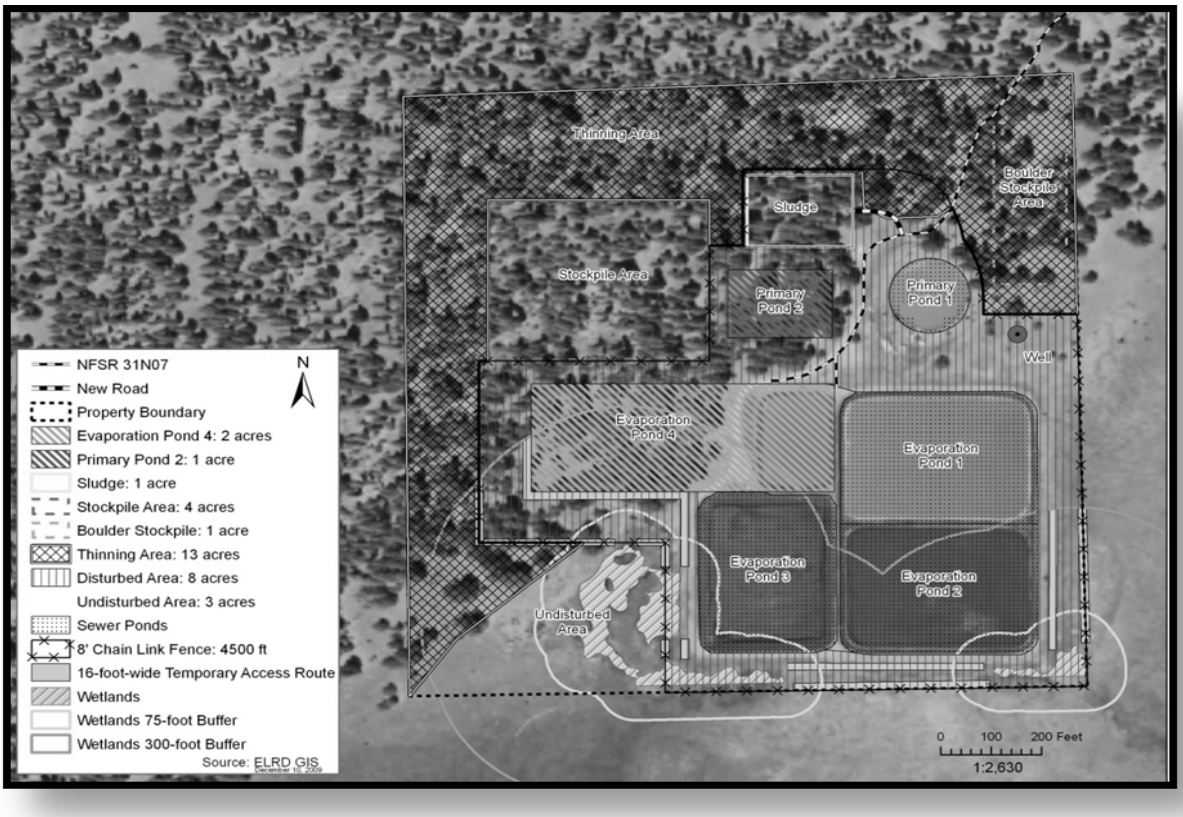
- Remove the existing barbed wire fences on the interior of the 40 acres and the above ground sprinkler heads from the old spray field area.
- Remove 3,100 feet of existing barbed wire fence from the perimeter of the sewage treatment facility site.
- Construct approximately 4,500 feet of 8-foot-high chain-link fence around the sewage treatment facility perimeter.
- Repair and or construct a barbed wire fence around the perimeter of the property where the 8-foot chain-link fence does not exist.
- Construct a cattle guard where the access road enters the property.
- Develop a water well for dust abatement East of Primary Pond 1.
- Unused fence material would be removed off National Forest System land.
- Clear the approximately 8 acres for the stockpile area, sludge drying area, pond expansion areas and primary pond area; leave stumps in place.
- Thin approximately 13 acres of forested land.

Phase II – Construct Sludge Drying Bed & Reline Evaporation Pond 3

- Remove stumps and, if necessary, slash piles and any remaining vegetation.
- Remove and stockpile boulders that are suitable for other uses on the forest in random areas within the boulder stockpile area.
- Stockpile the topsoil.
- Construct the road to the sludge drying area (300 feet by 18 feet wide).
- Excavate the sludge drying bed (0.8 acres, 1,500 CY) to a depth of approximately 5 feet. . Excavated topsoil would be stockpiled for later distribution. All other excavated material would be stockpiled for possible use in future phases. Construct the walls, floor and handrail for the sludge drying bed
- Haul and spread topsoil in the disturbed area outside the sludge drying bed.
- Revegetate the disturbed area outside the sludge drying bed.
- Transfer the sludge from Evaporation Pond 3 to the sludge drying bed.

- Remove the dried sludge from the sludge drying bed and haul it to a landfill in accordance with existing regulations.
- Pump all liquids from Evaporation Pond 3 into Evaporation Ponds 1 and 2.
- Remove the existing lining from Evaporation Pond 3.
- Haul the removed lining to a landfill in accordance with existing regulations.
- Install functionality features for Evaporation Pond 3.
- Prepare the surface for a new lining and reline Evaporation Pond 3.

Figure 5. Alternative 3 – Layout for the Expansion of the EL Facility to the North



Phase III – Construct Primary Pond 2 and Evaporation Pond 4

- Excavated Evaporation Pond 4 and Primary Pond 2 to the appropriate depths and stockpile the excess material 15 feet high in the stockpile area for use on future Lassen NF projects (3.5 acres, 66,000 CY). All topsoil would be stockpiled for later distribution.
- Remove and stockpile boulders that are suitable for other uses on the forest in random areas within the boulder stockpile area.
- Transfer the sludge from existing Primary Pond 2, Evaporation Ponds 1 and 2 to the sludge drying bed.
- Remove the dried sludge from the sludge drying bed and haul it to a landfill in accordance with existing regulations.
- Pump all liquids from Primary 2 to the Evaporation Ponds.
- Remove the existing lining from Primary Pond 2.
- Haul the removed lining to a landfill in accordance with existing regulations.

- Install functionality features for Evaporation Pond 4 and Primary Pond 2.
- Prepare the surface for new lining and line Evaporation Pond 4 and Primary Pond 2.
- Install lysimeters
- Install aerators
- Revegetate the disturbed area outside Evaporation Pond 4 and Primary Pond 2.

Phase IV – Reline Primary Pond 1, Evaporation Ponds 1 and 2

- Transfer the sludge from Primary 1 to the sludge drying bed.
- Remove the dried sludge from the sludge drying bed and haul it to a landfill in accordance with existing regulations.
- Pump all water from Primary Pond 1, Evaporation Ponds 1 and 2 into Evaporation Ponds 3 and 4.
- Remove the existing lining from Primary Pond 1, Evaporation Ponds 1 and 2.
- Raise the berm between Evaporation Ponds 1 and 2 obtaining approximately 3,110 CY of material from the stockpile area.
- Haul the removed lining to a landfill in accordance with existing regulations.
- Install functionality features for Primary Pond 1, Evaporation Ponds 1 and 2.
- Prepare the surface for new lining and reline Primary Pond 1, Evaporation Ponds 1 and 2.
- Install lysimeters
- Install aerators

Phase V – Reclamation

- Haul and spread topsoil in the remaining disturbed area.
- Revegetate the remaining disturbed areas.
- Remove cattleguard and temporary fencing from perimeter of project area.

Alternative 4

The bank between Evaporation Pond 1 and 2 would be raised so that the ponds function as two separate ponds. Additionally, the depth of Evaporation Ponds 1, 2 and 3 would be increased by approximately two (2) feet. Evaporation Ponds 1, 2 and 3 and Primary Ponds 1 and 2 would be relined. A sludge drying bed would constructed north on the Primary Pond 2. Additionally, one water well would be developed east of Primary Pond 1. This alternative is divided into six phases as described below. Each phase outlines the work to be completed during that phase. Work from multiple phases may occur concurrently. During Phase I through V material in the existing ponds may be transferred to other ponds as necessary, to allow for removal and relining of each pond. All replaced liners would be removed off NFS land and disposed of according to existing regulations. Figure 6 displays the location of the newly constructed sludge drying bed, the sites where soil materials would be removed and spread as need for the newly constructed features and the lowering of the evaporation ponds, the boulder stockpile area, approximate location of the new well and the area where tree thinning would occur to reduce hazardous fuels to protect this site.

Phase I – Site Preparation

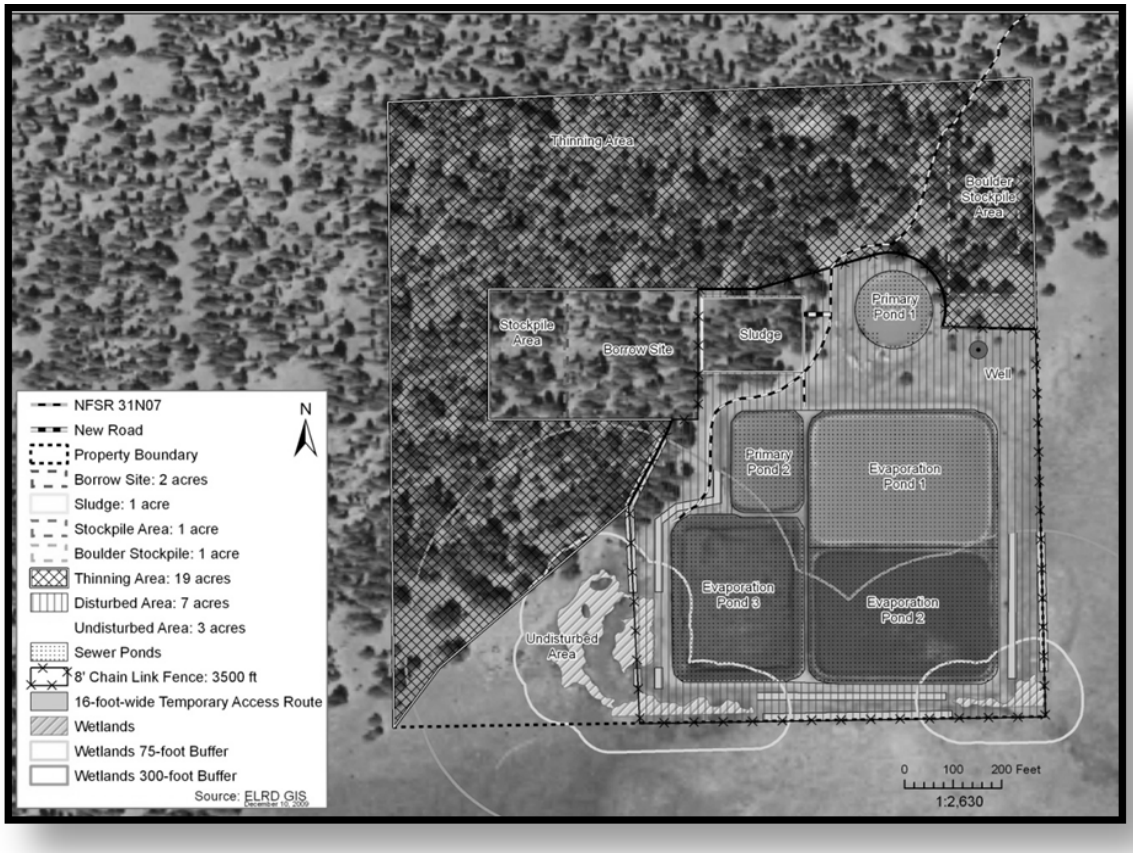
- Remove the existing barbed wire fences on the interior of the 40 acres and the above ground sprinkler heads from the old spray field area.

- Remove 3,100 feet of existing barbed wire fence from the perimeter of the sewage treatment facility site.
- Construct approximately 3,700 feet of 8-foot-high chain-link fence around the sewage treatment facility perimeter.
- Repair and or construct a barbed wire fence around the perimeter of the property where the 8-foot chain-link fence does not exist.
- Construct a cattle guard where the access road enters the property.
- Develop a water well for dust abatement east of Primary Pond 1.
- Unused fence material would be removed off National Forest System land.
- Clear the approximately 3 acres for the stockpile area borrow area and sludge drying area; leave stumps in place.
- Thin approximately 20 acres of forested land.

Phase II – Construct Sludge Drying Bed and Lower Evaporation Pond 3

- Remove stumps and, if necessary, slash piles and any remaining vegetation. Stumps could be temporarily stored on site.

Figure 6. Alternative 4 – Layout for the Deeping of Evaporation Ponds



- Remove and stockpile boulders that are suitable for other uses on the forest in random areas within the boulder stockpile area.
- Stockpile the topsoil.
- Construct the road to the sludge drying area (300 feet by 18 feet wide).

- Excavate the sludge drying bed (0.8 acres, 1,500 CY) to a depth of approximately 5 feet. Excavated topsoil would be stockpiled for later distribution. All other excavated material would be stockpiled for possible use in future phases.
- Construct the walls, floor and handrail for the sludge drying bed.
- Haul and spread topsoil in the disturbed area outside the sludge drying bed.
- Revegetate the disturbed area outside the sludge drying bed.
- Transfer the sludge from Evaporation Pond 3 to the sludge drying bed.
- Remove the dried sludge from the sludge drying bed and haul it to a landfill in accordance with existing regulations.
- Pump all liquids form Evaporation Pond 3 into Evaporation Ponds 1 and 2.
- Remove the existing lining from Evaporation Pond 3.
- Haul the removed lining to a landfill in accordance with existing regulations.
- Excavate and stockpile approximately 4,700 CY from the bottom of Evaporation Pond 3. The excavate material would be stockpiled for possible use in future phases.
- Install functionality features for Evaporation Pond 3.
- Prepare the surface for new lining and reline Evaporation Pond 3.
- Install aerators.

Phase III – Reline Primary Pond 2

- Transfer the sludge from Primary Pond 2 to the sludge drying bed.
- Pump all liquids from Primary Pond 2 into Evaporation Pond 3.
- Remove the dried sludge from the sludge drying bed and haul it to a landfill in accordance with existing regulations.
- Remove the existing lining from Primary Pond 2.
- Haul the removed lining to a landfill in accordance with existing regulations.
- Install functionality features for Primary Pond 2
- Prepare the surface for new lining and reline Primary Pond 2.
- Install aerators.

Phase IV – Reline Primary Pond 1, Evaporation Ponds 1

- Transfer the sludge from Primary 1 and Evaporation Ponds 1 to the sludge drying bed.
- Remove the dried sludge from the sludge drying bed and haul it to a landfill in accordance with existing regulations.
- Pump as much water as possible from Evaporation Ponds 1 and 2 into Evaporation Pond 3.
- Construct coffer dams and plug the 18 inch culvert between Evaporation ponds 1 and 2. If the coffer dam does not work, pump and haul all remaining liquids in Evaporation Ponds 1 and 2 to a sewage treatment facility (approximately 2.6 million gallons).
- Pump all liquid from Primary Pond 1 and Evaporation Pond 1 into Evaporation Ponds 2 and 3.
- Remove the existing lining from Primary Pond 1 and Evaporation Pond 1.
- Haul the removed lining to a landfill in accordance with existing regulations.
- Install functionality features for Primary Pond 1 and Evaporation Pond 1.
- Excavate and stockpile approximately 6,400 CY from the bottom of Evaporation Pond 1. The excavated material would be stockpiled for possible use in future phases.

- Raise the ½ of berm between Evaporation Ponds 1 and 2 using approximately 1,555 CY of material from the stockpile area.
- Prepare the surface for new lining and reline Primary Pond 1 and Evaporation Pond 1.
- Install lysimeters
- Install aerators

Phase V – Reline Evaporation Pond 2

- Transfer the sludge from Evaporation Pond 2 to the sludge drying bed.
- Remove the dried sludge from the sludge drying bed and haul it to a landfill in accordance with existing regulations.
- Pump all liquid from Primary Pond 2 into Evaporation Ponds 1 and 3.
- Remove the existing lining Evaporation Pond 2.
- Haul the removed lining to a landfill in accordance with existing regulations.
- Install functionality features for Evaporation Pond 2.
- Excavate and stockpile approximately 6,400 CY from the bottom of Evaporation Pond 2.
- Raise the ½ of berm between Evaporation Ponds 1 and 2 obtaining approximately 1,555 CY of material from the stockpile area.
- Prepare the surface for new lining and reline Evaporation Pond 2.
- Install aerators

Phase VI – Reclamation

- Haul and spread topsoil in the remaining disturbed area.
- Revegetate the remaining disturbed areas.
- Remove cattleguard and temporary fencing from perimeter of project area.

Alternative 5

Alternative 5 was developed to address the issue to not eliminate a portion of the Merrill wetlands. The bank between Evaporation Pond 1 and 2 would be raised so that the ponds function as two separate ponds. Evaporation Ponds 1, 2 and 3 and Primary Pond 1 and 2 would be relined. A sludge drying bed would constructed north on the Primary Pond 2. Additionally, one water well would be developed east of Primary Pond 1. This alternative is divided into six phases as described below. Each phase outlines the work to be completed during that phase. Work from multiple phases may occur concurrently. During Phase I through V material in the existing ponds may be transferred to other ponds as necessary, to allow for removal and relining of each pond. All replaced liners would be removed off NFS land and disposed of according to existing regulations. Figure 7 displays the location of the newly constructed sludge drying bed, the sites where soil materials would be removed for the newly constructed features, the boulder stockpile area, approximate location of the new well and the area where tree thinning would occur to reduce hazardous fuels to protect this site.

Phase I – Site Preparation

- Remove the existing barbed wire fences on the interior of the 40 acres and the above-ground sprinkler heads from the old spray field area.

- Remove 3,100 feet of existing barbed wire fence from the perimeter of the sewage treatment facility site.
- Construct approximately 3,700 feet of 8-foot-high chain-link fence around the sewage treatment facility perimeter.
- Repair and/or construct a barbed wire fence around the perimeter of the property where the 8-foot chain-link fence does not exist.
- Construct a cattle guard where the access road enters the property.
- Develop a water well for dust abatement east of Primary Pond 1.
- Unused fence material would be removed off National Forest System land.
- Clear the approximately 1.5 acres for a borrow area and sludge drying area; leave stumps in place.
- Thin approximately 21 acres of forested land.

Figure 7. Alternative 5 – Layout for Relining All Ponds

Phase II – Construct Sludge Drying Bed and Reline Evaporation Pond 3

- Remove stumps and, if necessary, slash piles and any remaining vegetation. Stumps could be temporarily stored on site.
- Remove and stockpile boulders that are suitable for other uses on the forest in random areas within the boulder stockpile area.
- Stockpile the topsoil.

- Construct the road to the sludge drying area (300 feet by 18 feet wide).
- Excavate the sludge drying bed (0.8 acres, 1,500 CY) to a depth of approximately 5 feet.
- Construct the walls, floor and handrail for the sludge drying bed. Excavated topsoil would be stockpiled for later distribution. All other exacted material would be stockpiled for possible use in future phases.
- Haul and spread topsoil in the disturbed area outside the sludge drying bed.
- Revegetate the disturbed area outside the sludge drying bed.
- Transfer the sludge from Evaporation Pond 3 to the sludge drying bed.
- Remove the dried sludge from the sludge drying bed and haul it to a landfill in accordance with existing regulations.
- Pump all liquids from Evaporation Pond 3 into Evaporation Ponds 1 and 2.
- Remove the existing lining from Evaporation Pond 3.
- Haul the removed lining to a landfill in accordance with existing regulations.
- Install functionality features for Evaporation Pond 3.
- Prepare the surface for new lining and reline Evaporation Pond 3.

Phase III – Reline Primary Pond 2

- Transfer the sludge from Primary Pond 2 to the sludge drying bed.
- Remove the dried sludge from the sludge drying bed and haul it to a landfill in accordance with existing regulations.
- Pump all liquids from Primary Pond 2 into Evaporation Pond 3.
- Remove the existing lining from Primary Pond 2.
- Haul the removed lining to a landfill in accordance with existing regulations.
- Install functionality features for Primary Pond 2
- Prepare the surface for new lining and reline Primary Pond 2.
- Install aerators.

Phase IV – Reline Primary Pond 1, Evaporation Pond 1

- Transfer the sludge from Primary 1 and Evaporation Pond 1 to the sludge drying bed.
- Remove the dried sludge from the sludge drying bed and haul it to a landfill in accordance with existing regulations.
- Pump as much water as possible from form Evaporation Ponds 1 and 2 into Evaporation Pond 3.
- Construct coffer dams and plug the 18 inch culvert between Evaporation ponds 1 and 2. If the Coffer dam does not work pump and haul all remaining liquids in Evaporation Ponds 1 and 2 to a sewage treatment facility (approximately 2.6 million gallons).
- Pump all liquid from Primary Pond 1 and Evaporation Pond 1 into Evaporation Ponds 2 and 3.
- Remove the existing lining from Primary Pond 1 and Evaporation Pond 1.
- Haul the removed lining to a landfill in accordance with existing regulations.
- Install functionality features for Primary Pond 1 and Evaporation Pond 1.
- Raise the ½ of berm between Evaporation Ponds 1 and 2 obtaining approximately 1,555 CY of material from the stockpile area.
- Prepare the surface for new lining and reline Primary Pond 1 and Evaporation Pond 1.
- Install lysimeters
- Install aerators

Phase V – Reline Evaporation Pond 2

- Transfer the sludge from Evaporation Pond 2 to the sludge drying bed.
- Remove the dried sludge from the sludge drying bed and haul it to a landfill in accordance with existing regulations.
- Pump all liquid from Primary Pond 2 into Evaporation Ponds 1 and 3.
- Remove the existing lining Evaporation Pond 2.
- Haul the removed lining to a landfill.
- Install functionality features for Evaporation Ponds 2.
- Raise the ½ of berm between Evaporation Ponds 1 and 2 obtaining approximately 1,555 CY of material from the stockpile area.
- Prepare the surface for new lining and reline Evaporation Pond 2.
- Install lysimeters

Phase VI – Reclamation

- Haul and spread topsoil in the remaining disturbed area.
- Revegetate the remaining disturbed areas.
- Remove cattleguard and temporary fencing from perimeter of project area.

Integrated Design Features for Alternative 3, 4 and 5

This set of integrated design features is different than the one described for the Proposed Action. This set IDF's only apply to Alternatives 3, 4 and 5. The need for two distinct sets of IDFs resulted from the need to address entering the Merrill wetlands in Alternative 1. Alternatives 3, 4 nor 5 enter the wetlands. Although many of the IDF's are common to all alternatives, there are IDFs that are unique to Alternatives 3, 4 and 5.

Integrated Design Features Common to Alternative 3, 4 and 5

The RCA of the Merrill wetlands extends 300 ft horizontal from the edge of the wetlands. The RCA is divided into two zones. The inner RCA extends from the edge of the wetlands to 75 feet and the outer RCA extends from 75 feet to 300 feet. The RCA would be impacted by the sewer pond expansion operations in the following ways.

Description of the Sewer Pond Expansion Operations in the RCA Zones

a. A temporary access route up to 16 feet in width from the base of a pond berm would be utilized for work related to pond relining. A temporary access route up to 16 feet from the fence line would be utilized for work related to fence removal and replacement. Additionally, where berms are breached a work area up to 20 feet in width would be utilized for the installation of monitoring and or functionality features for the facilities (Figures 5, 6 and 7 show the access routes).

b. Mechanical equipment may be utilized on temporary access routes described in "a" above within the inner RCA as long as dry soil conditions are met. Dry soil conditions are met when soils within the RCA are dry to a depth of 12 inches prior to entrance. Mechanical equipment would be excluded from the inner RCA areas that are not part of the temporary access routes described in "a" above.

c. The following types of work may occur within the RCA's of the Merrill wetlands and are outside the existing access roads on the top of the pond berms.
    - Installation of pond liners
    - Installation of pond monitoring facilities
    - Installation of piping and other materials to improve the sewer system functionality.
    - Installation of fences
    - Hauling of dirt, sand and or other aggregates and or dirt for berm related work.
    - Short term storage of construction materials (not to exceed one week)
d. An erosion control plan (BMP 2.2) would be implemented to protect the wetlands and reduce sedimentation. At a minimum the erosion control plan would include anchored sediment fencing and straw waddles placed between the construction area and the wetland
e. None of the above described access areas would intrude on the actual Merrill wetlands as defined in the 2009 wetlands delineation study.

The following features are noted as timber operations (timber) or sewer pond expansion operations (ponds). For those features that overlap both operations, it is noted as (both). The descriptions of access routes and work that may occur within the RCA's apply to all operations involving sewer pond expansion. (ponds)

Aquatics

1. A "no mechanical equipment" buffer would be designated around the inner RCA zone (within 75 feet of the delineated wetlands as described in the 2009 wetlands delineation study) within Little Merrill Flat during timber removal. (timber)
2. Landings would be located outside the seasonal wetlands and the RCA zones. (timber)
3. Conifers would be removed with feller-bunchers that have 24-inch or greater track widths. (timber)
4. Skid trails would be kept to a minimum *(no more than one every 100 feet)* and no water bars would be installed after treatment *on slopes that are gentle (1-2%).* Where slopes are gentle, water bars are more likely to interfere with natural flow paths than serve their intended purposes, which, is to disperse concentrated flows away from skid trails. (timber)
5. Skid trails within the RCA zones of Little Merrill Flat would require 90 percent of existing ground cover on bare soil on the trails; slash would be spread over these open areas (timber).
6. Ground-based equipment would be used to remove timber using one-end suspension outside the inner RCA zone. (timber)
7. Hand thinning and timber removal would be allowed within the inner RCA zone. Trees would be felled away from water bodies. (timber)
8. Slash piles within the RCA would be hand-piled and burned in the outer RCA zone (75 feet to 300 feet) of the RCA of Little Merrill Flat. Machine piles would be located completely outside the RCA. (timber)

Botany

9. New occurrences of Threatened and Endangered *and Forest Service Region 5 Sensitive* (TES) plant species, discovered before or during ground-disturbing activities within the thinning area, would be protected through flag and avoid methods. Avoidance buffer widths would be based on the requirements of the TES species present. (both)

10. All fence work in the south and east margins of the project area, including the installation of permanent chain-link fence around the treatment facility, would occur when soils are dry, so that plants *of Mimulus pygmaeus* would have completed their annual life cycle. (both)
11. All equipment would be weed-free prior to entering the Forest. Staging of equipment would be done in weed-free areas. (both)
12. Certified weed-free mulches or fill would be used as necessary. (both)
13. If, prior to ground-disturbing activities, new noxious weed infestations are identified within thinning units or on access roads, the infestations would be evaluated, then dug up or pulled by hand and avoided by project activities. (both)
14. If, prior to ground-disturbing activities, new noxious weed infestations are identified outside of thinning units or on access roads, and they cannot be eliminated through hand-pulling, tarping, or other cultural methods such as seeding with competitive native species, topsoil infested with these weeds would not be respread into impacted areas of the project. (both)
15. Post-project monitoring for implementation and effectiveness of weed treatments, control of new infestations, and borrow site revegetation would be conducted as soon as possible and as needed. (both)

Silviculture

16. All conifer stumps greater than 14 inches in diameter would be treated with SPORAX® within the thinning area. No Sporax would be applied within 25 feet of known Sensitive and Special Interest Plants or applied within 25 feet of the wetlands as described in the 2009 wetlands delineation study. (timber)

Soils

17. Existing landings and skid trails would be used as much as possible to minimize new disturbance. (timber)
18. Outside the RCA, Lassen NF Wet Weather Operations and Wet Weather Haul Agreement, and Lassen NF Timber Waiver permit from Lahontan would be followed during all operations. When a conflict exists between the Wet Weather Operations and Wet Weather Haul Agreement, and Lassen NF Timber Waiver permit the most stringent requirements shall apply. (both)
19. In construction zones, manual wetting of soils to enhance soil aggregation properties is permissible as is mechanical operations on soils that are manually wetted for this purpose. (ponds)
20. Any activity-generated surface fuels would be piled and burned such that the intensity and duration of the fire minimizes soil sterilization. In thinning areas, this would be achieved by limiting piling and burning to landing areas in order to minimize the areal extent of burning. In RCAs, this would be accomplished by limiting pile size to hand-piles only (i.e. no mechanical piling). (both)
21. If trees are pushed over in the pond expansion area and borrow area to facilitate stump removal, then soil would be dislodged on site. (pond)
22. Potential sedimentation to RCA zones from project areas, including from currently forested areas that are being harvested for pond expansion procedures (i.e. borrow site, sludge drying site), would be prevented by installing site-specific erosion and sediment control devices. These devices may include, but are not limited to, silt fencing, straw bales, coir logs (i.e., straw waddles), plant cover, and mulch. (BMP 1-18 Meadow Protection During Timber Harvesting; BMP 2-11 Control of Side-Cast Material During Construction and Maintenance; BMP 2-13 Control of Construction; BMP 2-19 Disposal of Right of Way and Roadside Debris; BMP 2-15 Diversion of Flows around Construction Sites; BMP 2-18 Regulation of Borrow Areas). (both)

23. Provide visible delineations around construction and borrow sites. Delineated wetland (as described in the 2009 wetlands delineation study) areas would remain free of mechanical equipment that must be driven. Examples of mechanical equipment that may be used in the wetlands are small generators, a gas power post hole digger etc. Mechanical equipment would not be left unattended on the ground in order to minimize ground contamination by fuels. Refueling of mechanical equipment would be prohibited in the RCA zones. Materials that need to be stored for more than 7 days would be stored outside the outer RCA zone. (ponds)
24. In addition to the revegetation of borrow sites, the area encompassed by the borrow area would be covered at the time of revegetation with mulch, pine needles, or rice straw so that at least 50 percent of the soil would be covered. (pond)
25. Maintain at least three logs per acre of downed large logs in all currently forested areas. (both)

Water Quality

26. All temporary access routes within the RCA zones would be evaluated for possible scarification, recontoured, seeded with native vegetation, and have 90% of the existing groundcover following completion of the sewer pond expansion operations. (ponds)
27. Mechanical equipment may be utilized in the outer RCA zone as long as dry soil conditions are met. Soil must be dry to a depth of 12 inches before mechanical equipment is allowed to enter the outer RCA zone. (both)
28. Mechanical equipment is prohibited from entering the inner RCA zone with the exception of the existing access road on the pond berm of Evaporation Ponds 2 and 3 and the evaporation ponds themselves with the exception of work allowed in the RCA's previously discussed. (Ponds)
29. Hand thinned material within the RCA may be dispersed using lop and scatter with the stipulation that fuel objectives are met following treatment. (timber)
30. At a minimum the contractor would have on site at all times sufficient absorption materials and tools to cleanup and properly dispose of any size oil or oil products spill. Additionally the contractors would maintain storage facilities for oil or oil products in the project area and would take preventative measures to ensure that any spill would not enter the Little Merrill Flat wetlands. If the total oil products storage exceeds 1,320 gallons in containers of 55 gallons or greater, then the contractor would prepare a Spill Prevention Control and Countermeasures Plan (SPCC). In addition, these BMPs would be followed: BMP 2-12 Servicing and Refueling of Equipment; BMP 7-4 Forest and Hazardous SPCC. (both)
31. Treatment pond berms would be constructed with slopes less than 25 percent, unless sound structure cannot be achieved and or the following exists. (BMP 2-4 Stabilization of Slope Surfaces and Spoil Disposal Areas; BMP 2-28 Surface Erosion Control at Facility Sites). (ponds)
    a. The 25 percent slope does not apply to existing berms.
    b. In the event the 25 percent slopes increase the cost of the project substantially and/or there are other issues identified that make a 25 percent slopes impractical a steeper slope would be used in the design with approval.

    Additionally, berms would be seeded with native vegetation.
32. Use organic materials and rocks *(not considered to be boulders)* generated from the project to back fill the borrow site. When the borrow site is not longer needed contour the site, spread topsoil and seed the site with native vegetation. (BMP 2-27 Restoration of Borrow Pits). (ponds) (BMP 2-27 Restoration of Borrow Pits). (ponds)
33. The well installed for dust abatement would be constructed according to California Standards (Bulletin 74-90). With seals and casing placed to prevent migration of soil and ground water from the soil layer to deeper bedrock formations. Waste water from the well drilling would be pumped into the EL Facility. (both)

34. Installation of fencing located within the wetland would occur by use of the following equipment: 1) a gas power hand held auger to drill post holes approximately 38 inches deep, 2) manual placement of concrete for post footings, 3) manual tightening of fence material or use of rubber tired tractor placed outside of wetland. (ponds)

Wildlife

35. To the extent practicable, disturbed areas would be seeded, with a variety of locally adapted native plants. These plants should provide food value to wildlife in the form of browse, fruits and seeds, possibly including but not limited to such plants as elderberry, serviceberry, chokecherry, Scouler's willow, and native grasses. Any substitute locally-adapted plants would be similar or better than those listed plants at providing food value. Newly constructed or reconstructed berms around the sewage ponds would be stabilized with a mix of native grasses (possibly including but not limited to Poa secunda, one-sided bluegrass; Elymus glaucus, blue wild rye; and Bromus carinatus, California brome) to prevent wind and soil erosion. Any substitute locally-adapted plants would be similar or better than those listed plants at preventing wind and soil erosion (BMP 2-4 Stabilization of Slope Surfaces and Spoil Disposal Areas; BMP 2-28 Surface Erosion Control at Facility). (ponds)

Transportation System

36. Install appropriate safety signs per the Manual on Uniform Traffic Control Devices (MUTCD) at locations on NFSR 31N07 and at the intersection of NFSR 31N07 and County Road A-1 to inform the public of construction activity. (both)
37. Contractor would obtain all required permits from all government agencies for oversize (length and or width) and overweight loads. (both)
38. NFS road 31N07 would be used for timber haul and would receive pre, during, and post haul maintenance as per Forest Service Road Maintenance Specifications for Timber Sale Contracts. A surface replacement deposit collection would be required based on haul volume on approximately 2 miles of NFS road 31N07. (timber)

Facilities:

39. Implementation of an approved Storm water Pollution Prevention Plan and Erosion Control Plan. (ponds)
40. Protection of existing landscape and vegetation outside of the construction zone (ponds).
41. Upon completion of the project areas that show signs of rutting would be scarified to a depth of 6 six inches. Scarified areas would be contoured and seeded with native vegetation. (ponds)
42. Site-specific erosion and sediment control devices would be installed around stockpiled materials to prevent sediment movement. These devices at a minimum would include, silt fencing, straw bales, coir logs (i.e., straw waddles), (BMP 2-11 Control of Side-Cast Material During Construction and Maintenance; BMP 2-13 Control of Construction; BMP 2-19 Disposal of Right of Way and Roadside Debris; BMP 2-15 Diversion of Flows around Construction Sites; BMP 2-18 Regulation of Borrow Areas). (both)

Air Quality:

43. Prescribed burning would only be conducted on permissive burn days as defined by the California Air Resources Board (CARB) and follow the constraints of a Smoke Management Plan (SMP) approved by the Lassen County Air Quality Management District. (both)
44. Develop and implement a dust abatement plan along the road in the project area. Logging and vegetation management activities would be dust abated where rubber-tired vehicles are operating on haul routes. Water for dust abatement would be, obtained onsite from the well, trucked-in, or a dust palliative may be approved which may include magnesium chloride, calcium chloride, lignin

sulfate, or an approved equal. Dust palliatives would not be used within 25 feet of the RCA. Dust palliatives, if used, would be stored and mixed outside of the RCA. (both)

Range

45. Coordination of cattle movement and usage within the project area would be conducted. (both)
46. When need a temporary fence would be placed and maintained around the project area to keep cattle trespassing to a minimum. (both)
47. A temporary cattle guard would be place at the entrance to the project area to prevent cattle from entering the site during thinning and sewer pond expansion activities. (both)

Heritage

48. The two sites in the project area (05-06-58-499 and 05-06-58-982) were determined not to be eligible for the National Register of Historic Places and were released from management. (both)

Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative as they relate to Purpose and Need (P&N) and show how the alternatives address the significant issue.

Table 1. Comparison of Alternatives

Purpose & Need Statements	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Replacement of the liners to prevent immanent large scale failure of the liner	Meets P&N	Does Not Meet P&N	Meets P&N	Meets P&N	Meets P&N
Expansion of the facility so that closure of the ELRA facilities is not required during the replacement	Meets P&N	Does Not Meet P&N	Meets P&N	Does Not Meet P&N	Does Not Meet P&N
Prevents a negative impact – political and/or economic	Meets P&N	Does Not Meet P&N	Meets P&N	Meets P&N	Meets P&N
Provide the storage capacity to handle future capacity increases	Meets P&N	Does Not Meet P&N	Meets P&N	Meets P&N	Does Not Meet P&N
Minimizes the Impact and protects the greater Little Merrill Flats Wetlands	Meets P&N	Meets P&N	Meets P&N	Meets P&N	Meets P&N
Maintain tree growth, decrease the risk of tree mortality and reduce the risk to the EL Facility from a wildfire	Meets P&N	Does Not Meet P&N	Meets P&N	Meets P&N	Meets P&N
Provide a borrow area on site and makes room for the expansion	Meets P&N	Does Not Meet P&N	Meets P&N	Meets P&N	Does Not Meet P&N
Issue Statement Measure	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Acres of wetlands destroyed	0.77	0	0	0	0

Environmental Effects

This section summarizes the effects due to implementation of the alternatives. All cited references can be found in the individual specialist's report, as noted, in the project record.

Air Quality

Alternatives 1, 3, 4, and 5

Direct, Indirect and Cumulative Effects

A portion of the access to the proposed project area is on gravel surfaced roads. During the summer, when dry conditions persist, vehicle travel on these roads, especially those located along open terrain free of forested cover, can result in dust plumes that do not immediately settle. Depending on the amount of travel and the stability of the ambient airmass, these conditions can impact nearby visibility as fine dust is entrained and transported away from the roads. Dispersion of these plumes (and corresponding decrease of visible particulates in the air) increases with time and distance. Additionally, during periods of prescribed burns smoke entrainment could impact visibility in the ELRA. These effects would be mitigated through the use of the integrated design features.

In accordance with Title 17 of the California Code of Regulations, a smoke management plan would be required and would be submitted and approved by the Lassen County Air Pollution Control District (LCAPCD) prior to any prescribed fire ignitions that are part of Action Alternatives. Adherence to the smoke management plan (SMP) for prescribed burning would decrease the chance of negative impacts to communities and other smoke sensitive areas. It would also help to ensure that emissions from prescribed burning would not violate the National Ambient Air Quality (NAAQ) emission standards. In addition to these safeguards, a daily Air Quality Conference Call is conducted during the prescribed fire season. These calls are attended by representatives of the Air Quality Management Districts, the California Air Resources Board, Geographical Area Coordination Center meteorologists and agencies that are conducting prescribed fire operations. These calls help ensure that burning only occurs when atmospheric conditions are conducive to good smoke dispersion and that the cumulative effects of all prescribed burning remain at levels that are within the provisions of the Clean Air Act.

Fugitive dust from operations would be mitigated by applying watering or other dust abatement techniques. A dust palliative, for dust abatement where rubber-tired vehicles are operating on haul routes may be used. The dust palliative may include magnesium chloride, calcium chloride, lignin sulfate, or an approved equal. The dust palliative would not be used within 25 feet of live streams, wet meadows, or wetlands. Based on similar, past applications in the project area and in various locations across the District, it is not anticipated that vegetation adjacent to haul route roads would be impacted.

Alternative 2

Direct Effects

The EL Facilities Project would not be implemented under Alternative 2 and therefore there would be no direct effects.

Indirect Effects

This alternative would create no short-term impacts to the local areas from prescribed fire. However, the risk of a major air quality impact from a large wildland fire burning in the area would be increased under Alternative 2. The amount of smoke created, in the event of a large wildland fire burning in the project area, would be increased for several reasons. There would be more acres burned in a shorter period of time, the fire would burn under hotter and drier conditions, so the amount of fuel consumed would increase and fuels would burn that would have been removed under the Action Alternatives. Increased consumption of the canopy fuels, due to the more intense fire behavior, would also contribute to increased smoke production.

Additionally, smoke impacts to local communities would be more severe in the event of a wildland fire due to the normal summertime inversions. Inversions cause smoke to linger near the surface in low-lying areas and can last for extended periods, especially during summertime conditions. Summertime inversions have negatively impacted the area during years when large wildland fires burned including 1977, 1987, 1992, 1999 and 2007.

Additional information about air quality can be found in the Fuels and Silviculture Reports, hereby incorporated by reference, located at the Eagle Lake Ranger District, 477-050 Eagle Lake Road, Susanville, CA 96130 in the project record.

Engineering

Alternative 1 – Proposed Action

All action alternatives have differing direct and indirect effects. However, they all have similar cumulative effects which are presented at the end of this section.

Direct Effects

This alternative corrects all current operational deficiencies and complies with Lahontan requirements. The increase in capacity would allow for the movement of material from one evaporation pond to the other when inspection and maintenance of liners is required while maintaining the same level of operation. Additional capacity would provide added protection against a possible sewage spill in the event of a liner leak, damage to the plumbing system (a leak developing in a pipe, a valve in need of replacement), a large storm event or other sudden increases in volume, or a dead pond situation. Furthermore, the added capacity also increases evaporation by maximizing surface area.

Indirect Effects

Long-term effects of the project would include an increase in wastewater and lysimeter testing and sampling fees due to more collection points. Sludge in the ponds would have to be accommodated within the existing ponds and would affect future capacity of the system.

Alternative 2 – No Action

Direct Effects

If the liners are not replaced we would be in violation of our permit. A clean-up and abatement order would be issued and the sewage treatment facility would closed until such time as the repairs are made. Attempts to simply make repairs would be a short term fix and would require intensive monitoring and inspections. Lahontan would not accept this option as a long term solution since the liners have exceeded their intended life.

If the facility is shut down, all sewage and fluids would have to be immediately pumped from the ponds and the piping system and removed from NFS lands. This would be a very large volume; most likely over 2.6 million gallons. Finding one collection facility that could receive this much material is unlikely. The length of haul to multiple facilities out of the local area would be cost prohibitive. The liners would have to be rinsed and disinfected and the residual materials removed from NFS lands and alternatives for collection of human waste would have to be established.

Indirect Effects

Long-term effects of the no-action alternative would include closure and decommissioning. All improvements to the site would have to be decommissioned and eventually removed from NFS lands. This would include electrical systems, plumbing, buildings and other structures. The berms would have to be breached to prevent capture of precipitation. All sewage collection facilities located in the ELRA would have to be put out of service, disinfected and eventually removed from NFS lands. Alternative sewer collection facilities would have to be developed such as portable toilets in the short term and new vault toilets in the long term. The sanitary dump station and the fish cleaning station would have to be closed. The showers at the Marina would have to be closed. The Ronald McDonald camp would not be able to operate without kitchen and shower facilities, and could lead to overall closure. The transportation system would remain in place for private owner access; however no treatments would be performed.

Alternative 3

Direct Effects

The direct effects for Alternative 3 are the same as Alternative 1 with the following addition. Construction of drying beds to dewater sludge (biosolid) would increase overall treatment capacity of the evaporative ponds. Dried biosolid could then be taken to a landfill for ultimate disposal.

Indirect Effects

The Indirect effects for Alternative 3 are the same as Alternative 1 with the following addition. Need for development of a Sludge Management Plan for approval by the Lahontan.

Alternative 4

Direct Effects

This alternative corrects all the current operational deficiencies and complies with Lahontan requirements. Additional capacity would provide added protection from a large storm event or other sudden increases in volume. Furthermore, construction of drying beds to dewater sludge (biosolid) would increase the overall treatment capacity of the evaporative ponds.

Indirect Effects

Long-term effects of the project would include, increased personnel time for inspection, monitoring, and maintenance of the aeration devices. Increased personnel time for the removal of the aeration devices for the winter. Increased electrical usage and cost for operation of the aeration devices. Less flexibility in operations by keeping the number of ponds the same; would not reduce potential of shutdown in the event of a liner leak, damage to the plumbing system (a leak developing in a pipe, a valve in need of replacement), a large storm event or other sudden increase in volume. Potential for a “dead pond” situation if an aerator fails to function. There would be a need for development of a Sludge Management Plan for approval by the Board.

Alternative 5

Direct Effects

This alternative corrects all the current operational deficiencies and complies with Lahontan requirements. Furthermore, construction of drying beds to dewater sludge (biosolid) would increase the overall treatment capacity of the evaporative ponds.

Indirect Effects

Long-term effects of the project would include the potential for violation of freeboard and storm event requirements during movement of material between ponds during and after a heavy precipitation winter. Less flexibility in operations would be achieved by keeping the number of ponds the same; this would not reduce the potential of shutdown in the event of a liner leak, damage to the plumbing system (a leak developing in a pipe, a valve in need of replacement), a large storm event or other sudden increase in volume, or a dead pond situation. There would be a need for development of a Sludge Management Plan for approval by the Board.

Cumulative Effects for Alternatives 1, 3, 4, and 5

The temporal scale for cumulative effects analysis for this project is the next 10 years. The spatial scale is the entire 40-acre parcel encompassing the proposed and existing treatment facility and the associated ground disturbing activities (timber thinning area, borrow site, clearing area); the existing access road (1.9 miles); and the existing sewage system serving the developed recreation sites of the ELRA. The sewage system includes numerous collection points, 13 duplex grinder stations, 1 single pump grinder station, 5 duplex lift stations, 1 duplex export station and other supporting structures, sewage lines and electrical

service. The recreation sites include all Forest Service facilities from Christie Campground to the Ronald McDonald Camp.

Past actions at the facility that could have had direct/indirect effects that overlap in time and space with the proposed action include the development of the facility in the 1970's and the facility upgrades since then. Future actions that could have direct/indirect effects on the facility include the following:

- Sewage collection system repairs, replacements and maintenance (piping, valves, electrical system)
- Routine maintenance of the access road
- Routine inspection and repairs to the pond liners
- Repairs and maintenance to the electrical system at the pond site
- Replacement of 11 existing flush restroom buildings in Merrill Campground with new accessible structures built with sustainable materials.
- Construction of new shower buildings at Merrill Campground.
- Construction of a low-water boat ramp at the Eagle Lake Marina

Additional information about Engineering can be found in the Engineering Report, hereby incorporated by reference, located at the Eagle Lake Ranger District, 477-050 Eagle Lake Road, Susanville, CA 96130 in the project record.

Transportation System

Alternatives 1, 3, 4 and 5

Direct, Indirect and Cumulative Effects

The existing forest transportation system would be utilized to provide access to the project area. The main route (expected haul direction) leading out of the project is north on NFS road 31N07 to Lassen County road A1. The majority of NFS road 31N07 is a gravel surfaced road that resides primarily on private lands for which the Forest Service has an agreement to use for activities related to the EL Facility. This road is not adjacent to a water body and does not cross any major drainage. Approximately 500 feet of 31N07 is paved starting from the intersection with County Road A1 before it changes to gravel. This paved area would allow any accumulation of dirt or mud that may have occurred from hauling on the gravel road to be dislodged before being transferred to the paved county road. No temporary roads would be needed for the harvest activities.

Temporary access routes have been identified on the project maps. These routes have been mapped to delineate the operations area within the RCA. These routes would be utilized for work related to fence removal and replacement, pond relining, and installation of monitoring features for the facilities. These routes would not be part of the NF transportation system.

There are concerns about negative impacts that roads may have on watershed conditions. In order to achieve the proposed project while minimizing impacts to water quality, Best Management Practices

(BMPs) would be used during road maintenance, logging operations (pre haul through post haul), and hauling of construction materials.

NFS road 31N07 would be used for haul and would receive pre, during, and post haul maintenance as per Forest Service Road Maintenance T-Specifications for Timber Sale Contracts. A dust abatement plan would be included to control wind-caused erosion from road use.

The proposed water source for Alternative 1, is the Spalding Well located off of NFS road 33N02H (T33N R10E Sec 25). This is a well pumped water source that conforms to the applicable BMPs. The water source for Alternatives 3, 4, and 5 would be from a new well drilled and used on site.

Short term there would be a direct effect of increasing traffic due to the movement of equipment, materials and personnel into and out of the project area. Increased traffic can impact the safety of the public and employees using the roads in the area. Traffic management measures would minimize these impacts. With the use of standard contract provisions for traffic control, indirect, and cumulative effects would be negligible.

Alternative 2 – No Action

Direct, Indirect Effects

The Eagle Lake Sewer Ponds project would not be implemented under Alternative 2 and therefore there would be no effects to NFS road 30N07 and the existing transportation system would remain unchanged.

Additional information about Transportation can be found in the Engineering Report located at the Eagle Lake Ranger District, 477-050 Eagle Lake Road, Susanville, CA 96130 in the project record.

Hydrology

This section is divided into four effects indicators: 1) hydrology, 2) effects on water quality and beneficial uses of affected surface water bodies, 3) effects on Little Merrill Flat wetlands (Merrill wetlands), and 4) Riparian Conservation Objectives (RCO) consistency (SNFPA ROD page 33, 2004). They are described as risks to the indicator. A Cumulative Watershed Effects analysis is noted at the end of this section. All applicable BMPs for the alternatives are listed in Appendix 1 of the Hydrology Report. IDFs used to mitigate and reduce risks are listed in this EA.

Common Risks to Alternatives 1, 3, 4 and 5

Indicator 1 (Alt 1, 3, 4 & 5) - Hydrology

At the watershed scale, project activities would pose a negligible risk to stream flow within the project watershed. Less than 1 percent of the project watershed area would be treated. Re-lining the primary and evaporation sewage ponds would prevent pond water seepage from entering Merrill wetlands and groundwater.

Indicator 2 (Alt 1, 3, 4 & 5) - Water Quality and Beneficial Uses

Water quality standards and control measures for surface and ground waters of the Lahontan Region are contained in the Water Quality Control Plan for the Lahontan Region (Basin Plan). The plan designates beneficial uses for water bodies and establishes water quality objectives (WQOs) and other implementation measures to protect those beneficial uses. At the watershed scale, project activities would pose a negligible risk to water quality and beneficial uses within the project watershed. Less than one percent of the project watershed area would be treated. Re-lining the primary and evaporation sewage ponds would prevent pond water seepage from entering Merrill wetlands and ground water.

Indicator 4 (Alt 1, 3, 4 & 5) - RCO Consistency

RCO 3 would not be applicable as there are no streams within the project area; RCO 3 was not analyzed further. The supply of coarse woody debris to Merrill Creek would not be affected by this project. No coarse woody debris was observed in the wetlands during site visits in November 2008.

Site Preparation would be consistent with RCOs 1, 2, 4, 5, and 6. The wetlands would maintain a no equipment zone, consistent with RCOs 2, 4, 5, and 6. Implementation practices would follow applicable BMPs to protect water quality and beneficial uses, which would be consistent with RCO 1.

Alternative 1 – Proposed Action

Direct and Indirect Effects

Indicator 1 - Hydrology

On a local scale, restrictive dry soil conditions would reduce and mitigate the risk of rutting and compaction; however, Construction activities would result in a long-term disturbance and loss of 0.77 acres of the 0.89 acres of depressional wetlands. The restoration of Papoose Meadow would mitigate for this long-term wetland loss as previously described in Wetlands Mitigation and described in detail in the PMRP Project.

Indicator 2) - Water Quality and Beneficial Uses

On a local scale, restrictive dry soil conditions would reduce and mitigate the risk of rutting, compaction, sedimentation, and related impacts to water quality and beneficial uses (described in the Hydrology Report); however, Construction activities would result in the long-term disturbance and loss of 0.77 acres of the 0.89 acres of depressional wetlands and beneficial uses related to the depressional wetlands. 0.77 acres of depressional wetlands would be filled in and buried by the extension of Evaporation Pond 3. The long-term loss of wetlands would be mitigated through the restoration of Papoose Meadow as previously described in Wetlands Mitigation and described in detail in the PMWR Project.

Indicator 3 - Effects to Little Merrill Flat Wetlands

Although the Merrill wetlands would be protected during Site Preparation with RCA buffers, Construction activities would cause long-term disturbance and loss of 0.77 acres of the 0.89 acres of depressional wetlands and beneficial uses related to the depressional wetlands. A portion of the wetlands would be filled in and buried by the extension of Evaporation Pond 3. The restoration of Papoose

Meadow would mitigate for this long-term wetland loss as previously described in Wetlands Mitigation (this EA) and described in detail in the PMWR Project.

Indicator 4 - RCO Consistency.

Construction activities that result in a long-term disturbance and loss of 0.77 acres of wetland would be inconsistent with RCOs 1, 2, 4, 5, and 6. Reclamation activities would be consistent with 1, 2, 4, 5, and 6. (Although 0.77 acres of wetland would experience long-term loss during Construction, the remaining 117 acres of wetland would be protected during Reclamation activities).

Cumulative Effects

The proposed action would pose a negligible risk to cumulative effects because the site measures less than 1 percent of the planning watershed area. The new liners would prevent pond leakage from reaching Merrill wetlands. It is unlikely that the project would result in sedimentation of Eagle Lake or Merrill Creek. The project would not generate enough sediment to impair beneficial uses on a watershed scale; however, the beneficial uses related to the depressional wetlands would experience a long-term disturbance and loss with the long-term disturbance and loss of 0.77 acres of the 0.89 acres of depressional wetlands. The loss of wetlands would be mitigated through the restoration of Papoose Meadow (as described in Wetlands Mitigation and described in detail in the PMWR Project).

Alternative 2 – No Action

Direct and Indirect Effects

There is a low risk of some water seeping from the sewage ponds into the wetlands as pond liners continue to degrade. Currently, the sewage ponds are hydrologically disconnected from the wetlands (Foothill Associates, 2009). In the event of a leak, the amount of water would not likely have an effect on the water table of the wetlands, as any additional water would evaporate due to lack of trees in Merrill wetlands. Water quality samples taken from lysimeters and underdrains indicate nitrate levels are well below the maximum contaminant level for drinking water as defined by the EPA. Wetlands would continue to be protected with no risk of mechanical equipment entering any of the wetlands. The no action alternative would be consistent with RCOs 2, 4, 5, and 6 and inconsistent with RCO 1. RCO 3 is not applicable.

Common Risks to Alternatives 3, 4 and 5

Direct and Indirect Effects

Indicator 1 - Hydrology

On a local scale, Site Preparation, Construction, and Reclamation activities could result in a moderate to high risk of rutting and soil compaction. The use of mechanical equipment (driven) on soil outside the RCA that is not dry to a depth greater than 6 inches prior to treatment would have the potential to create ruts, expose groundwater, and compact soil. These effects could lead to a decrease in water infiltration, a decrease in groundwater recharge, an increase in overland flow, a shorter “wet season”, a decrease in

soil's water holding capacity, and a hampering of plant growth. Risks of rutting and compaction are discussed in detail in the Hydrology Report.

Construction and Reclamation activities would lack a mechanical equipment (driven) exclusion zone to buffer the wetlands that would pose a moderate risk to hydrology. The lack of a buffer would potentially allow mechanical equipment (driven) to approach the wetland as close as the wetland edge; although the delineated wetlands would not be entered by mechanical equipment (driven). The soil within the RCA of the wetlands is finer-grained and has less rock than the soil outside the RCA, increasing the risk of rutting and compaction. Rutting could potentially drain and locally dry out the wetlands. Compaction would potentially decrease soil's water holding capacity, water infiltration, groundwater recharge, and inhibit plant growth. Requiring dry soil conditions within the RCA would minimize these impacts.

Hydrology - Mitigations for Alts 3, 4, and 5: To minimize impacts and risks discussed above, surface scarification, a wet weather agreement, erosion control measures, revegetation, and possibly sub-soiling operations would be implemented. Scarification of rutted surfaces would be contoured and seeded. Erosion control measures (that may include sediment fences, straw waddles, plant material, and mulching) could trap sediment, disperse overland flow, slow delivery, and enhance the water holding capacity of the soil. Sub-soiling operations would break up compaction and increase infiltration into the soil. Additionally, within the RCA, dry soil conditions to 12 inches would be required prior to commencing Construction and Reclamation activities. Disturbed areas within the RCA would require 90 percent of existing ground cover post-project.

Indicator 2 - Water Quality and Beneficial Uses

On the watershed scale, the water well created for dust abatement would help prevent sediment production from roads and ground disturbing activities during construction. The water well would utilize 100,000 gal/day for 20-50 days and should have a negligible effect on groundwater resources or supply.

On the local scale, creation of berm slopes greater than 25% may pose a low risk to water quality and beneficial uses. Steeper slopes could be more easily eroded and could result in local sedimentation of Merrill wetlands. To minimize the erosion and sedimentation effects of steeper berm slopes, mulching, erosion control measures, and seeding of the berms would be implemented.

On a local scale, Site Preparation, Construction and Reclamation activities on soils outside the RCA that are not dry to a depth greater than 6 inches prior to treatment would increase the risk of rutting, compaction, and sedimentation. The impacts of rutting and compaction were mentioned in Indicator 1 and are discussed in detail in the Hydrology Report. Additionally, rutting and compaction could increase the rate at which overland flow would be transported to Merrill wetlands, potentially increasing overland flow's ability to transport sediment. If there is an increase in sediment production, there would be increased potential for sediment delivery to the wetlands.

On the local scale, Construction and Reclamation activities within the RCA utilizing mechanical equipment (driven) in the inner zone could pose a moderate risk to water quality and beneficial uses by increasing the risk of rutting, compaction, and sedimentation. The lack of a buffer would potentially allow mechanical equipment (driven) to approach the wetland as close as the wetland edge. The risks of rutting and compaction are described in detail in the Hydrology Report. Sedimentation would possibly result from the concentration of overland flow due to compaction and rutting. The lack of a mechanical equipment (driven) exclusion zone would increase the potential for sediment transport to Merrill wetlands. Typically the RCA, especially the inner zone, acts as a buffer to filter out activity related sediment and minimize the effects of ground-disturbing activities.

Water Quality and Beneficial Use - Mitigations for Alts 3, 4, and 5: To minimize the risks of the impacts discussed above, Construction and Reclamation activities would require dry soil conditions within the RCA to 12 inches, implementation of a wet weather agreement and an erosion control plan, surface scarification, post-project revegetation, and possibly sub-soiling operations. Dry soil conditions and the wet weather agreement would limit activities on wet soil, reducing risks of rutting and compaction. Scarification of rutted surfaces would be contoured and seeded. Erosion control measures (that may include sediment fencing, straw waddles, plant material and mulching) could trap sediment, disperse overland flow, slow delivery, reduce sedimentation, and enhance the water holding capacity of the soil. Sub-soiling operations would break up compaction and increase infiltration into the soil. Additionally, disturbed areas within the RCA would require 90 percent of existing ground cover post-project. Although Construction and Reclamation activities would lack a mechanical equipment (driven) exclusion zone to buffer the wetlands, the depressional wetlands, hydraulic function, and beneficial uses related to 0.77 acres of the depressional wetlands would still exist.

Indicator 3 - Effects on Little Merrill Flat Wetlands

Alternatives 3, 4, and 5 would not result in a net change of wetland area pre- and post-project.

During Construction and Reclamation activities, the delineated depressional Merrill wetlands described in the 2009 wetlands delineation study (Foothill Associates, 2009) would not be entered with mechanical equipment (driven); however, the lack of a buffer would potentially allow mechanical equipment (driven) to approach the wetland as close as the wetland edge. The lack of a mechanical equipment (driven) exclusion zone could pose a moderate risk to Merrill wetlands of soil compaction, rutting, and sedimentation. The lack of a buffer would increase the potential for activity-related sediment to be transported to the wetlands. Additional information may be found in the Hydrology Report. These risks to Merrill wetlands would be reduced and mitigated with dry soil requirements within the RCA, use of a wet weather agreement and an erosion control plan, and additional post project cover, revegetation, sub-soiling, and scarification.

Even with the local effects on the wetlands, activity related sedimentation and compaction would be unlikely to affect Merrill wetlands as a whole (118 acres). Additionally, all the wetlands would still exist post-project.

Indicator 4 - RCO Consistency

Construction and Reclamation would be consistent with RCOs 1, 2, 4, 5, and 6. Replacing the liners would prevent sewage water from potentially seeping into the wetlands, which would be consistent with RCO 1. Although Construction activities would pose some risk to indicators 1, 2, and 3, IDFs including the dry soil requirements within the RCA, wet weather agreement, erosion control plan, scarification of compacted and rutted soils, and increased cover would reduce those risks and be consistent with RCOs 1, 2, 4, 5, and 6.

Different Risks between Alternatives 3, 4 and 5

Alternative 3 would involve more long-term disturbance through construction of new ponds and structures that could result in a slightly higher risk to indicators 1, 2, and 3 than Alternatives 4 and 5 would potentially cause. Conversely, Alternative 5 would require the least amount of construction and ground disturbance of Alternatives 3, 4, and 5 and would pose the least amount of risk to indicators 1, 2, and 3. For a detailed chart displaying the risk differences between Alternatives 3, 4, and 5, refer to Appendix 2 of the Hydrology Report.

Alternative 3

Cumulative Effects

Alternative 3 would pose a negligible risk to cumulative effects because the site measures less than 1 percent of the planning watershed area. It is unlikely that the project would diminish beneficial uses or result in sedimentation of Eagle Lake or Merrill Creek. The new liners would prevent pond leakage from reaching Merrill wetlands. Although the pond expansion would result in a long-term disturbance by building new ponds, all the 0.89 acres of depressional Merrill wetlands would still exist. Actions that include filling in of waters of the United States including wetlands are considered more environmentally damaging than those that do not. Thus because Alternative 3 would retain the depressional wetlands, Alternative 3 would be less environmentally damaging than Alternative 1.

Alternative 4

Cumulative Effects

This alternative would pose similar risks to cumulative effects as Alternative 3; however, there would be no long-term disturbance associated with creating additional primary or evaporation ponds.

Alternative 5

Cumulative Effects

This alternative would pose similar risks to cumulative effects as Alternative 3; however, Alternative 5 would have slightly less impact than Alternatives 1, 3, and 4 because there would be less long-term disturbance and cleared acreage.

Cumulative Watershed Effects

Past, ongoing, and reasonably foreseeable future actions (PORFFA) for the project area were summarized in the PORFFA for the Eagle Lake Sewer Ponds Project. Current environmental trends are due mainly to the combination of past activities (mainly private), roads, and natural events.

Cumulative watershed effects (CWE) analysis using the Region 5 Equivalent Roaded Acre (ERA) method was conducted for the Merrill Creek planning watershed. The methodology for calculating a watershed's ERA is contained in Chapter 20 of Forest Service Handbook (FSH) 2509.22. The ERA method uses disturbance coefficients to quantify effects of treatments to a watershed. Planning sub-watershed sizes used for ERA analyses range from 3,000 to 10,000 acres. Treatments are recovered on a linear 30 year recovery trend, being considered fully recovered after 30 years. The resulting ERA number is compared to the Threshold of Concern (TOC) assigned to the sub-watershed. The TOC is an upper disturbance limit that represents the upper limits of watershed tolerance to land use. Sensitive watersheds have lower TOC numbers.

The Merrill Creek sub-watershed measures 8,851 acres, of which only 310 acres (4%) are managed by the Forest Service. Private ownership (PO) activities contribute a large majority of disturbance to the Merrill Creek sub-watershed. The majority of PO activities include timber sales (with various prescriptions ranging from clearcuts to salvage logging) and range allotments. The current range allotment has a low density of cows, with only 134 cow/calf pairs over 6,257 acres between May and September. However, because water is limited in the area, RCAs may experience high concentration. Little Merrill Flat wetlands are part of the allotment and are subject to grazing. Currently a fence gates off part of the 0.89 acres of Little Merrill Flat wetlands on NFS lands.

Disturbance coefficients and a linear 30 year time recovery coefficient were assigned to the private ownership and NFS land activities listed in the PORFFA. The current road density within the Merrill Creek sub-watershed is 3.5 miles per square mile. Continual activities and roads are not recovered. The current ERA is 13 and is below the Threshold of Concern (TOC) of 15. Current watershed trends have resulted mainly from the combination of roads, private land activities, and natural events.

Additional information can be found in the Hydrology Report, hereby incorporated by reference, located at the Eagle Lake Ranger District, 477-050 Eagle Lake Road, Susanville, CA 96130 in the project record.

Soils

The LRMP provides standards for assessing soil condition and for evaluating the effects of the Eagle Lake Sewage Ponds Project on soil productivity. The Sewer Pond project area has been managed as an administrative site since its construction, replacing forested land with a sewage treatment facility. A Non-Significant Forest Plan Amendment is included with the decision for this project record in order to adjust soil forest standards for this project to accommodate the existence and potential expansion of the administrative facility. Effects analysis of project Alternatives are compared by LRMP standards as

modified by the Non-Significant Forest Plan Amendment. The indicators used to assess direct, indirect and cumulative effects on the soil resource include: the areal extent of forest replacement by permanent Sewage Pond facilities; the effects of the project on levels of soil compaction in forested areas; the effect of the project on erosion hazard ratings, and; the effect of the project on soil organic matter and ground cover (including forest floor, vegetation, and large woody material).

All action alternatives have differing direct and indirect effects. However, they all have similar cumulative effects which are presented at the end of this section.

Alternative 1 – Proposed Action

Direct and Indirect Effects

The Proposed Action is compliant with LRMP soil standards as amended by the project record. However, compared to other actions, Alternative 1 would result in the highest level of soil resource damage by reducing the project area under forest production permanently by 3 acres (area covered by pond expansion). Long-term losses of soils organic matter (SOM) due to borrow pit excavation are projected under Alternative 1. Alternative 1 includes pond expansion into jurisdictional wetlands. The effects of Alternative 1 on wetland soils are discussed in the Hydrology Report.

Alternative 2 – No Action

Direct and Indirect Effects

The No Action Alternative is compliant with LRMP soil standards as amended by the project record and would have no effect on the soil resource.

Alternative 3

Direct and Indirect Effects

This Alternative is compliant with LRMP soil standards as amended by the project record. This Alternative would reduce the project area under forest production permanently by 6 acres (area covered by sludge-drying area, pond expansion area and pond creation area). Compared to other Alternatives, long-term losses of SOM due to excavation for ponds and sludge-drying areas would be highest under Alternative 3.

Alternative 4

Direct and Indirect Effects

This Alternative is compliant with LRMP soil standards as amended by the project record and offers the second highest potential resource protection compared to other action-Alternatives. Alternative 4 would reduce the project area under forest production permanently by 1 acre (area covered by sludge-drying area). Compared to other Alternatives, long-term losses of SOM due to excavation for sludge-drying area would be second-lowest by Alternative 5 (3 total acres disturbed in Alternative 4 for sludge-drying and stockpiling compared to 1 acre in Alternative 5).

Alternative 5

Direct and Indirect Effects

This Alternative is compliant with LRMP soil standards as amended by the project record and offers the greatest potential resource protection compared to other action-Alternatives. Alternative 5 would reduce the project area under forest production permanently by 1 acre (area covered by sludge-drying area). Compared to other Alternatives, long-term losses of SOM due to excavation for sludge-drying area would be lowest by Alternative 5.

Effects Common to Alternatives 1, 3, 4 and 5

The forest thinning proposed under these Alternatives has limited potential to cause soil compaction or erosion due to the presence of coarse rock fragments in the soil. Ground cover loss by temporary structures created for pond expansion and due to mechanical equipment operations would be replaced according to Integrated Design Features. All Alternatives include mechanical operations in jurisdictional wetlands. The effects of this project on wetland soils are discussed in the Hydrology Report.

Cumulative Effects Common to Alternatives 1, 3, 4, and 5

Cumulative effects to the soil resource were assessed for the 40 acre project area. This area was used as the boundary to assess cumulative effects because this area would be the only area within which proposed actions would have likelihood of contributing to soil cumulative effects. The interpretation of cumulative effects includes the effects on the soil resource of past, present and future actions within the project boundary. A detailed description of the Past, Ongoing and Reasonably Foreseeable Future Actions Summary (PORFFA), hereby incorporated by reference, are included with the project record. The current soil conditions, as outlined in the Affected Environment section of the Soils Report, are within standards established by LRMP standards and guidelines as amended by the decision for this project. The implementation of Integrated Design Features established for this project in order to protect the soil resource would ensure that all Action Alternatives would not result in significant detrimental cumulative effects to the soil resource.

Additional soils information can be found in the Soil Resource Report, hereby incorporated by reference, located at the Eagle Lake Ranger District, 477-050 Eagle Lake Road, Susanville, CA 96130 in the project record.

Recreation

All Action Alternatives have differing direct and indirect effects. However, they all have similar cumulative effects, which are presented at the end of this section.

Common to all Alternatives

The Eagle Lake Sewer Ponds project has no nexus with, and therefore produces no effects to dispersed recreation, trails or their usage, or winter sports at or around Eagle Lake. This is because dispersed recreation sites in the ELRA do not have running water, the trails offer no running water facilities, and the water at the ELRA is turned off during the winter.

Direct Effects Common to Alternative 1, 2 and 3

These alternatives would have no direct effects on recreation, because no recreational activities occur within the project area boundary. Public access to the Eagle Lake Sewer Ponds is restricted.

Indirect Effects Common to Alternative 1 and 3

Impacts to developed recreation visitors would be minimal, since the phasing of the work would not impact the amount of sewage the facility could treat.

Roads accessing campgrounds, the marina, Camp Ronald McDonald organization camp, Gallatin beach, sanitary dump station, 42 recreational residences and multiple biking and hiking trails would be kept open and free of debris. During project implementation, the public would be alerted to potential hazards through signing along National Forest system roads.

Indirect Effects Common to Alternative 1, 3 and 4

Long-term effects of the project would be the ability to add showers at Merrill Campground (between three and six showers are currently planned, according to the 1999 Merrill Campground Redesign Decision Memo and the Design Narrative in the 2008 Merrill Capital Improvement Project) Campground. This would, in turn, provide the possibility of increasing peak occupancy rates at Merrill Campground during the busy season that runs from Memorial Day Weekend to Labor Day Weekend. Currently, the occupancy rate in the Eagle Lake campgrounds is approximately 60 to 90 percent.

Alternative 2 - No Action

Indirect Effects

If part of the sewage treatment facility liners failed because no action was taken to replace or repair them, water usage at the campgrounds, the marina, Camp Ronald McDonald organization camp and Gallatin beach would have to be reduced. The amount of reduction would determine the impacts to visitors.

If all of the sewage treatment facility liners failed, there could be no water usage that required a sewage treatment facility at the campgrounds, the marina, Camp Ronald McDonald camp and Gallatin beach. It would also create a need to replace all bathrooms with vault toilets, and to close the laundry facility, fish washing station, full and partial recreational hook-ups, and showers at the marina and Camp Ronald McDonald.

These changes in the amenities offered at the Eagle Lake Recreation Area would be expected to cause noticeable reductions in the number of people recreating at Eagle Lake. Reduced recreation would cause financial impacts to the surrounding area. Reduced occupancy rates at the campgrounds would result in reduced revenues to the campground concessions operations. These revenues largely fund the Lassen College Foundation scholarship fund for graduating high school students in Lassen County. So any reduction in recreation at Eagle Lake would negatively affect the Lassen County community by reducing college scholarships for local youth to attend Lassen Community College, in an amount roughly proportional to the decrease in campground recreation.

Campers typically patronize local businesses, so lower occupancy rates would mean less business for and negative impacts to the economies of both Susanville and the Spaulding community.

Dishwater, portable shower water and hand washing water would likely be dumped onto the ground, and bathing and cleaning activities would likely occur in Eagle Lake, which could introduce some unwanted waste materials, such as dish soap. However, quantities of these materials would be low.

Roads accessing campgrounds, the marina, Camp Ronald McDonald organization camp, Gallatin beach, sanitary dump station, 42 recreational residences and multiple biking and hiking trails would not be impacted.

Long-term effects of the project would be the inability to add showers at Merrill Campground (between three and six showers are currently planned, according to the 1999 Merrill Campground Redesign Decision Memo and the Design Narrative in the 2008 Merrill Capital Improvement Project). This would, in turn, prevent the possibility of increasing peak occupancy rates at Merrill Campground during the busy season that runs from Memorial Day Weekend to Labor Day Weekend. Currently, the occupancy rate in the Eagle Lake campgrounds is approximately 60 to 90 percent.

The type of recreationist would be expected to change over time, from recreationists looking for the convenience provided by full-service facilities (e.g., restrooms, showers, fish washing station), to recreationists looking for a more rustic experience.

Cumulative Effects

The cumulative effects area includes the project area and the ELRA. The area of the ELRA is approximately 830 acres and extends from Christie Campground on the west side, to the Osprey Overlook on the east side and the from Eagle Lake on the north side, and to the Forest Service property line on the south end.

There would be no cumulative effects under Alternative 2 because there would be no action.

Effects Common to Alternatives 4 and 5

Direct Effects

There is the potential for Alternatives 4 and 5 to impact the capacity of the Eagle Lake Sewer Ponds during construction and relining activities. There may be no reduction in treatment capacity of the facility, but if there is a reduction in capacity, it is not clear how much the capacity would be reduced. The worst case scenario would be that the sewage treatment facility could not be used for one season.

Indirect Effects

During implementation of the project, a reduction in the amount of sewage the sewage treatment facility could handle would impact developed recreation visitors. If implementation does not reduce the amount of sewage the facility can handle the impacts to visitors would be minimal. If implementation does reduce the amount of sewage the facility can handle, then water usage at the campgrounds, the marina, Camp

Ronald McDonald organization camp, Gallatin beach would have to be reduced. The amount of reduction would determine the impacts to visitors.

In the event that the EL Facility had to go off-line for a full season, there could be no water usage that required a sewage treatment facility at the campgrounds, the marina, Camp Ronald McDonald organization camp, and Gallatin beach. Reduced recreation would lead to financial impacts to the surrounding area, It would also create a need to replace all toilets with portable toilets, and to close the laundry facility, fish washing station, full and partial recreational hook-ups, and showers at the marina and Camp Ronald McDonald.

The short-term effects of the any reduction in the amenities offered at the Eagle Lake Recreation Area would be a proportional reduction in the number of people recreating at Eagle Lake. Reduced recreation would cause financial impacts to the surrounding area. Reduced occupancy rates at the campgrounds would result in reduced revenues to the campground concessions operations. These revenues largely fund the Lassen College Foundation scholarship fund for graduating high school students in Lassen County. So any reduction in recreation at Eagle Lake would negatively affect the Lassen County community by reducing college scholarships for local youth in an amount roughly proportional to the decrease in campground recreation.

Campers typically patronize local businesses, so lower occupancy rates would mean less business for and negative impacts to the economies of both Susanville and the Spaulding community.

Dishwater, portable shower water and hand washing water would likely be dumped onto the ground, and bathing and cleaning activities would likely occur in Eagle Lake, which could introduce some unwanted waste materials, such as dish soap. However, quantities of these materials would be low.

Roads accessing campgrounds, the marina, Camp Ronald McDonald organization camp, Gallatin beach, sanitary dump station, 42 recreational residences and multiple biking and hiking trails would be kept open and free of debris. During project implementation, the public would be alerted to potential hazards through signing along National Forest system roads.

Indirect Effects Unique to Alternative 5

Long-term effects of the project would be the inability to add showers at Merrill Campground (between three and six showers are currently planned, according to the 1999 Merrill Campground Redesign Decision Memo and the Design Narrative in the 2008 Merrill Capital Improvement Project) Campground. This would, in turn, prevent the possibility of increasing peak occupancy rates at Merrill Campground during the busy season that runs from Memorial Day Weekend to Labor Day Weekend. Currently, the occupancy rate in the Eagle Lake campgrounds is approximately 60 to 90 percent.

Cumulative Effects Common to Alternatives 1, 3, 4, and 5

Past actions at the ELRA that could have had direct or indirect effects that overlap in time and space with the Action Alternatives include the development of the Eagle Lake Trail extension, the Merrill Amphitheater, the Merrill Campground reconstruction and the signing of a Special Use Permit with the

Lassen College Foundation. No cumulative effects are anticipated from the effects of these past actions with the effects of any Action Alternatives.

Future actions at the ELRA that could have short-term direct or indirect effects that overlap in time and space with the Action Alternatives include planned fuels reduction and fire control measures, insect and tree disease management activities, and replacement/upgrading of some bathrooms at Merrill Campground. These future actions have the potential to impact recreation cumulatively with the EL Facility Action Alternatives, by introducing heavy truck and equipment traffic to Road A-1 in the vicinity of the ELRA. This cumulative effect would be mitigated by alerting the public to potential hazards through signing along National Forest system roads.

A future action at the ELRA that could have long-term direct or indirect effects that overlap in time and space with the Action Alternatives is removing flush toilets from Aspen Campground, Removing flush toilets from Aspen Campground would decrease the load on the EL Facility, but the cumulative effect of removing these toilets would be insignificant, because the EL Facility would have no problem accommodating less usage.

Cumulative Effects Common to Alternatives 1, 3, and 4

A future action at the ELRA that that could have long-term direct or indirect effects that overlap in time and space with the Action Alternatives is the adding of showers at Merrill Campground, Adding showers at Merrill Campground would increase the load on the EL Facility, but under Action Alternatives 1, 3, and 4, the cumulative effect of adding showers would be insignificant because of the increased capacity of the EL Facility under any of these alternatives.

Cumulative Effects Under Alternatives 5

A future action at the ELRA that could have long-term direct or indirect effects that overlap in time and space with the Alternative 5 is the adding of showers at Merrill Campground. Adding showers at Merrill Campground would increase the load on the EL Facility, and under Alternatives 5, the cumulative effect of adding showers would be potentially more than the system could support, because Alternative 5 does not increase the capacity of the EL Facility.

Additional recreation information can be found in the Recreation Report, hereby incorporated by reference, located at the Eagle Lake Ranger District, 477-050 Eagle Lake Road, Susanville, CA 96130 in the project record.

Terrestrial Wildlife Species

Threatened, Endangered & Forest Service Sensitive Species

Alternatives 1, 3, 4, and 5

This section summarizes the determinations for these species.

Direct, Indirect and Cumulative Effects

Due to the project area being outside the range of the species, or due to the lack of suitable habitat or habitat components in the project area Alternatives 1, 3, 4, and 5 would have no effect on the following Federally Listed threatened or endangered species or their critical habitat: northern spotted owl, valley elderberry beetle.

Additionally, due to the project area being outside the range of the species, or due to the lack of suitable habitat or habitat components in the project area, Alternatives 1, 3, 4, and 5 would have no effect on the following Forest Service Sensitive species: Northern bald eagle, California wolverine, American marten, Pacific fisher, Sierra Nevada red fox, Townsend's big-eared bat, western red bat, greater sandhill crane, California spotted owl, Swainson's hawk, great gray owl, willow flycatcher.

Analyses of direct, indirect and cumulative effects to northern goshawk habitat concluded that Alternatives 1, 3, 4, and 5 may affect individuals northern goshawks, but are not likely to result in a trend towards federal listing or loss of species viability due to, 1) the project site is an existing sewage pond facility, and thus human disturbance in this site likely reduces its value to this species, 2) there is no nesting habitat being affected within the project boundaries, and, 3) the project affects a very small number of acres of forested habitat .

Finally, analyses of direct, indirect and cumulative effects to pallid bat habitat concluded that Alternatives 1, 3, 4, and may affect individuals pallid bats, but are not likely to result in a trend towards federal listing or loss of species viability due to, 1) low potential for effects to roost trees, 2) habitat improvement via thinning, and, 3) long-term habitat loss is restricted to approximately 4 acres of meadow habitat due to construction of a evaporation pond.

Management Indicator Species (MIS).

Alternatives 1, 3, 4, and 5

Direct, Indirect and Cumulative Effects

Aspen stands or other riparian hardwood habitat do not exist in the project area. Therefore, neither montane riparian or yellow warblers are not discussed. Similarly, this is an eastside project, no west slope chaparral types would be affected, and these habitat types are not addressed. No oaks of any kind exist in the project area, so oak-associated hardwood and hardwood/conifer are not addressed. No late seral open- or closed-canopied coniferous habitat (size class 5s) currently exist in the project area, nor do burned forest habitats, thus this report does not address late seral conifer habitats or burned forest habitats.

Eagle Lake, the closest perennial water body, is approximately 3 miles downstream of the project area, and represents the nearest Lacustrine/Riverine Habitat to the project. Habitat factors for analysis for this habitat type are flow, sedimentation, and water surface shade. Since none of these habitat factors are affected by the project, Lacustrine/Riverine Habitat were not evaluated.

The MIS whose habitat would be either directly or indirectly affected by the project and that were analyzed were: mountain quail, hairy woodpecker, and Pacific tree frog. Results of the analysis for these species are given below or in the aquatics section.

The minor amount of acres of early- and mid-seral forested habitat that would be lost as a result of this project (12 acres in Alternative 1, 11 acres in Alternative 3, 5.0 acres in Alternative 4, and 3.0 acres in Alternative 5) represents 0.00048% or less of the 3,312,000 acres of early- and mid-seral coniferous habitat estimated to exist at the bioregional scale. Therefore, neither Alternatives 1, 3, 4, nor Alternative 5 of the EL Facility Project would alter the existing trend in this habitat type, nor would they lead to a change in the distribution of mountain quail across the Sierra Nevada bioregion.

The project would result in essentially no change in medium- or large-sized snags per acre on 14 acres (Alternative 1), 13 acres (Alternative 3), 19 acres (Alternative 4), or 20 Acres (Alternative 5) in the thinning area. All existing snags would be lost on 12 acres (Alternative 1), 11 acres (Alternative 3), 5 Acres (Alternative 4), or 3 Acres (Alternative 5) due to creation of the evaporation pond, borrow pit, stockpile, sludge drying, or storage areas. This 12, 11, 5, or 3 acre loss of snags is negligible compared to the amount of snags in green forest habitat within the bioregion. For instance, there are over 2.7 million acres of mid-seral forest alone within the bioregion. Therefore, neither Alternative 1 nor Alternatives 3, 4, or 5 of the Eagle Lake Sewage Ponds Remediation Project would alter the existing trend in this habitat type, nor would they lead to a change in the distribution of hairy woodpecker across the Sierra Nevada bioregion.

Additional information about wildlife can be found in the Terrestrial and Aquatic Project Management Indicator Species Report, and the Biological Evaluation for Terrestrial Species reports, hereby incorporated by reference, at the Eagle Lake Ranger District, 477-050 Eagle Lake Road, Susanville, CA 96130 in the project record. This includes the cumulative effects boundary and the rational for boundary selection.

Aquatic Wildlife

Threatened, Endangered and R5 Forest Service Sensitive Species

Alternatives 1, 3, 4, and 5

This section summarizes the determinations for threatened, endangered and R5 Forest Service Sensitive aquatic wildlife species.

The project would have no effect on the following threatened and endangered species or their critical habitat; Central Valley steelhead Distinct Population Segment (*Oncorhynchus mykiss*), Central Valley spring-run Chinook salmon Evolutionarily Significant Unit (ESU) (*Oncorhynchus tshawytscha*), Delta smelt (*Hypomesus transpacificus*), Winter-run chinook salmon ESU (*Oncorhynchus tshawytscha*), California red-legged frog (*Rana aurora draytonii*), Giant garter snake (*Thamnophis gigas*), Shasta Crayfish (*Pacifastacus fortis*), Conservancy fairy shrimp (*Branchinecta conservatio*), Vernal pool fairy shrimp (*Branchinecta lynchi*), and Vernal pool tadpole shrimp (*Lepidurus packardi*).

The project would have no effect on the following Forest Service Sensitive Species; Foothill yellow-legged frog (*Rana boylii*), Mountain yellow-legged frog (*Rana muscosa*), Cascades frog (*Rana cascadae*), Northwestern pond turtle (*Clemmys marmorata marmorata*), California floater (*Anodonta californiensis*), Topaz Juga (*Juga acutifilosa*) Scalloped Juga (*Juga occata*), Nugget pebblesnail (*Fluminicola seminalis*), and Central Valley fall/late-fall-run Chinook salmon ESUs (*Oncorhynchus tshawytscha*).

Direct, Indirect and Cumulative Effects

For the Great Basin rams-horn the action alternatives may affect individuals, but is not likely to cause a trend toward federal listing or a loss of viability. The reasons for this determination are the Great Basin rams-horn snails are known to occur downstream of the project area in nearshore areas of Eagle Lake. There would be no net loss of habitat resulting from these alternatives. During construction, alternatives 4 and 5 might cause a short-term low increase in nutrient enrichment risk due to possible grey water dumping near and bathing activities in Eagle Lake. Nutrient enrichment risk under alternatives 1 and 3 would remain the same as present. Additionally it is anticipated that there would be a long-term beneficial effect of reducing nutrient enrichment risk to the aquatic resources of Eagle Lake, including the Great Basin rams-horn habitat.

For the montane peaclam the action alternatives may impact individuals, but is not likely to cause a trend toward federal listing or a loss of viability. This is because of the following factors: Montane peaclams are known to occur downstream of the project area in nearshore areas of Eagle Lake. There would be no net loss of habitat resulting from these alternatives. Implementing the project poses a very low short-term risk of negatively affecting habitat quality in the Merrill Creek vicinity. The risk would be from sedimentation; however adherence to BMPs and the installation of sediment control devices before ground disturbing activities would minimize this risk. Cumulatively this risk is minimal. During construction alternatives 4 and 5 might cause a short-term low increase in nutrient enrichment risk due to possible grey water dumping near and bathing activities in Eagle Lake. Nutrient enrichment risk under alternatives 1 and 3 would remain the same as present. It is anticipated that there would be a long –term beneficial effect of reducing nutrient enrichment risk to the aquatic resources of Eagle Lake, including the montane peaclam habitat.

For the Eagle Lake rainbow trout the action alternatives may impact individuals, but is not likely to cause a trend toward federal listing or a loss of viability. This is because of the following factors. Eagle Lake rainbow trout are known to occur downstream of the project area in Eagle Lake. There would be no net loss of habitat resulting from these alternatives. During construction, alternatives 4 and 5 might cause a short-term low increase in nutrient enrichment risk and corresponding forage base reduction risk due to possible grey water dumping near and bathing activities in Eagle Lake. Nutrient enrichment risk under alternatives 1 and 3 would remain the same as present. It is anticipated that there would be a long-term beneficial effect of reducing nutrient enrichment risk to the aquatic resources of Eagle Lake, including the Eagle Lake rainbow trout and its forage base.

Alternative 2 – No Action

Direct and Indirect Effects

For the Great Basin rams-horn, alternative 2 may impact individuals, but is not likely to cause a trend toward federal listing or a loss of viability. This is because of the following factors. Great Basin rams-horn snails are known to occur downstream of the project area in nearshore areas of Eagle Lake. There would be no net loss of habitat resulting from this alternative. Continued use of the sewage treatment ponds without relining could negatively affect habitat quality. The risk to individual snails and habitat continue to be low from potential nutrient enrichment either from failing ponds or dumping of grey water at campgrounds.

For the montane peaclam, alternative 2 may impact individuals, but is not likely to cause a trend toward federal listing or a loss of viability. This is because of the following factors. Montane peaclams are known to occur downstream of the project area in nearshore areas of Eagle Lake. There would be no net loss of habitat resulting from this alternative. Continued use of the sewage treatment ponds without relining could negatively affect habitat quality. The risk to individual peaclams and habitat continue to be low to moderately low from potential nutrient enrichment either from failing liners or grey water dumping at campgrounds.

For the Eagle Lake rainbow trout, alternative 2 may impact individuals, but is not likely to cause a trend toward federal listing or a loss of viability. This is because of the following factors. Eagle Lake rainbow trout are known to occur downstream of the project area in Eagle Lake. There would be no net loss of habitat resulting from this alternative. Continued use of the sewage treatment ponds without relining could negatively affect habitat quality. The risk to individual trout and habitat continue to be low from potential nutrient enrichment and a corresponding potential reduction in forage base.

Management Indicator Species (MIS)

Direct, Indirect and Cumulative Effects

Alternative 1- Proposed Action

The elimination of 0.77 acres of the 0.89 acres of wetland on NFS land by the Eagle Lake Sewage Pond Project under Alternative 1 would alter the existing trend in the ecosystem component of wet meadows within the project area. However, considering the approximately 66,000 acres of wet meadow on USFS lands in the Sierra-Nevada bioregion, the expected loss of 0.77 acres of meadow wetland in the project and mitigation creation of at least 1.34 acres of wetland elsewhere would not substantially alter the existing trend in the habitat, nor would it lead to a change in the distribution of Pacific tree frogs across the Sierra Nevada bioregion.

Alternative 2 – No Action

Acres of wet meadow would not be affected by this alternative. Additionally there would be no direct effects to the other habitat elements. No indirect effects to acreage and hydrology are expected from this alternative. Herbaceous height and cover of the wet meadow might change in the future due to nutrient enhancement as the liners in the ponds adjacent to them fail.

Alternative 3, 4, and 5

Alternatives 3 through 5 are not anticipated to change acres of wetlands or change herbaceous height class or herbaceous density class within the delineated meadow wetlands. Considering the approximately 66,000 acres of wet meadow on USFS lands in the Sierra-Nevada bioregion, the risk of altering the hydrology on .89 acres of meadow wetlands would not substantially alter the existing trend in the habitat, nor would it lead to a change in the distribution of Pacific tree frogs across the Sierra Nevada bioregion.

Additional information about Aquatics can be found in the Terrestrial and Aquatic Project Management Indicator Species Report and the Aquatic Biological Evaluation reports, hereby incorporated by reference, at the Eagle Lake Ranger District, 477-050 Eagle Lake Road, Susanville, CA 96130 in the project record. This includes the cumulative effects boundary and the rational for boundary selection.

Botany

Environmental Consequences on Threatened, Endangered, Sensitive Plant Species

There are no Threatened, Endangered, or Sensitive (TES) plant species found within the project area, nor is there potential habitat for those species. Therefore, there would be no effects to TES species from the implementation of the EL Facility Project.

Environmental Consequences on Special Interest Plant Species

Alternative 1 – Proposed Action

Direct Effects

Implementation of the Proposed Action would have no direct effect on individual plants of the species *Mimulus pygmaeus*. The species occurs in the seasonally wet, vegetated margins east and south of the existing ponds. These segments of the property boundary are currently marked by standard barbed wire range fences, which would be removed at the outset of the project and subsequently replaced by chain link fence around the treatment facility and barbed wire around the larger site. Installation of the permanent fence would entail more ground disturbance, but project Botany IDFs require that soils be dry during this work, so that the *Mimulus* would have completed its annual life cycle.

Indirect Effects

Vegetation structure is unlikely to change in the parts of the project area where *Mimulus pygmaeus* occurs unless the local hydrology changes or rutting and compaction during fence constriction activities are severe and extensive. However, there would be little risk of rutting or compaction under the Proposed Action because project IDFs require that soils within the RCA be dry to a depth of 12 inches before beginning any of the mechanical work during the first three phases of the project and that soils also be dry during Phase IV when fence work activities would occur. Regarding hydrology, the land immediately west of the current Evaporation Pond 3 features seasonally flooded swales and open soil that are not known to have any *Mimulus pygmaeus* plants, but the population elsewhere in the Little Merrill Flat wetlands and the surrounding meadow might expand there in a suitably wet year—such an expansion would be forestalled if Evaporation Pond 3 is extended westward across the area. It is possible that new

swales would develop; balancing the loss of swales to pond expansion, or perhaps the land would dry, resulting in less potential habitat for *Mimulus pygmaeus*. In either case, the sewage pond site occupies only a tiny portion of the entire meadow of Little Merrill Flat, and the privately owned portion of the meadow contains extensive patches of seasonally wet habitat suitable for growth of *Mimulus pygmaeus*. Plants that have been seen near the sewage ponds are very likely a small portion of a much larger population across the rest of the (privately owned) meadow.

Besides the potential for local changes to wet habitat, the most likely indirect effect for *Mimulus pygmaeus*, attendant upon increased traffic and mechanical disturbance from project activities, would be a potential increase in noxious weeds or other undesirable non-native species within the project area. While no noxious weeds are currently known in or around the project area, thinning and pond construction would create extensive soil disturbance, and thinning would reduce overall forest canopy cover. These factors could increase the risk of noxious weed introduction and subsequent spread in the project area, and those weeds could detrimentally affect the existing *Mimulus pygmaeus* occurrence or its habitat. Project noxious weed IDFs, such as equipment cleaning and post-project monitoring and requirements that mulch and other materials be weed-free, would substantially reduce the risk of noxious weed introduction and therefore also the risk of impacts to *Mimulus pygmaeus* in the EL Facility project area.

Cumulative Effects

With the implementation of project IDFs, no direct effects on *Mimulus pygmaeus* are expected but indirect effects are possible. The project area was chosen as the cumulative effects analysis area for *Mimulus pygmaeus* because its historic range and specific habitat requirements are unknown, and it was assumed that if the EL Facility project would not affect the viability of this species within the project area, it would not affect its viability outside of the project area. The *Mimulus pygmaeus* occurrence in the project area was discovered in 1995, well after the construction of the current sewage ponds. The historic abundance of the species in the project area is unknown, and thus its condition since 1995 was used as the baseline condition for analysis.

The only developments in the project area since 1995 have been a few structural adjustments within the existing ponds. These actions would not have affected *Mimulus pygmaeus*, and there are therefore no cumulative effects from such activities. The meadow beyond the treatment facility is subject to ongoing grazing, but cattle are discouraged from entering the area of the ponds (and the known *Mimulus pygmaeus*) by fencing. After project completion, locked chain-link fence would prevent all public and livestock entry. No future Forest Service activities are planned in the project area, so no impacts are foreseen from such activities.

As noted above, individual plants of *Mimulus pygmaeus* may be affected by treatment activities, but there is very likely extensive habitat for the species elsewhere in the meadow. The plant is probably present elsewhere in the meadow and is certainly present at many other locations in the broader area, where its numbers are believed to be stable. Project activities are unlikely to have an appreciable effect on the presence of *Mimulus pygmaeus* at Little Merrill Flat, and there would be no additional effects to the

species from any known past, present, or reasonably foreseeable future actions in the EL Facility project area to which the Proposed Action would add cumulatively.

Alternative 2- No Action

Direct and Indirect Effects

There would be no direct effects on *Mimulus pygmaeus* in the EL Facility project area from Alternative 2 because no actions would be implemented. Indirect effects can include weed arrival or spread, the potential for which exists even in the absence of proposed treatment activities. However, the project area is currently free of noxious weeds and would likely remain so. If anything, *Mimulus pygmaeus* is less likely to face pressure from invading weeds under Alternative 2 than under the other alternatives.

Alternatives 3, 4, and 5

Direct and Indirect Effects

Alternatives 3, 4, and 5 are similar to the Proposed Action in being likely to have no direct effects on *Mimulus pygmaeus* in the EL Facility project area. Project IDFs are somewhat different from those for the Proposed Action but still require that soil "be dry to a depth of 12 inches below the soil surface prior to mechanical operations." Furthermore, project IDFs for all action alternatives require specifically that work on fences (including the *Mimulus* habitat) be done when soils are dry.

None of these alternatives involve pond expansion in the wetlands, so that there is only limited potential for indirect effects for *Mimulus pygmaeus*, other than the potential for the spread or arrival of weeds. Rutting and compaction within *Mimulus* habitat are possible but would be minimized by project IDFs for water quality requiring that 90% of existing cover remain on temporary access routes after the completion of the project. The response of local hydrology to the expansion of the pond area into forest under Alternative 3 or the pond deepening under Alternative 4 are uncertain, but the effects of construction, if they occur, are expected to be less than under the Proposed Action, according to the project "CWE and Hydrology Report."

Cumulative Effects

As with the Proposed Action, there would be no additional effects to *Mimulus pygmaeus* from any past, present, or reasonably foreseeable future actions in the EL Facility project area to which Alternatives 3, 4, or 5 would add cumulatively.

Additional information about botany can be found in the Noxious Weed Risk Assessment and the Botany Report for Special Interest Plant Species, hereby incorporated by reference, at the Eagle Lake Ranger District, 477-050 Eagle Lake Road, Susanville, CA 96130 in the project record.

Heritage Resources

All Alternatives

Direct, Indirect and Cumulative Effects

Under these alternatives, the assumption is that the two sites in the project area were determined not eligible for the National Register of Historic Places and as such they were released from management. Historic properties would not be affected by the EL Facility Project. Therefore, there are no direct, indirect or cumulative effects from any of the alternatives.

Additional information about Heritage Resources can be found in the Cultural Resources Report, hereby incorporated by reference, at the Eagle Lake Ranger District, 477-050 Eagle Lake Road, Susanville, CA 96130 in the project record.

Silviculture

Alternatives 1, 3, 4 & 5

Direct and Indirect Effects

Stand Composition

Thinning would result in residual stand structure of primarily open stands comprised of large trees with relatively lower stand densities. Post-treatment vegetative cover within the thinning area would remain eastside pine.

Stand Structure and Density

Under current management, trees less than 30 inches dbh are available for removal; however, based on stand modeling most trees to be removed would be 24 inches dbh or less. Thinning-from-below would reduce stand density, vertical ladder fuels, and shade tolerant species, while increasing crown base heights (Peterson et al, 2005; Graham et al, 2004).

Within the thinning unit, trees 30 inches in diameter and greater would be retained where they exist on the landscape, regardless of species or condition. They would only be removed in situations to facilitate operability. These include trees that need to be removed to create landings and skid trails or as identified as hazards per Occupational Safety and Health Act (OSHA) requirements for logging operations. Occasional larger trees could be cut to break up pockets of horizontal continuity of canopy fuels or lower densities down to prescribed levels in pockets or to selectively leave an adjacent similar-sized but smaller, healthier tree. This is consistent with the 2004 SNFPA ROD (page 68). In addition the existing snag/down log attributes are not expected to change as a result of harvest. Where existing, all snags 15 inches diameter and greater would be retained, as well as 3 of the largest downed logs 12 inches (at large end) and greater.

Under the proposed treatment, the predominant California Wildlife Habitat Relationship (CWHR) size class of forested stand would be size class 4. Canopy cover would be reduced to CWHR canopy class P (refer to Silviculture Report for CWHR class definitions).

Implementing the thinning would achieve the desirable stand densities of less than 60 percent of the limiting or maximum Stand Density Index (SDI)[12] for the stand. These represent fully stocked stands with available growing space and resources such that inter-tree competition does not immediately affect stand growth for a period of generally 10 to 20 years or more.

Harvest Operations

Harvest operations would have effects on forest stand structure. Tractor logging requires small clearings, or landings, generally less than 1/2 acre, to store logs prior to trucking. Landings utilized during operations would be evaluated post-treatment by the Forest Service on a site-specific basis to determine if subsoiling would be beneficial in reducing compaction that affects hydrological function of the soils. Subsoiling would lift and fracture the soil in place leaving it loose and friable to a minimum depth of 18 inches. No road construction/reconstruction would be required specifically for the thinning operations. Some roadwork may be necessary on roads outside the project boundary to accommodate logging trucks.

Forest Health

Thinning would decrease stand mortality caused by bark beetle and the moderate to heavily infected mistletoe trees. Thinned stands would generally increase in overall forest health and individual tree growth. Thinning would target the removal of damaged and diseased trees and favor retention of trees free of damage and defect.

Thinning treatments have the potential to increase populations of the pine engraver beetle, *Ips pini*. The action alternatives include slash treatments to minimize habitat for the pine engraver beetle. Additionally, the action alternatives propose to apply an Environmental Protection Agency (EPA) registered borate compound SPORAX® (Sporax) to cut stumps of all live conifer trees equal to or greater than 14 inches stump diameter to protect against the spread of annosus root disease.

Cumulative Effects on Stand Composition, Structure, and Density

The project boundary was used as the cumulative effects analysis area. This boundary was chosen since treatments to the existing vegetation would not impact other forest stands adjacent to the area. Modeling indicates that eastside pine stands would remain in a good growth stocking range where density-related tree mortality would be reduced for approximately 20 years. The understory vegetation, grass, herbs, and other native brush species could increase with thinning-from-below; if canopies are sufficiently open (McConnell and Smith, 1970).

12 SDI converts a stand's current density into a density at a constant reference size of 10 inches dbh

Cumulative Effects on Forest Health

Annosus root disease is expected to remain near current levels throughout the project area, using the IDFs. The proposed treatments would improve tree vigor by reducing stand densities, however thinning is not expected to remove all annosus infection, nor would it address infections outside of treatment stands. Insect-related tree mortality would decrease within thinned stands (Oliver, 1995). With the removal of heavily infected overstory trees, new infections of the understory would decrease.

Alternative 2 – No Action

Direct and Indirect Effects

Stand Composition, Stand Structure, and Density

Treatments to address objectives and desired conditions identified in the Purpose and Need would not be employed. Alternative 2 would allow the stand to continue to develop according to succession consequently, the horizontal and vertical continuity of surface, ladder, and canopy fuels would remain intact in the absence of naturally occurring disturbance, such as mortality, and accumulation would continue to increase in the absence of fire. Stands would remain densely stocked, increasing in susceptibility to loss from insect, disease, and stand replacing fires.

Harvest Operations

Under this alternative, there would be no harvest operations.

Forest Health

New annosus infections in ponderosa or Jeffrey pine would be rare because p-type pine-annosus infection centers almost always originate from freshly created pine stumps. Over-crowded and/or diseased trees would continue to be killed by bark beetle events, often associated with precipitation deficits.

The risk of bark beetle outbreaks causing large-scale mortality in large, remnant, overstory pines would increase over time, as stands grow increasingly dense. Of particular concern are mountain, Jeffrey, and western pine beetles because of their aggregating behavior. Stands at greatest risk in the project area are those stands with high levels of stocking (60 percent of maximum SDI or more), especially during periods of extended drought (Demars and Roettgering, 1982; Ferrel, 1986; Kegley et al, 1997; Smith, 1971).

Mistletoe would continue to persist in the stand. Pine reproduction would continue to be infected. Tree growth and form would continue to be impacted.

Additional information about Silviculture can be found in the Silviculture Report, hereby incorporated by reference, located at the Eagle Lake Ranger District, 477-050 Eagle Lake Road, Susanville, CA 96130 in the project record.

Fire and Fuels

Alternatives 1, 3, 4 & 5

Direct and Indirect Effects

Alternatives 1, 3, 4 and 5 (Action Alternatives) would have similar effects to the fuel loading and fire behavior of the project area. Table 2 lists the number of acres of timber and or vegetation to be cleared to facilitate the pond construction and associated stockpiling/borrow pit activities. The remaining ground would be thinned to promote stand health and reduce the risk of fire.

Table 2. Acres of Activity by Alternative

	Acres by Alternative		
Alternative	Cleared	Thinned	Re-vegetated
1	12	14	9
2	0	0	0
3	11	13	7
4	5	19	3
5	3	20	2

Source: Fuels Report

The thinning and prescribed fire treatments under the Action Alternatives would have the effect of reducing the surface, ladder, and canopy fuel loadings. These reductions would result in lower flame lengths and increased Torching and Crowning indices. Combined, these changes would result in reduced first order fire effects and reduced potential for a transition to a passive or active crown fire. A more detailed explanation of these indicators can be found in the project record in the Fuels Report, hereby incorporated by reference.

Table 3 summarizes the predicted flame lengths following treatment as well as the desired flame lengths within the individual tree selection (ITS) thinning treatment. The effects of the treatment would be successful in reducing flame lengths to desired levels, which would allow firefighters to use direct attack methods on fires occurring within the proposed treatment area.

Table 3. Summary of Effects under the Action Alternatives for Reducing Fire Hazard

Effects Indicators	ITS Thinning	Desired
Unit Type	Modeled Average	
Flame length (feet)	3	<4.0
Fire type	Surface	Surface
Torching Index (TI)*	81	>30
Crowning Index (CI)**	48	>40
Canopy Base Height (CBH) (feet)	27	15 – 25+

Source: Fuels Report *The Torching Index (TI) is a measure of how susceptible a stand is to the vertical movement of fire. The higher the TI the less susceptible a stand is to the vertical movement of fire (torching/passive crown fire). **The Crowning Index (CI) is a measure of the ability of a stand to sustain a fire that moves through the canopy (active crown fire). The higher the CI the less susceptible a stand is to an active crown fire.

The TI and CI of the treatment would be sufficient to meet desired levels and reduce the chance of torching and active crown fire, even under extreme fire weather conditions, to very low levels unlike the No Action Alternative as displayed in Table 4.

Table 4. Predicted Fire Behavior and Effects Indicators for the Eagle Lake Sewage Pond project area under 90th Percentile Weather Conditions.

Effects Indicators	Existing Conditions		Desired
Unit Type	Average	Range	
Flame length (feet)	12	10 - 14	<4
Fire type	Passive crown	Passive crown	Surface only
Torching Index(TI)	3	1 - 5	>30
Crowning Index (CI)	37	33 - 41	>40
Crown Base Height (CBH) (feet)	6	5 - 7	15 - 25

Source: Fuels Report.

Cumulative Effects

The Fire and Fuels cumulative effects analysis area for the Eagle Lake Sewage Ponds Project includes the area within the project boundary. Over the past 100-150 years, in part due to grazing and fire suppression, the Eagle Lake Sewer Pond project area has undergone structural changes which include an increase in the surface and ladder fuel loading and a densification of the stand. Current conditions show that the stand is outside its range of natural variability. Based on fire behavior modeling predictions, the Eagle Lake Sewage Pond project area shows that existing fuels exceed desired levels in terms of surface fuel loading, torching index and crowning index. Lives, property, and natural resources in and around the project area are at risk from wildland fires that have the potential to be both large in size and damaging to the ecosystem well beyond the scope of what occurred in this area historically. Cumulatively under the Action Alternatives, the thinning and prescribed fire treatments would have the effect of reducing the surface, ladder, and canopy fuel loadings. These reductions would result in lower flame lengths and increased Torching and Crowning indices. The reduction in flame lengths to the desired levels would allow firefighters to use direct attack methods on fires occurring within the proposed treatment area. Combined, these changes would result in reduced first order fire effects, low-intensity surface fires, and reduced potential for transition to a passive or active crown fire.

Alternative 2 – No Action

Direct and Indirect Effects

Under Alternative 2, densification of stands, and surface and ladder fuel loading throughout the project area would continue to increase. Lives, property, and natural resources in and around the Eagle Lake Sewage Ponds Project area would continue to be at risk from wildland fires that have the potential to be both large in size and damaging to the ecosystem. In the future, these conditions would be more pronounced without some type of fuels reduction treatment or other disturbance (wildland fire) that reduces fire hazard in the area.

Additional information about fuels can be found in the Fuels report, hereby incorporated by reference, located at the Eagle Lake Ranger District, 477-050 Eagle Lake Road, Susanville, CA 96130 in the project record.

Forest Plan Consistency

Non-significant Forest Plan Amendment Evaluation of Significance

The National Forest Management Act (NFMA) requires evaluation of whether proposed forest plan amendments would constitute a significant change in the long-term goods, outputs and services projected for the National Forest. The following criteria are used to determine the significance of forest plan amendments (FSM 1926.51-52).

Changes to the Forest Plan that are not significant and could result from:

1) Actions that do not significantly alter the multiple-use goals and objectives for long-term land and resource management.

The 40-acre parcel where the sewer ponds are located has been has managed as an administrative site since the EL Facility's pond construction. The administrative use of this 40-acre parcel for the Eagle Lake Sewer Ponds is consistent with the Forest Plan goals to manage the Eagle Lake Recreation Area.

2) Adjustments of management area boundaries or management prescriptions resulting from further on-site analysis when adjustments do not cause significant changes in the multiple-use goals and objectives for long-term land and resource management.

No changes to management area boundaries or management prescriptions would occur.

3) Minor changes in standards and guidelines; and

Upon completion of this project, no more than 6 acres would be encumbered by new infrastructure. This plan amendment would deviate from the use of this standard on these acres only.

4) Opportunities for additional projects or activities that would contribute to achievement of the management prescription.

The Eagle Lake Sewer Pond project would assist in achieving the desired condition of this management area. The desired conditions for Recreation in the Eagle Management Area are the following.....

1. Develop a composite recreation plan addressing the future of the marina, provision of any new facilities, and development of bicycle and off-highway vehicle trails.
2. Develop a visitor information station at the entrance to the Eagle Lake Recreation Area (Junction of county roads 201 and A-l), when land is acquired.
3. Build a new visitor information center and amphitheater at the Merrill Creek information station.
4. Exclude livestock from developed recreation sites.
5. Develop and implement a vegetative management plan for the Eagle Lake Recreation Area.

6. Manage the undeveloped camping areas at Houseman Camp, Dow Wells, Prison Springs, and Pine Bridge as dispersed campsites.
7. Maintain the Gallatin House to resemble its appearance during the historical period, by coordinating with Eagle Lake Children's Charities as it develops and operates a camp for special needs children.
8. Make lands available on the south shore of Eagle Lake for the purpose of construction and operation of a Priority 1 Organizational Camp. This use would be authorized by Special Use Permit.[13] Priority 1 is defined as programs for the disadvantaged or underprivileged in which, regardless of sponsorships, charges to recipients are free or token only and without such sponsorship the recipient probably could not go to camp. Generally speaking, recipients need not be members of the sponsoring organization. Examples of such programs would be those sponsored by the Salvation Army, Boy's Clubs of America and some civic clubs, programs for the physically challenged or infirm where the objective is rehabilitation and training, and programs to provide an outdoor experience not available except through the supervision of the sponsoring organization. Camps for physically challenged children, retarded children, diabetics, or the hearing impaired are examples.
9. Cooperate in efforts to recommend Eagle Lake as a National Recreation Area.

Changes to the Land Management Plan that are significant and circumstances that may cause a significant change to the plan:

1) Changes that would significantly alter the long-term relationship between levels of multiple-use goods and services originally projected (section 219.10 (e) of the planning regulations in effect before November 9, 2000 (36 CFR parts 200 to 299, revised as of July 1, 2000).

The deviation from this soils standard for this site-specific project allows continued use of the standard for other projects. It does not alter the long-term relationships between the levels of goods and services projected in the Forest Plan.

2) Changes that may have an important effect on the entire land management plan or affect land and resources throughout a large portion of the planning area during the planning period.

The deviation from this soils standard is a project level, site-specific Plan Amendment that does not have implications for the entire Forest Plan.

Agencies and Persons Consulted

The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

Federal, State and Local Agencies:

Lassen County Board of Supervisors, the Lahontan Regional Water Quality Control Board, Lassen Fire Safe Council, and the Office of Congressman Tom McClintock

Native American Tribes:

Greenville Indian Rancheria, Pit River Tribe, Susanville Indian Rancheria

13 A Priority 1 Organizational Camp is defined under Forest Service Manual 2345.1.1 as follows:

Others:

Valerie Aubrey, Beatty & Associates, Camp Ronald McDonald, Lassen College Foundation, Lassen Cougar Enterprises, Fruit Growers Supply Co., Roney Land & Cattle Co.

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California Environmental Quality Act (CEQA)
Eagle Lake Sewage Ponds Project
Environmental Checklist Form
Appendix 1

1. Project title: Eagle Lake Sewage Ponds Project

2. Lead agency name and address: California Regional Water Quality Control Board, Lahontan Region (Lahontan)
   2501 Lake Tahoe Blvd
   South Lake Tahoe, CA 96150

3. Contact person and phone number: George Cella, 530-542-5426

4. Project location: The project is located within Lassen County approximately 20 miles northwest of Susanville, California and approximately 2 miles south west of Eagle Lake on the Eagle Lake Ranger District of the Lassen National Forest. The project area is accessed via National Forest System Road (NFSR) 31N07. The legal location is T31N, R10E, NE¼NE¼ Section 21, Mount Diablo Meridian (MDM).

5. Project sponsor's name and address: Lassen National Forest
   2551 Riverside Drive, Susanville, CA 96130

6. General plan designation: National Forest

7. Zoning: National Forest

8. Description of project: The project consists of repairing and upgrading an existing wastewater treatment facility in the Eagle Lake Recreation Area. The purpose and need for this project is to bring the facility into conformance with the regulations of the Lahontan Regional Water Quality Control Board. A joint NEPA/CEQA is being prepared for this project. A full description of the alternatives can be found in the Eagle Lake Sewage Ponds Environmental Assessment (EA).

The Eagle Lake Ranger District of the Lassen National Forest (LNF) is proposing the following Eagle Lake Sewer Ponds Project (Project). The Eagle Lake sewage ponds service the Lassen NF's Eagle Lake Recreation Area (ELRA). The ponds, lined in the 1980's, are beginning to deteriorate. The draft Environmental Assessment/Initial Study (draft EA/IS) describes five alternative (including a "No Action alternative") proposed in order to address the situation, and disclose the potential environmental effects on each of the alternatives. Patches are considered temporary fixes to mitigate the potential immediate safety hazard of small leaks in the lining. Complete replacement of the liners could prevent widespread failure of one or more of the pond's small leaks in the lining, however, draining the ponds and replacing the liners could require closure for at least one season of the ELRA. Closure of these recreation facilities could have negative impact-political and/or economic–on the public, surrounding communities, and the LNF. Expansion of the facility could circumvent this issue, but the National Forest System (NFS) parcel on which the existing facility is located is limited in size. To add to the concerns, existing storage capacity of the evaporation ponds may be inadequate to handle future capacity increase to the ELRA. There are five alternatives addressed in the Environmental Assessment (EA). A map of the existing facility can be found on page 4 of the EA.

Alternative 1. Figure 3 on page 8 of the EA shows the approximate locations for the expanded facility. The alternative is described in detail on pages 7 through 10. Evaporation Ponds 1 and 2 would become one pond by removing the center berm that currently divides them, while Evaporation Pond 3 would be enlarged to double its capacity. Material for construction would be removed from the borrow site.

Alternative 1, impacts 0.77 acres of the 0.89 acres of wetlands on National Forest System land as a result of the existing sewage treatment facility expansion. The 0.89 acres of Merrill wetlands located on NFS lands are only a

small fraction of the greater Merrill wetlands which is located on private lands. *The Papoose Meadows Wetlands Restoration Project* has been proposed as a mitigation site for the altered onsite wetlands and marsh within the same 5th field watershed as the Merrill wetlands, and a wetlands comparison is provided in the Draft EA/IS, Appendix C. This mitigation would at a minimum, create the required one and one-half times more wetlands habitat than would be impacted by the Proposed Action. The Environmental documentation for this project was covered under the EA and Decision Notice (DN) for the South Eagle lake Grazing Allotment. A description of this project is found in Appendix D of this document. Actual design features would be submitted to Lahontan for approval prior to implementation.

Under all action alternatives liner selection and design would occur during the EL Facility design process and under consultation with Lahontan. All replaced liners would be removed off National Forest System land and disposed of according to existing regulations. Federal Acquisition Regulations that would be included in the contract involving replacement of liners include standard language that contracted work is to be in conformance with all local, State and Federal requirements.

The Action Alternatives also propose forest thinning activities to increase crown base height and remove ladder fuels throughout the 40-acre NFS site. Site-clearing activities are also proposed to provide an on-site area from which a Project-related borrow site could be established on the NF property, and to make room for the expansion of the ponds in certain alternatives. The development of an on-site well is proposed to provide water to control dust during timber harvest and pond construction/reconstruction activities.

Alternative 2 is the no action alternative.

Alternative 3, This alternative is similar to alternative 1 except the pond expansion would be located north of the delineated Little Merrill Flat wetlands. This alternative is described on pages 16 through 19 of the EA with a figure on page 17.

Alternative 4 involves deepening and relining the existing evaporative ponds with no new pond construction. This alternative is described on pages 19 through 22, with the figure on page 20.

Alternative 5 involves raising the banks between Evaporation Pond 1 and 2 so they would function as two separate ponds. The existing evaporative ponds would be relined with no new pond construction. This alternative is described on pages 22 through 25, with the figure on page 23.

The draft EA/IS includes Individual Design Features, Best Management Practices, mitigation measures, a Revegetation Plan, and a Monitoring Plan, which would be implemented to protect resources and restore and potential impacts which could occur during Project activities.

9. Surrounding land uses and setting: The 40-acre parcel of National Forest System land is completely surrounded by private timber land. The facility's function is to service the Lassen NF's Eagle Lake Recreation Area (ELRA). The ELRA consists of five campgrounds with 318 campsites, two group campgrounds; one 100 person site and one 75 person site, two day use areas, two boat launching facilities, a marina (that includes a store, showers, laundry facilities and fish cleaning stations), Camp Ronald McDonald, a research facility and hiking and biking trails.

10. Other public agencies whose approval is required

Prior to commencing and thinning and or clearing operations the Lassen NF would obtain a 2009 Timber Waiver Permit from Lahontan.

In accordance with Title 17 of the California Code of Regulations, a smoke management plan would be submitted to and approved by the Lassen County Air Pollution Control District (LCAPCD) prior to any prescribed fire ignitions that are part of the proposed action.

A Stormwater Pollution Prevention Plan (SWPPP) and Erosion Control Plan will be implemented. The SWPPP, which must be written by the contractor, will be submitted to Lahontan for approval 30 days prior to commencement of any ground-disturbing Project activity.

A 401/404 Water Quality Cert, and waste discharge permit will be required prior to any construction activities

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

❒	Aesthetics	❒	Agriculture Resources	❒	Air Quality
❒	Biological Resources	❒	Cultural Resources	❒	Geology/Soils
❒	Hazards & Hazardous Materials	❒	Hydrology/Water Quality	❒	Land Use/Planning
❒	Mineral Resources	❒	Noise	❒	Population/Housing
❒	Public Services	❒	Recreation	❒	Transportation/Traffic
❒	Utilities/Service Systems	❒	Mandatory Findings of Significance		

DETERMINATION: (To be completed by the Lead Agency)
On the basis of this initial evaluation:

❒	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION would be prepared.
❒	I find that although the proposed project could have a significant effect on the environment, there would not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION would be prepared.
❒	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
❒	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
❒	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

Date

CEQA Environmental Checklist

The following Appendices are attached to and incorporated into this Checklist:

Appendix A - Eagle Lake Sewage Ponds Project Revegetation Plan

Appendix B - Eagle Lake Sewage Ponds Project Monitoring Plan

Appendix C – Wetlands Comparison

Appendix D – PMWR grant (This project was analyzed under the South Eagle Lake Grazing Allotment Environmental 2007. This and the corresponding Decision Notice can be obtained from the Eagle Lake Ranger District office)

Appendix E - Best Management Practices (BMPs) (A full list of BMPs cited in the EA and this Checklist)

Appendix F – Wetlands Delineation

Mitigations refer to Integrated Design features (IDFs) common to Alternatives 3, 4 and 5 unless specifically noted as Alternative 1 (Alt.1).

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista	☐	☐	☐	X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	☐	☐	☐	X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	X	☐	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	X

Discussion of Checklist Questions

The project is not located in or adjacent to a designated scenic vista or along a scenic highway. The project would not result in the development of a new source of light or glare.

The primary impact to aesthetics would be the creation of areas of soil and vegetation disturbance. The proposed project includes the implementation and maintenance of site specific BMPs which are designed to control storm-driven erosion at the site as well as site-specific mitigation measures to restore the project site to natural conditions. See Appendix A – Eagle Lake Sewage Ponds Project Revegetation Plan. The impacts to aesthetics are less than significant with mitigation measures.

Mitigation Measures

Soils-17. Existing landings and skid trails would be used as much as possible to minimize new disturbance.

Two previously disturbed areas have been identified within the project area that are within proximity to the existing system road that would be suitable as timber landings. No additional landings are anticipated. Existing skid trails, many which have revegetated exist throughout the thinning area. These features are outside the designated RCA. These features would be used this entry where they facilitate moving material to the designated landings. Any new skid trails must be designated on the ground by the Contract Representative prior to use.

Wildlife-33 (Alt.1). To the extent practicable, disturbed areas, the borrow site, stockpile site, and sludge drying bed perimeter, would be seeded, with a variety of locally adapted native plants (Appendix A). These plants should provide food value to wildlife in the form of browse, fruits and seeds, possibly including but not limited to such plants as elderberry, serviceberry, chokecherry, Scouler's willow, and native grasses. Any substitute locally-adapted plants would be similar or better than those listed plants at providing food value.

An initial survey would be conducted on each site to determine the suitability for revegetation. The percent of each area that is practicable for revegetation in terms of exposed rock and depth of topsoil will be documented.

Newly constructed or reconstructed berms around the sewage ponds would be stabilized with a mix of native grasses (possibly including but not limited to *Poa secunda*, one-sided bluegrass; *Elymus glaucus*, blue wild rye; and *Bromus carinatus*, California brome) to prevent wind and soil erosion. Any substitute locally-adapted plants would be similar or better than those listed plants at preventing wind and soil erosion. (BMP 2-4 Stabilization of Slope Surfaces and Spoil Disposal Areas; BMP 2-28 Surface Erosion Control at Facility Sites, (Appendices A and E)

The following item would be included in the sewer pond expansion contract(s).

Facilities-39. Implementation of an approved Storm Water Pollution Prevention Plan (SWPPP) and Erosion Control Plan.

A SWPPP and Erosion Control Plan will be implemented. The SWPPP, must be written by the contractor, be submitted to Lahontan for approval 30 days prior to commencement of any ground-disturbing Project activity.

Facilities-40. 40. Protection of existing landscape and vegetation outside of the construction zone (ponds).

Facilities-42. Upon completion of the project areas that show signs of rutting would be scarified to a depth of 6 six inches. Scarified areas would be contoured and seeded with native vegetation as per the Revegetation Plan (Appendix A).

Air Quality-43. Prescribed burning would only be conducted on permissive burn days as defined by the California Air Resources Board (CARB) and follow the constraints of a Smoke Management Plan (SMP) approved by the Lassen County Air Quality Management District.

In accordance with Title 17 of the California Code of Regulations, a smoke management plan would be submitted to and approved by the Lassen County Air Pollution Control District (LCAPCD) prior to any prescribed fire ignitions that are part of the proposed action.

Air Quality-44. Develop and implement a dust abatement plan along the road in the project area. Logging and vegetation management activities would be dust abated where rubber-tired vehicles are operating on haul routes. Water for dust abatement would be, obtained onsite from the well, trucked-in, or a dust palliative may be approved which may include magnesium chloride, calcium chloride, lignin sulfate, or an approved equal. Dust palliatives would not be used within 25 feet of the RCA. Dust palliatives, if used, would be stored and mixed outside of the RCA.

Approval for the use of dust palliatives is given by the Forest Service Line Officer.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
II. AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	X
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	X

Discussion of Checklist Questions

No farmland is located in the project area. There would be no impacts to agricultural resources.

Mitigation Measures

No mitigation is required

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	X
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	X	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	X
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	X
e) Create objectionable odors affecting a substantial number of people?	☐	☐	X	☐

Discussion of Checklist Questions

In accordance with Title 17 of the California Code of Regulations, a smoke management plan (SMP) would be submitted to and approved by the Lassen County Air Pollution Control District (LCAPCD) prior to any prescribed fire ignitions that are part of the proposed action. Adherence to the SMP would ensure that emissions from pile burning would not violate the National Ambient Air Quality (NAAQ) emission standards. Since the proposed project area falls within a federal attainment area for air quality, no conformity determination is required.

Treatment of fuels under the Action Alternatives would result in decreased smoke production and associated emissions in the event of a wildland fire. This decrease in emissions would help to reduce smoke-related impacts to nearby communities. Fugitive dust could result from both construction and logging operations during dry seasons. This would be mitigated by standard contract requirements for road watering or other dust abatement techniques.

The project may generate smoke during burn days and some dust during construction and timber harvesting activities. Once construction is complete, disturbed areas would be revegetated to ensure soil stabilization. Compliance with BMPs and specific contract conditions would avoid and minimize effects to air quality. The proposed project would have a less-than-significant impact on air quality with the following mitigations.

Mitigation Measures

Air Quality-43. Prescribed burning would only be conducted on permissive burn days as defined by the California Air Resources Board (CARB) and follow the constraints of a Smoke Management Plan (SMP) approved by the Lassen County Air Quality Management District.

Air Quality-44. Develop and implement a dust abatement plan along the road in the project area. Logging and vegetation management activities would be dust abated where rubber-tired vehicles are operating on haul routes. *(Skidding by tracked vehicles would not be permitted on the haul route, FSR 31N07).*

Revegetation mitigation. Once construction is complete, disturbed areas would be revegetated to ensure soil stabilization (Appendix A).

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	X	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	X	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	X	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	X
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	X

Discussion of Checklist Questions

The Biological Evaluations/Biological Assessments (BEs/BAs) prepared for this project and incorporated by reference into the Environmental Assessment, were prepared in accordance with the Endangered Species Act of 1973, as amended, and follows standards established in Forest Service Manual Direction (FSM 2671.2 and 2672.42) for Threatened, Endangered and Sensitive (TES) wildlife species. Species to be considered in this document were determined based on review of the U.S. Fish and Wildlife Service species list (website accessed on 5 February, 2009), and on review of the USDA Forest Service Sensitive species list for Region 5. For the purpose of the CEQA Checklist, species included in the BEs/Bas are defined as "special-status species" and are included in this analysis. The following information summarizes potential effects of the proposed action on biological resources. The impacts to biological resources are less than significant with mitigations.

Terrestrial Species: Due to the project area being outside the range of the species, or due to the lack of suitable habitat or habitat components in the project area the proposed project would have no effect on the following Federally Listed threatened or endangered species or their critical habitat: northern spotted owl, valley elderberry beetle. Additionally, due to the project area being outside the range of the species, or due to the lack of suitable habitat or habitat components in the project area, the proposed project would have no effect on the following Forest Service Sensitive species: Northern bald eagle, California wolverine, American marten, Pacific fisher, Sierra Nevada red fox, Townsend's big-eared bat, western red bat, greater sandhill crane, California spotted owl, Swainson's hawk, great gray owl, willow flycatcher.

Analyses of direct, indirect and cumulative effects to northern goshawk habitat concluded that the proposed project may affect individuals northern goshawks, but are not likely to result in a trend towards federal listing or loss of species viability due to, 1) the project site is an existing sewage pond facility, and thus human disturbance in this site likely reduces its value to this species, 2) there is no nesting habitat being affected within the project boundaries, and, 3) the project affects a very small number of acres of forested habitat .

Finally, analyses of direct, indirect and cumulative effects to pallid bat habitat concluded that the proposed project, and may affect individuals pallid bats, but are not likely to result in a trend towards federal listing or loss of species viability due to, 1) low potential for effects to roost trees, 2) habitat improvement via thinning, and, 3) long-term habitat loss is restricted to approximately 4 acres of meadow habitat due to construction of a evaporation pond.

Aquatic Species: The project would have no effect on the following threatened and endangered species or their critical habitat; Central Valley steelhead Distinct Population Segment (*Oncorhynchus mykiss*), Central Valley spring-run Chinook salmon Evolutionarily Significant Unit (ESU) (*Oncorhynchus tshawytscha*), Delta smelt (*Hypomesus transpacificus*), Winter-run chinook salmon ESU (*Oncorhynchus tshawytscha*), California red-legged frog (*Rana aurora draytonii*), Giant garter snake (*Thamnophis gigas*), Shasta Crayfish (*Pacifastacus fortis*), Conservancy fairy shrimp (Branchinecta conservatio), Vernal pool fairy shrimp (*Branchinecta lynchi*), and Vernal pool tadpole shrimp (*Lepidurus packardi*).

The project would have no effect on the following Forest Service Sensitive Species; Foothill yellow-legged frog (*Rana boylii*), Mountain yellow-legged frog (*Rana muscosa*), Cascades frog (*Rana cascadae*), Northwestern pond turtle (*Clemmys marmorata marmorata)*, California floater (*Anodonta californiensis*), Topaz Juga (*Juga acutifilosa*) Scalloped Juga (*Juga occata*), Nugget pebblesnail (*Fluminicola seminalis*), Northwestern pond turtle (*Clemmys marmorata marmorata*), and Central Valley fall/late-fall-run Chinook salmon ESUs (*Oncorhynchus tshawytscha).*

Botanical Species: There are no Threatened, Endangered, or Sensitive (TES) plant species found within the project area, therefore, there would be no impacts to botanical TES species from the proposed project.

Lassen National Forest Special Interest Plant Species - *Mimulus pygmaeus*. Implementation of the proposed project would have no direct effect on individual plants of the species. *Mimulus pygmaeus* occurs in the seasonally wet, vegetated margins east and south of the existing sewage ponds. Potential impacts to this species during fence reconstruction would be mitigated through integrated design features. The impacts to botanical species are less than significant with mitigations.

Wetlands: There are no perennial streams within the project area; however, the project area includes 0.89 acres of the Merrill wetlands. The 118 acres of Merrill wetlands are located at the headwaters of Merrill Creek, an intermittent stream that is 0.3 miles from the proposed project. Snowmelt provides the majority of the surface runoff, which is dispersed. Surface water and possibly emergent groundwater could flow from the wetlands to Eagle Lake via Merrill Creek during snowmelt runoff events, rain on snow events, and potentially during rain events when soils are highly saturated. The current sewage ponds are hydrologically disconnected to the wetlands (Foothill Associates, 2009).

> Alternative 1 - Construction activities would cause long-term disturbance and loss of 0.77 acres of depressional wetlands and beneficial uses related to the depressional wetlands. A portion of the wetlands would be filled in and buried by the extension of Evaporation Pond 3. Appendix D details the Papoose Meadows Wetlands Restoration Project. Appendix C compares the beneficial uses of the Papoose Meadows wetlands and Little Merrill Flat wetlands
>
> Alternatives 3, 4, and 5 would not result in a net change of wetland area pre- and post-project.

The delineated depressional Merrill wetlands described in the 2009 wetlands delineation study (Foothill Associates, 2009) would be protected during Phase 1 activities with buffers. During construction and reclamation phases, the delineated depressional Merrill wetlands would not be entered with mechanical equipment (driven); however, the lack of a buffer would potentially allow mechanical equipment (driven) to approach the wetland as close as the wetland edge. Although, the lack of a buffer would increase the potential for local effects on the wetlands, activity related sedimentation and compaction would be unlikely to affect Merrill wetlands as a whole (118 acres). Additionally, the wetlands would still exist post-project. The impacts to wetlands are less than significant with mitigations.

Mitigation measures

Botany-9. New occurrences of Threatened and Endangered Species (TES) plant species, discovered before or during ground-disturbing activities within the thinning area, would be protected through flag and avoid methods. Avoidance buffer widths would be based on the requirements of the TES species present.

Upon discovery, the Contract Administrator will notify the Forest Botanist, who will at that time determine the appropriate buffer based on the species discovered and the activity occurring in proximity to the plant

Botany-10. All fencework in the south and east margins of the project area, including the installation of permanent chain-link fence around the treatment facility, would occur when soils are dry, so that plants of *Mimulus pygmaeus* would have completed their annual life cycle.

Silviculture-16. All conifer stumps greater than 14 inches in diameter would be treated with SPORAX® within the thinning area. No Sporax would be applied within 25 feet of known Sensitive and Special Interest Plants or applied within 25 feet of the of the wetlands as described in the 2008 wetlands study

Aquatics-1. A "no mechanical equipment" buffer would be designated around the inner RCA zone (within 75 feet of the delineated wetlands as described in the 2009 wetlands delineation study) within Little Merrill Flat during timber removal. .

The following would apply within the RCAs for the Merrill wetlands:

Aquatics-2. Landings would be located outside the seasonal wetlands and the RCA zones.

Aquatics-3. Conifers would be removed with feller-bunchers that have 24-inch or greater track widths.

Aquatics-4. Skid trails would be kept to a minimum *(no more than one every 100 feet)* and no water bars would be installed after treatment *on slopes that are gentle (1-2%).* Where slopes are gentle water bars are more likely to interfere with natural flow paths than their intended purposes, which, is to route concentrated flows from skid trails.

Slopes within the RCA in the outer RCA buffer (75 to 300 feet) are gentle and will not have waterbars installed. Outside the buffer the spacing of waterbars and energy dissipaters installation would be by the standards outlined in Forest Service Handbook 2409.15 p.61.42 Exhibit 01.

Aquatics-5. Skid trails within the RCA zones of Little Merrill Flat would require 90 percent of existing ground cover on bare soil on the trails; slash would be spread over these open areas.

Using "existing cover" rather than a predefined quantity allows site-specific application of this IDF to better approximate pre-activity conditions across a heterogeneous landscape.

Aquatic-6. Ground-based equipment would be used to remove timber using one-end suspension outside the inner RCA zone.

If rutting occurs from this type of operation skid trails within the RCA zones would be evaluated for possible scarification, recontouring, and seeding with native vegetation.

Soils-22. Potential sedimentation to RCA zones from project areas, including from currently forested areas that are being harvested for pond expansion procedures (i.e. borrow site, sludge drying site), would be prevented by installing site-specific erosion and sediment control devices. These devices may include, silt fencing, straw bales, coir logs (i.e., straw waddles), plant cover, and mulch. (BMP 1-18 Meadow Protection During Timber Harvesting; BMP 2-11 Control of Side-Cast Material During Construction and Maintenance; BMP 2-13 Control of Construction; BMP 2-19 Disposal of Right of Way and Roadside Debris; BMP 2-15 Diversion of Flows around Construction Sites; BMP 2-18 Regulation of Borrow Areas).

Soils-23. Provide visible delineations around construction and borrow sites. Delineated wetland (as described in the 2009 wetlands delineation study) areas would remain free of mechanical equipment that must be driven. Examples of mechanical equipment that may be used in the wetlands are small generators, a gas power post hole digger etc. Mechanical equipment would not be left unattended on the ground in order to minimize ground contamination by fuels. Refueling of mechanical equipment would be prohibited in the RCA zones. Materials that need to be stored for more than 7 days would be stored outside the outer RCA zone.

Water Quality-27. Mechanical equipment may be utilized in the outer RCA zone (designated as 300 feet to 75 feet from the delineated wetlands within Little Merrill Flat) as long as dry soil conditions are met. Soil must be dry to a depth of 12 inches before mechanical equipment is allowed to enter the outer RCA zone.

Water Quality-29. Mechanical equipment is prohibited from entering the inner RCA zone (designated as "75 feet from the delineated wetlands within Little Merrill Flat) with the exception of the existing access road on the pond berm of Evaporation Ponds 2 and 3 and the evaporation ponds themselves with the exception of work allowed in the RCA's previously discussed.

Water Quality-30 (Alt.1). At a minimum the contractor would have on site at all times sufficient absorption materials and tools to cleanup and properly dispose of any size oil or oil products spill. Additionally the contractor would maintain storage facilities for oil or oil products in the project area and would take preventative measures to ensure that any spill would not enter the Merrill wetlands or groundwater. If the total oil products storage exceeds 1,320 gallons in containers of 55 gallons or greater, then the contractor would prepare a Spill Prevention Control and Countermeasures Plan. In addition, these BMPs would be followed: BMP 2-12 Servicing and Refueling of Equipment; BMP 7-4 Forest and Hazardous Substance Spill Prevention Control and Countermeasure (SPCC) Plan.

Water Quality-34. Installation of fencing located within the wetland would occur by use of the following equipment: 1) a gas power hand held auger to drill post holes approximately 38 inches deep, 2) manual placement of concrete for post footings, 3) manual tightening of fence material or use of rubber tired tractor placed outside of wetland.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES: Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	X	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	X
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	X

Discussion of Checklist Questions

There are no historic sites/resources present within the area of potential effects for the proposed undertaking. Therefore, the project would not affect the significance of historic resource values.

FS archaeological resources 05-06-58-499 and 05-06-58-982 have been evaluated for significance and determinations have been made regarding their eligibility to the National Register of Historic Places (NRHP). Test excavations, special studies, and analysis indicate that the sites should not be eligible to the NRHP. We have submitted our findings to the State Historic Preservation Office (SHPO) and requested concurrence with our ineligibility determinations and that no historic properties would be affected by the proposed undertaking. Based on recent informal consultation with their office, it is likely they would concur with our finding. A formal response from the SHPO should be received during the draft EA/IS comment period and will be presented in the FEA/IS accordingly. The impacts to cultural resources are less than significant if our analyses are confirmed by SHPO and the Indian Tribes.

Mitigation Measures

If the sites are determined to be ineligible for the inclusion into the National Register of Historic Places no further management of the sites will be required and the project may proceed. If the sites are determined eligible for inclusion to the National Register of Historic Places, then additional consultation with the SHPO and Indian tribes will be needed before project implementation can occur. Additional consultation may result in a treatment plan, mitigation, and possibly data recovery for the cultural properties.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
VI. GEOLOGY AND SOILS: Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☐	X
ii) Strong seismic ground shaking?	☐	☐	☐	X
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	X
iv) Landslides?	☐	☐	☐	X
b) Result in substantial soil erosion or the loss of topsoil?	☐	X	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	X
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	X
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	X

Discussion of Checklist Questions

The proposed project is not located in an Earthquake Fault Zone, on a geologic unit which is unstable, or a geologic unit which could become unstable as a result of the project. The project is not located on an expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994).

The primary soil family complexes located with the project area are the Inville-Patio-Trojan families complex and the Wintoner family-Aquolls-Patio families association. The meadow area soil is comprised of the Aquoll family, a very poorly drained soil resulting in ponding for a majority of the growing season. The surface layers of Aquolls are characterized by loam and silt loam textures with granular and blocky structures. Underlying the surface layer are blocky and massive soil structures, often composed of a near-

impermeable silt- or fragi-pans, resulting in very slow rates of water permeability. Soil pit surveys conducted within the project area indicate the area has a low erosion hazard rating (EHR). The proposed project would have a less-than-significant impact on soils with the following mitigations.

Mitigation Measures

No mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
VII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	X	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	X	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	X
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	X
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	X

Discussion of Checklist Questions

The proposed project is not expected to result in the creation of health hazards, potential health hazards, or expose people to potential health hazards since the proposed project is a relining of the existing system and expansion of capacity. The facility is located in a remote area. The nearest residence is two miles away. During construction, the use and staging of construction equipment or storage of fuels may have the potential to release hazardous substances, such as oil and diesel. The following mitigation measures would result in a less than significant risk. The Project activities are also intended to reduce the risk of wildfire, and that a burn plan will prevent escape of planned burns

Mitigation Measures

Soils-23. Provide visible delineations around construction and borrow sites. Delineated wetland (as described in the 2009 wetlands delineation study) areas would remain free of mechanical equipment that must be driven. Examples of mechanical equipment that may be used in the wetlands are small generators, a gas power post hole digger etc. *Mechanical equipment would not be left unattended on the ground in order to minimize ground contamination by fuels. Refueling of mechanical equipment would be prohibited in the RCA zones.* Materials that need to be stored for more than 7 days would be stored outside the outer RCA zone.

Water Quality-30 (Alt.1). At a minimum the contractor would have on site at all times sufficient absorption materials and tools to cleanup and properly dispose of any size oil or oil products spill. Additionally the contractor would maintain storage facilities for oil or oil products in the project area and would take preventative measures to ensure that any spill would not enter the Merrill wetlands. If the total oil products storage exceeds 1,320 gallons in containers of 55 gallons or greater, then the contractor would prepare a Spill Prevention Control and Countermeasures Plan. In addition, these BMPs would be followed: BMP 2-12 Servicing and Refueling of Equipment; BMP 7-4 Forest and Hazardous Substance Spill Prevention Control and Countermeasure (SPCC) Plan

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
VIII. HYDROLOGY AND WATER QUALITY: Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	X	☐	☐

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	X	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	X
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	X	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	X	☐	☐
f) Otherwise substantially degrade water quality?	☐	X	☐	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	X
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	X
j) Inundation by seiche, tsunami, or mudflow	☐	☐	☐	X

Discussion of Checklist Questions

At the watershed scale project activities would pose a negligible risk to water quality and beneficial uses within the project watershed. However, less than one percent of the project watershed area would be treated. The proposed project would prevent pond water seepage from entering the Little Merrill wetlands and groundwater. The proposed project has the potential for local effects on the water quality, activity related sedimentation and compaction. The impacts to hydrology and water quality are less than significant with mitigations. As previously discussed Alternative 1 would result in a loss of wetland acres, but this would be mitigated through the Papoose Meadows mitigation bank.

Hydrology protection measures at the Papoose Meadow Wetland Restoration (PMWR) site were addressed in the South Eagle lake Grazing Allotment EA and Decision Notice (DN) Project design features are described in the Lassen Modoc Special Status Plant Fund Grant application. Actual design features within the meadow will require Lahontan's approval prior to implementation. (Appendix D)

Mitigation Measures

Aquatics-1. A "no mechanical equipment" buffer would be designated around the inner RCA zone (within 75 feet of the delineated wetlands as described in the 2009 wetlands delineation study) within Little Merrill Flat during timber removal.

Aquatics-2. Landings would be located outside the seasonal wetlands and the RCA zones.

Aquatics-4. Skid trails would be kept to a minimum *(no more than one every 100 feet)* and no water bars would be installed after treatment *on slopes that are gentle (1-2%).* Where slopes are gentle water bars are more likely to interfere with natural flow paths than their intended purposes, which, is to route concentrated flows from skid trails.

> *Slopes within the RCA in the outer RCA buffer (75 to 300 feet) are gentle and will not have waterbars installed. Outside the buffer the spacing of waterbars and energy dissipaters installation would be by the standards outlined in Forest Service handbook 2409.15 p61.42 Exhibit 01.*

Aquatics-5. Skid trails within the RCA zones of Little Merrill Flat would require 90 percent of existing ground cover on bare soil on the trails; slash would be spread over these open areas.

Aquatics-8. Slash piles within the RCA would be hand-piled and burned in the outer RCA zone (75 feet to 300 feet) of the RCA of Little Merrill Flat. Machine piles would be located completely outside the RCA.

Soils-17. Existing landings and skid trails would be used <u>as much as possible</u> to minimize new disturbance.

> *Two previously disturbed areas have been identified within the project area that are within proximity to the existing system road that would be suitable as timber landings. No additional landings are anticipated. Existing skid trails, many which have revegetated exist throughout the thinning area. These features are outside the designated RCA. These features would be used this entry where they facilitate moving material to the designated landings. Any new skid trails must be designated on the ground by the Contract Representative prior to use.*

Soils-18. Outside the RCA, Lassen NF Wet Weather Operations and Wet Weather Haul Agreement, and Lassen NF Timber Waiver permit from Lahontan would be followed during all operations. When a conflict exists between the Wet Weather Operations and Wet Weather Haul Agreement, and Lassen NF Timber Waiver permit the most stringent requirements shall apply.

Soils-22. Potential sedimentation to RCA zones from project areas, including from currently forested areas that are being harvested for pond expansion procedures (i.e. borrow site, sludge drying site), would be prevented by installing site-specific erosion and sediment control devices. These devices may include, silt fencing, straw bales, coir logs (i.e., straw waddles), plant cover, and mulch. (BMP 1-18 Meadow Protection During Timber Harvesting; BMP 2-11 Control of Side-Cast Material During Construction and Maintenance; BMP 2-13 Control of Construction; BMP 2-19 Disposal of Right of Way and Roadside Debris; BMP 2-15 Diversion of Flows around Construction Sites; BMP 2-18 Regulation of Borrow Areas).

Soils-23. Provide visible delineations around construction and borrow sites. Delineated wetland (as described in the 2008 wetlands delineation study) areas would remain free of mechanical equipment that must be driven. Examples of mechanical equipment that may be used in the wetlands are small generators, a gas power post hole digger etc. *Mechanical equipment would not be left unattended on the ground in order to minimize ground contamination by fuels. Refueling of mechanical equipment would be prohibited in the RCA zones.* Materials that need to be stored for more than 7 days would be stored outside the outer RCA zone.

Soils-26 (Alt.1). Mulch, chips, and/or organic material would be spread in the borrow site area to provide a minimum of 50 percent surface coverage, to reduce soil erosion and overland flow, and to maintain soil moisture. *Fifty percent ground cover has been demonstrated to provide adequate cover for minimizing erosion, for allowing vegetative understory recovery and for minimizing fuel accumulation in thinning operations in the eastside pine ecotype*

Water Quality-26. All temporary access routes within the RCA zones would be evaluated for possible scarification, recontouring and, seeding with native vegetation, and have 90% of the existing groundcover following completion of the sewer pond expansion operations.

Water Quality-27. Mechanical equipment may be utilized in the outer RCA zone as long as dry soil conditions are met. Soil must be dry to a depth of 12 inches before mechanical equipment is allowed to enter the outer RCA zone.

Water Quality-28. Mechanical equipment is prohibited from entering the inner RCA zone with the exception of the existing access road on the pond berm of Evaporation Ponds 2 and 3 and the evaporation ponds themselves with the exception of work allowed in the RCA's previously discussed.

Water Quality-30 (Alt.1). *At a minimum the contractor would have on site at all times sufficient absorption materials and tools to cleanup and properly dispose of any size oil or oil products spill. Additionally the c*ontractor would maintain storage facilities for oil or oil products in the project area and would take preventative measures to ensure that any spill would not enter the Merrill wetlands or groundwater. If the total oil products storage exceeds 1,320 gallons in containers of 55 gallons or greater, then the contractor would prepare a Spill Prevention Control and Countermeasures Plan. In addition, these BMPs would be followed: BMP 2-12 Servicing and Refueling of Equipment; BMP 7-4 Forest and Hazardous Substance

Spill Prevention Control and Countermeasure (SPCC) Plan

Water Quality-33. The well installed for dust abatement would be constructed according to California Standards (Bulletin 74-90). With seals and casing placed to prevent migration of soil and ground water from the soil layer to deeper bedrock formations. The site would be located in proximity to the existing road, allowing access from the road. Waste water from the well drilling would be pumped to existing ponds. Cuttings would be removed from the site by the contractor.

Water Quality-34. Installation of fencing located within the wetland would occur by use of the following equipment: 1) a gas power hand held auger to drill post holes approximately 38 inches deep, 2) manual placement of concrete for post footings, 3) manual tightening of fence material or use of rubber tired tractor placed outside of wetland.

Facilities-42. Site-specific erosion and sediment control devices would be installed around stockpiled materials to prevent sediment movement. These devices at a minimum would include, silt fencing, straw bales, coir logs (i.e., straw waddles), or secured tarps. (BMP 2-11 Control of Side-Cast Material During Construction and Maintenance; BMP 2-13 Control of Construction; BMP 2-19 Disposal of Right of Way and Roadside Debris; BMP 2-15 Diversion of Flows around Construction Sites; BMP 2-18 Regulation of Borrow Areas).

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
IX. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?	☐	☐	☐	X
b)Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	X
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	X

Discussion of Checklist Questions

The proposed project would not change any land use allocation or conflict with any applicable habitat or natural community conservation plan. The 40-acre parcel, where the sewer ponds are located, have been managed as an administrative site, since their construction. The administrative use of this 40-acre parcel for the Eagle Lake Sewer Ponds is consistent with the Forest Plan goals to manage the Eagle Lake Recreation Area.

Impacts to grazing within the Papoose meadows wetland mitigation bank site are outside the scope of this current project. The Decision Notice (2007) for the South Eagle Lake Grazing Allotment changed the

availability to use Papoose Meadows for grazing

Mitigation Measures
No mitigation required

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
X. MINERAL RESOURCES: Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	X
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	X

Discussion of Checklist Questions

There are no known mineral resources of regional or state importance in the project area. The project does not contain any designated mineral resource recovery sites.

Mitigation Measures

No mitigation required

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XI. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	X
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	X	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	X
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	X	☐

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	X
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	X

Discussion of Checklist Questions

During construction there may be project-related noise, however this would be a temporary disturbance. The proposed project site is remote. Therefore, although project construction activities could be disruptive, the impact to noise is less than significant.

Mitigation Measures

The contract will require that OSHA protections are in place to protect the construction workers from excessive equipment noises. No other mitigation is required

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XII. POPULATION AND HOUSING: Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	X

Discussion of Checklist questions

The Project sites (Sewage treatment Ponds and Papoose Meadows) have never been designated for potential housing projects. Population and housing would not be impacted. There are no growth-inducing impacts associated with this project

Mitigation Measures

No mitigation is required

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XIII. PUBLIC SERVICES:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	☐	☐	☐	X
Fire protection?	☐	☐	☐	X
Police protection?	☐	☐	☐	X
Schools?	☐	☐	☐	X
Parks?	☐	☐	☐	X
Other public facilities?	☐	☐	☐	X

Discussion of Checklist Questions

Because of the project's remote location, construction activities would not interfere with police and fire access. The project would have no effect on schools or other public facilities, since none are located in the project area

Mitigation measures

No mitigation is required

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XIV. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	X	☐	☐

Discussion of Checklist Questions

The 40-acre parcel, where the sewer ponds are located, have been managed as an administrative site, since their construction. The administrative use of this 40-acre parcel for the Eagle Lake Sewer Ponds is consistent with the Forest Plan goals to manage the Eagle Lake Recreation Area. As previously discussed in this document the purpose of the Eagle lake sewage ponds project is to repair and upgrade the existing sewage facility that services the eagle lake recreation area. This project with its previously discussed mitigation measures will have a less than significant effect.

Mitigation Measures

No mitigation is required

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XV. TRANSPORTATION/TRAFFIC: Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☐	X
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	X
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	X
e) Result in inadequate emergency access?	☐	☐	☐	X
f) Result in inadequate parking capacity?	☐	☐	X	☐
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	X

Discussion of Checklist Questions

Transportation and traffic resources would not be impacted. Staging of the construction and timber harvesting equipment as well as personal vehicles would occur north of Primary Pond 2 and Evaporation Pond 1.

Mitigation Measures
No mitigation is required

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XVI. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	X	☐	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	X	☐	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	X
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	X	☐	☐
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	X	☐	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	X
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	X

Discussion of Checklist Questions

The project consists of repairing and upgrading an existing wastewater treatment facility. The purpose and need for this project is to bring the facility into conformance with the regulations of the Lahontan Regional Water Quality Control Board. The Eagle Lake Sewerage Pond Environmental Assessment addresses the effects of the proposed project. With the mitigations previously discussed there would be no significant environmental effects as a result of this project

Alternative 2, the No Action Alternative is an alternative which does nothing to address the existing liner failures nor does it address future needs. The impacts of the "No Action Alternative" are discussed on pages 31 through 59 of the EA.

Mitigation Measures for Alternatives 1, 3, 4 and 5

Previously noted in discussions above.

Mitigation Measures for Alternative 2

If the liners are not replaced the Forest Service would be in violation of the permit and the sewage treatment facility would be shut down by Lahontan. Attempts to simply make repairs would be a short term fix and would require intensive monitoring and inspections. Lahontan would not accept this option as a long term solution since the liners have exceeded their intended life.

If the facility is shut down, all sewage and fluids would have to be immediately pumped from the ponds and the piping system and removed from NFS lands. This would be a very large volume; most likely over 2.6 million gallons. Finding one collection facility that could receive this much material is unlikely. The length of haul to multiple facilities out of the local area would be cost prohibitive. The liners would have to be rinsed and disinfected and the residual materials removed from NFS lands and alternatives for collection of human waste would have to be established.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XVII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	X	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	X
c) Does the project have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	X

Discussion of Checklist Question a

The project, with the previously discussed mitigation measures incorporated, would not substantially impact the visual quality of the site, impair air or water quality, result in substantial soil erosion or loss of top soil, or impact biological or historic resources.

Discussion of Checklist Question b

The project would not contribute to any cumulative impacts since mitigation measures described in this document reduce impacts to a less-than-significant level

Discussion of Checklist Question c

The project would not have environmental effects that would cause adverse effects on human beings, either directly or indirectly

CEQA Appendix A
Revegetation Plan
Eagle Lake Sewage Ponds Project

Introduction

The EL Facility Project involves a 40-acre National Forest System parcel that is completely surrounded by private land. The 40-acre parcel is located approximately 20 miles northwest of Susanville, California and approximately 2 miles southwest of Eagle Lake on the Eagle Lake Ranger District of the Lassen NF. The project area is accessed via National Forest System Road (NFSR) 31N07 and located in T31N, R10E, Sec 21 of Lassen County

The Eagle Lake sewage ponds were lined in the 1980's and are beginning to deteriorate. The number of patches required to maintain functionality of the sewage treatment facility have increased considerably the past few years due to the age of the existing lining which has reached its life expectancy. Complete replacement of the liners is needed to prevent imminent large-scale failure of one or more of the ponds' linings..

The site clearing activities are needed to provide an area from which the borrow site could be established on NFS lands, and to make room for the expansion of the smaller evaporation pond. The available NFS lands are limited on the parcel. The 40-acre parcel is already highly developed by the existing sewage treatment facility, and using a borrow site adjacent to this facility would therefore restrict the disturbance caused by this project to a compact, contiguous area.

The Proposed Action is divided into phases which include site preparation, construction of a sludge drying bed, and then either pond expansion, pond reconstruction, or pond relining and finally site reclamation. . Land clearing activities that would require revegetation and soil stabilization post construction would include a borrow site, stockpile site, the perimeter of the sludge drying bed, and any temporary construction roads.

Where excavation is conducted for the construction of the borrow pit, sludge drying bed, stockpile site and new ponds the top soil would be removed and stockpiled. This material, if determined to be free of noxious weeds, would be re-spread over the sites to be revegetated.

Project Area

The natural environment of the project area consists of slopes that are generally less than 20 percent, with elevations ranging from approximately 5,393 feet to 5,420 feet. Uplands are covered by an eastside pine forest with very little understory. The uplands lead down to an altered seasonal wetland (Little Merrill Flats (Merrill) wetlands) and meadow, at the edge of which the existing Facility is located. The altered seasonal wetland and adjacent meadow occupies a basin nearly closed, except in its southeastern corner

where it is drained by Merrill Creek flowing northeast into Eagle Lake. Common wildlife species such as mule deer (*Odocoileus hemionus*), black bear (*Ursus americanus*), common raven (*Corvus corax*) and coyote (*Canis latrans*) inhabit the area. Water resources in this area consist of seasonal streams, seasonally saturated wetlands, and small depressional seasonal wetlands areas that are closely associated with seasonal runoff and that supports hydric soils and plant species of moist to wet, open flats.

As noted above the forested area is eastside pine with very little understory. Thinning would reduce stand density and encourage the growth of a more diverse understory. Due to the nature of the reclaimed soils the aim of this revegetation effort is to emphasize grasses and shrubs over trees. It is anticipated somenatural seeding of trees would occur.

Revegetation

Seed mixes and shrub species and associated planting methods would be determined by the Forest Service Botanist and/or Ecologist as noted below. The following plan also specifies monitoring. The plan address procedures to evaluate the success of revegetation efforts, including recommended remediative action should initial revegetation efforts prove unsuccessful in some areas.

If prior to revegetation activities, new noxious weed infestations are identified in the stockpiled topsoil, which cannot be eliminated through hand-pulling or tarping, topsoil infested with these weeds would not be respread into impacted areas of the project.

Post construction sites within the project would be revegetated with locally adapted native plants. These areas include the borrow site, the perimeter of the sludge drying bed, the stockpile site, the berms surrounding the new ponds, and the temporary construction roads. Upon completion of the construction the cleared areas would have organic material and rocks (not considered to be boulders) backfilled over them,the stockpiled topsoil would be respread in these areas . An initial survey would be conducted on each site to determine the suitability for revegetation. The percent of each area that is practicable for revegetaion in terms of exposed rock and depth of topsoil would be documented. Species to be planted would be determined at this time.

The areas to be revegetated would be covered at the time of revegetation with mulch, pine needles, or rice straw so that at least 50 percent of the soil would be covered. to reduce soil erosion and overland flow, and to maintain soil moisture. Fifty percent ground cover has been demonstrated to provide adequate cover for minimizing erosion, for allowing vegetative understory recovery and for minimizing fuel accumulation in thinning operations in the eastside pine ecotype. Mulch would be certified as weed-free. Tacifiers would not be used. Native grasses would be broadcast seeded at a rate of 20 poundss per acre. Shrub planting density (spacing) would be depend upon the species selected for planting.

The borrow site, stockpile site, and sludge drying bed perimeter would be seeded, with a variety of locally adapted native plants. These plants should provide food value to wildlife in the form of browse, fruits and seeds. Species selected for planting may include but not may not be limited to such plants as elderberry,

serviceberry, chokecherry, Scouler's willow, and native grasses. Any substitute locally-adapted plants would be similar or better than those listed plants at providing food value.

Newly constructed or reconstructed berms around the sewage ponds would be seeded with a mix of native grasses including but not limited to *Poa secunda*, one-sided bluegrass; *Elymus glaucus*, blue wild rye; and *Bromus carinatus*, California brome) to prevent wind and soil erosion. Any substitute locally-adapted plants would be similar or better than those listed plants at preventing wind and soil erosion

All temporary construction roads would be evaluated for possible scarification and , recontouring, and would be seeded, with a variety of locally adapted native plants and native grasses. Upon completion of the project areas that show signs of rutting would be scarified to a depth of 6 six inches. Scarified areas would be contoured and seeded with native vegetation.

Planting should be done in March-April (for disturbance that occurs during the winter and spring), and/or in October-November (for disturbance that occurs in the summer and fall) when there is sufficient soil moisture present.

Best Management Practices (BMPs) that would be implemented during the reclamation activities include:

- BMP 2-4 Stabilization of Slope Surfaces and Spoil Disposal Areas and

  Objective: To minimize erosion from exposed cut slopes, fill slopes, and spoil disposal areas.

- BMP 2-27 Restoration of Borrow Pits:

  Objective: To minimize sediment production from borrow pits and quarry sites.

- BMP 2-28 Surface Erosion Control at Facility Sites:

  Objective: Reduce the amount of surface erosion taking place on developed sites and the amount of soil entering project area wetlands and streams.

- BMP 5.4 Revegetation of Surface Disturbed Areas
  Objective: To protect water quality by minimizing soil erosion through the stabilizing influence of vegetation foliage and root network.

Monitoring:

Implementation monitoring would be in the form of documenting the extent of each area that was planted and/or seeded, the list of species used, the number of plants or pounds of seed used and the date of activity. The form of protection would also be documented.

A noxious weed survey would be conducted at the end of the growing season. If any new infestations are identified within the revegetated areas, the infestations would be evaluated, then dug up or pulled by hand.

Long term area monitoring plots would be established. Effectiveness monitoring would occur in years one, three and five. Year one would be used to establish a baseline. If monitoring indicates that revegetation has not provided the percent coverage desired, or plants have failed to establish, the affected area would be reseeded/planted as needed. At this time a determination would be made as to if a different species or method, or irrigation, is required. Also, it would be determined if sufficient interim cover exists to prevent soil erosion. If sufficent cover is not present additional weed-free mulch, pine needles, or rice straw would be re-applied.

Forensic monitoring would be conducted on the berm areas and temporary construction roads where the concern is soil stabilization. If signs of erosion and gullying are noted, the source would be documented. Additional weed-free mulch or rice straw would be re-applied unitl vegetation has established. Gravel or rip rap would be used if revegetation is not succesful.

Success Criteria

Revegetation success for the borrow site, stockpile and sludge drying bed perimeter would be measured in terms of an increasing trend of ground cover and forage density. The desired species diversity is a minimum of two different species present. Naturally seeded tree species would be included in this assessment.

Success for the berm areas and construction roads would be measured in terms of sufficient soil cover to ensure soil stabilization indicated by the absence of rilling and gullying.

CEQA Appendix B
Monitoring Plan
Eagle Lake Sewage Ponds Project

BMPs

For the timber harvest, monitoring of the site will be accomplished according to specifications and methods contained in the 2009 Lahontan timber waiver. For construction, all mitigation measures and IDFs described in the EA/IS and the Storm Water Construction Permit Storm Water Pollution Prevention Plan will be required to be implemented correctly in the construction contract. Compliance with mitigation measures, contract specifications and operating plans is ensured by the Forest Service Contracting Officer's Representative.

The EL Project site and the Papoose Meadows Wetland Restoration/Mitigation Bank site will be added to the LNF BMP pool of sites. Random sites are selected on an annual basis for onsite BMP evaluation. Onsite evaluations will be used to assess both BMP implementation and effectiveness. Implementation evaluations will determine the extent to which planned, prescribed and/or required water quality protection measures were implemented. Effectiveness evaluations will gauge the extent to which the practices met their water quality protection objectives. In 2008, 90% of the 77 random BMP evaluations conducted by Lassen National Forest watershed staff were rated as implemented and eighty-nine percent of the evaluations were rated as effective.

Botany Monitoring

<u>Special-status plants</u>

The project area was surveyed for the presence of Threatened or Endangered (TES) and Lassen National Forest Special Interst (SI) plant species, and suitable habitat. The site does not contain habitat for any Threatened or Endangered (TES) plant species. The Forest Special Interest plant species *Mimulus pygmaeus* is the only special-status plant that occurs in the project area. After project completion, in appropriate seasonal moisture conditions, Forest Service botanists will visit the site to assess the presence, vigor, and extent of *Mimulus pygmaeus.*

<u>Integrated Design Feature</u>

1. New occurrences of Threatened and Endangered Species (TES) plant species, discovered before or during ground-disturbing activities within the 14-acre thinning unit, would be protected through flag and avoid methods. Avoidance buffer widths would be based on the requirements of the TES species present [Phase I].

Upon discovery, the Contract Administrator will notify the Forest Botanist, who will at that time determine the appropriate buffer based on the species discovered and the activity occurring in proximity to the plant

Noxious weeds

The site is currently weed-free; therefore, discovery and treatment of new infestations are likely the only noxious weed concerns in this project. Forest botany staff will visit the site annually for five years to see if new weeds have arrived. Any new weeds found will, if possible, be treated by hand removal, tarping, or other cultural methods such as seeding with competitive native species. If these methods are not effective enough, a new NEPA process will be initiated to implement a more suitable method.

Revegetation monitoring

Implementation monitoring would be in the form of documenting the extent of each area that was planted and/or seeded, the list of species used, the number of plants or pounds of seed used and the date of activity. The form of protection would also be documented.

A noxious weed survey would be conducted at the end of the growing season. If any new infestations are identified within the revegetated areas, the infestations would be evaluated, then dug up or pulled by hand.

Long term area monitoring plots would be established. Effectiveness monitoring would occur in years one, three and five. Year one would be used to establish a baseline. If monitoring indicates that revegetation has not provided the percent coverage desired, or plants have failed to establish, the affected area would be reseeded/planted as needed. At this time a determination would be made as to if a different species or method, or irrigation, is required. Also, it would be determined if sufficient interim cover exists to prevent soil erosion. If sufficent cover is not present additional weed-free mulch, pine needles, or rice straw would be re-applied.

Forensic monitoring would be conducted on the berm areas and temporary construction roads where the concern is soil stabilization. If signs of erosion and gullying are noted, the source would be documented. Additional weed-free mulch or rice straw would be re-applied unitl vegetation has established. Gravel or rip rap would be used if revegetation is not succesful.

CEQA Appendix C
Wetlands Comparison
Eagle Lake Sewage Ponds Project

The proposed project area boundary for the Eagle Lake Sewage Ponds project includes 0.89 acres of depressional Little Merrill Flat wetlands located near the southern part of the National Forest System (NFS) land property boundary, Map 2. The area where the depressional wetlands are presently located may have been altered by the 1993 modifications to the sewage ponds, as described in Modification of the Eagle Lake Treatment Plant, 1993. According to the 1993 project plans, the current location of the wetlands was the site of the 1993 borrow pit source. Studies by Foothill Associates 2009 have since delineated the Forest Service portion the Little Merrill Flat wetlands as jurisdictional depressional seasonal wetlands

The Little Merrill Flat wetlands are comprised of 117 acres (99.9 percent of which are located on private land) of saturated seasonal wetlands and 0.89 acres of depressional seasonal wetlands (located on National Forest System land), Map 2. The Little Merrill Flat wetlands are located near the head waters of Merrill Creek. Merrill Creek is an intermittent stream, seasonally flowing for at least 90 days a year, and draining to Eagle Lake. Snowmelt provides the majority of the surface runoff, which is dispersed. Surface water and possibly emergent groundwater may flow from the wetlands to Eagle Lake via Merrill Creek during snowmelt runoff events, rain-on-snow events, and potentially during rain events when soils are highly saturated. The existing Eagle Lake Sewage ponds are located adjacent to the wetlands. Current studies have shown the sewage ponds are hydrologically disconnected from the wetlands and hence, from Eagle Lake (Foothill Associates, 2009).

On a local scale, construction activities under Alternative 1 would pose a high risk to the depressional Little Merrill Flat wetlands. There would be a long-term disturbance and loss of 0.77 acres of 0.89 acres of jurisdictional depressional Little Merrill Flat wetlands located in the Merrill Creek watershed (Foothill Associates, 2009). This long-term loss of wetland would result from the expansion of Evaporation Pond 3 and the addition of 28,000 cubic yards of fill into and over the wetland. The remaining 117 acres of Little Merrill Flat wetlands would be saturated seasonal wetlands that would provide a different kind of habitat as compared to depressional wetlands.

Papoose Meadow is a large 270-acre meadow located about 4.5 miles east of the Little Merrill Flat wetlands, Map 1. Restoration of Papoose Meadow would be used to mitigate construction activities in Alternative 1. Currently only 160 acres of the 270 acres are a seasonally flooded wet meadow and marsh system (Sanger, 2007). The restoration project would aim to restore Papoose Meadows to its pre-settlement hydrologic and vegetative condition, which would be 270 acres of wet meadow and marsh. This could result in the increase of 110 acres of wet meadow and marsh. For additional details refer to the project application to the Lassen Modoc Special Status Plant Fund (Sanger, 2007) (CEQA Appendix D)

Water resources in Papoose Meadows support the same faunal species as the delineated Little Merrill Flat wetlands. Additionally the Papoose Meadow wetlands support snail and clam species adapted to both seasonal and perennial waters and western toads (*Bufo boreas*). Through restoration of the Papoose Meadows wetlands, the warm water portion of the wetland would be expanded by expanding the habitat available to these species. Springs associated with Papoose meadows supports two endemic hydrobiid snails and an endemic *Vorticifex spp.* Snail. The spring habitat is not expected to be affected by the Papoose Meadows restoration.

The following tables and discussion summarize the comparison of the two wetland areas in terms of beneficial uses, biological species present, and soils

Table 1. Beneficial uses for Little Merrill Flat wetlands and Papoose Meadows Wetland Project.

	Little Merrill Flat Wetlands		**Papoose Meadows wetland**	
	Potential	Current in project area	Potential	Additional creation
Municipal and Domestic Water Supply	x	No current use	x	No current use
Agricultural Supply	x	Supports vegetation for range grazing, limited stock watering	x	Past support for range grazing and stock watering/ now not managed for this use
Groundwater Recharge	x	yes	x	Yes – increases with project
Freshwater Replenishment	x	no	x	Yes – decreases with project
Recreation (Contact and Non-Contact with Water)	x	Non-contact recreation	x	Non-contact recreation
Cold Freshwater Habitat	x	Does not support – warm water habitat	x	Supports- also supports warm water habitat
Wildlife Habitat	x	Currently supports	x	supports
Preservation of Biological Habitats of Special Significance	x	Non known	x	Several endemic snail species known/ Largest known Modoc Plateau Playa – helps restore historical extent of wetland
Rare, Threatened, or Endangered Species	x	Does not support	x	Greater sandhill crane habitat would be enhanced
Migration of Aquatic Organisms	x	Does not support		Does not support but potential to support Eagle Lake rainbow trout
Spawning, Reproduction, and Development	x	Supports Pacific Tree frogs	x	Supports Pacific Tree frogs and snails
Water Quality Enhancement	x	yes	x	Yes – increases with project
Flood Peak Attenuation/Flood Water Storage	x	yes	x	Yes – increases with project

Source: Hydrology Report

General Aquatics present: Water resources in the project area support common aquatic species adapted to seasonal waters such as chironomids, damselfly larvae, mayfly larvae and Pacific tree frogs (*Pseudacris regilla).*

Table 2 : Aquatics species analyzed for Little Merrill Flat and Papoose Meadow wetlands comparison

Species/habitat	NFS Land delineated wetlands in project area	Papoose Meadows Wetlands after restoration
Great Basin rams-horn (*Helisoma newberryi newberryi*)	Not present	Not present
montane peaclam (*Pisidium ultramontanum*)	Not present	Not present
Eagle Lake rainbow trout (*Oncorhynchus mykiss aquilarum*)	Not present	Not present
Wet meadow - Pacific tree frog *Pseudacris regilla*	present	present

Source: Aquatics Report

Water resources in the proposed mitigation site support the same species as the delineated wetlands. Additionally these wetlands support snail and clam species adapted to both seasonal and perennial waters and western toads (*Bufo boreas*). The warm water portion of the wetland would be expanded, expanding the habitat available to these species. Springs associated with Papoose meadows supports two endemic hydrobiid snails and an endemic *Vorticifex spp.* snail. The spring habitat is not expected to be affected by meadow restoration.

General terrestrial wildlife present: Water resources in the proposed mitigation site support some of the same species as the delineated wetlands (pallid bat *(Antrozous pallidus)* and northern goshawk *(Accipiter gentilis)*. Additionally the proposed mitigation site wetlands support avian and mammalian species adapted to both seasonal and perennial waters (greater sandhill crane *(Grus canadensis tabida)*, northern bald eagle *(Haliaeetus leucocephalus)*, Townsend's big-eared bat *(Corynorhinus townsendii)*, and the western Red Bat (*Lasiurus blossevillii*).

Table 3. Terrestrial species analyzed for project wetland comparison

Species/habitat	NFS Land delineated wetlands in project area	Papoose Meadows Wetlands after restoration
Greater sandhill crane *(Grus canadensis tabida)*	Not Present	Present
Pallid bat *(Antrozous pallidus)*	Present	Present
Northern bald eagle *(Haliaeetus leucocephalus)*	Not Present	Present
Northern goshawk *(Accipiter gentilis)*	Present	Present
Townsend's big-eared bat *(Corynorhinus townsendii)*	Not Present	Present
Western red bat (*Lasiurus blossevillii*)	Not Present	Present

Source: Wildlife Biologist

General plant life present: Water resources in the proposed mitigation site support some of the same species as the delineated wetlands, particularly the rush Juncus balticus (referred to in some accounts as Juncus mexicanus) and spikerush (Eleocharis sp.) Both plants are characteristic of sites with some degree of seasonal saturation. In general, however, Papoose Meadows is a much larger system than Little Merrill Flat, with deeper, more extensive and more persistent inundation. Two Forest Service Special Interest species, sweet marsh ragwort (Senecio hydrophiloides) and lesser bladderwort (Utricularia minor), are found in a very wet part of Papoose Meadows, near the head of Papoose Creek. One Forest Service Special Interest species, Egg Lake monkeyflower (Mimulus pygmaeus), is found on relatively early-drying soil along the edges of the Eagle Lake sewage facility and probably elsewhere in the private portion of the wetlands at Little Merrill Flat. None of these species have any further protection status with the federal government or with the state of California.

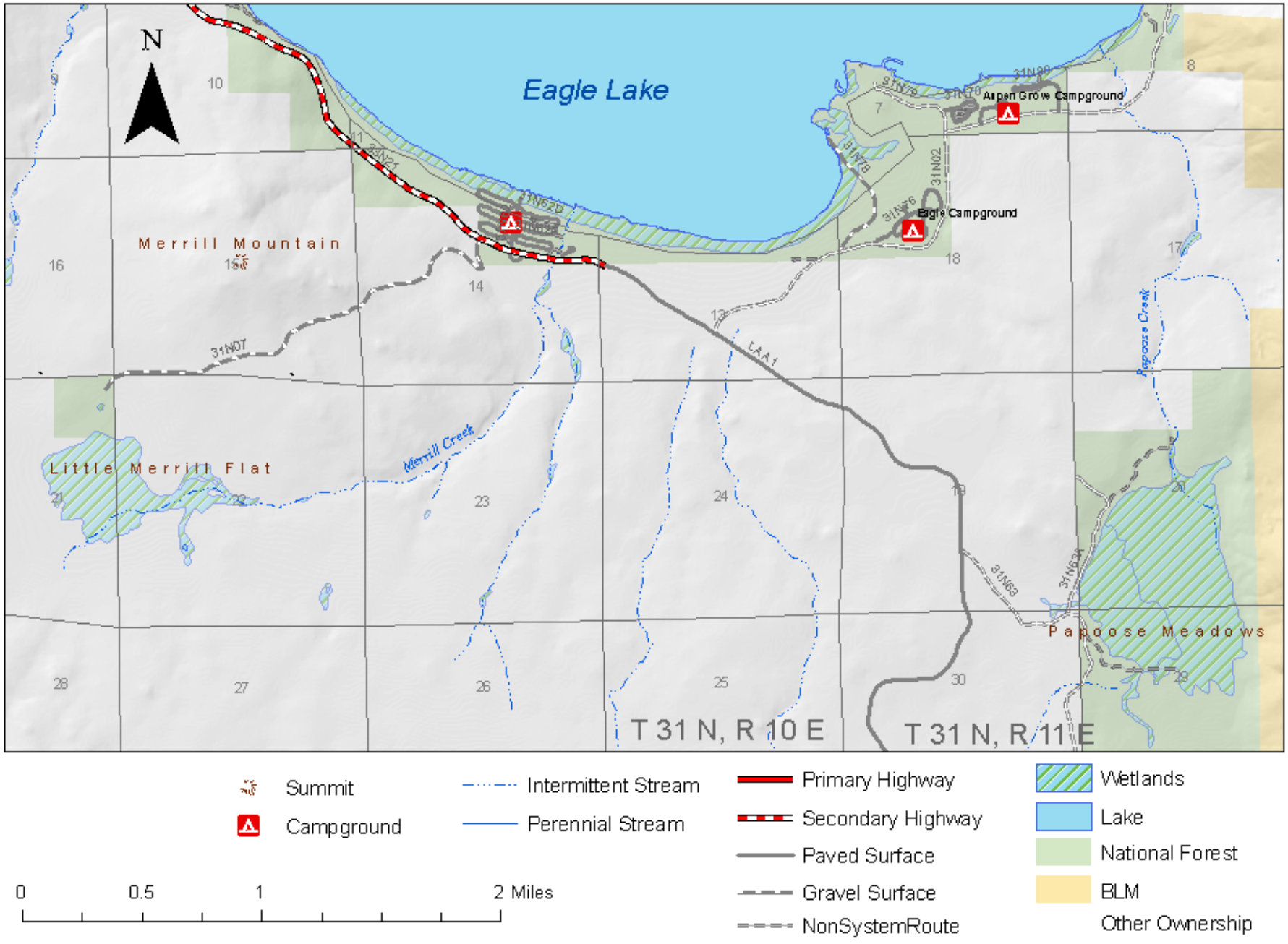
Table 4. Plant species analyzed for project wetland comparison

Species/habitat	NFS Land delineated wetlands in project area	Papoose Meadows Wetlands after restoration
Egg Lake monkeyflower *(Mimulus pygmaeus)*	Present	Not Present
Sweet marsh ragwort *(Senecio hydrophiloides)*	Not Present	Present
Lesser bladderwort *(Utricularia minor)*	Not Present	Present

Source: Forest Botanist

Soils: The soils of Little Merrill and Papoose Meadows are nearly identical with both areas having soils characterized by the Aquoll family. The surface horizon of Aquolls are characterized by loam and silt loam textures with granular and blocky structures. Underlying the surface layer are blocky and massive soil structures, often composed of a near-impermeable silt- or fragi-pans, resulting in very slow rates of water permeability and, consequently, extended periods of ponding on the soil surface. This diagnostic feature also results in restricted root growth to near-surface depths. Parent materials of these soils are quaternary volcanic rocks derived from flow basalts and andesites, making them high in base cations and exchangeable phosphorus

Map 1: Vicinity Map of Eagle Lake, Little Merrill Flat wetlands, and Papoose Meadows.



Papoose Meadows Restoration Project
Eagle Lake Ranger District
Lassen National Forest

Applicant and Contact Information:

Applicant Name: Lassen National Forest with cooperation from Colorado State University, Fort Collins

Type of organization: U.S. Forest Service

Address: Lassen National Forest
Supervisor's Office
2550 riverside Drive
Susanville, CA 96130
(530) 252-6662 or 257-2151
(530) 252-6428 (fax)

Contact person(s): Allison Sanger, Forest Botanist, Lassen National Forest
asanger@fs.fed.us

Tax Identification number: N/A

Project Information:

Project Title: *Papoose Meadows Restoration Project*

Requested amount: $72,215 **TOTAL project cost:** $98,215

Project duration: August 2007 to August 2009

Project summary: Papoose Meadows is a large 270 acre meadow located south of Eagle Lake in Lassen County (Map 1). At present, approximately 160 acres are a seasonally flooded wet meadow and marsh system. Historically this wetland complex was ditched to dry it out to improve hay production for livestock. The project objective is to assess the restoration potential of the meadow and them implement a restoration plan to restore Papoose Meadows to its pre-settlement hydrologic and vegetation condition.

Project Description:

Project Summary and Background Information:

Papoose Meadows is a 270 acre meadow located south of Eagle Lake in Lassen County (Map 1). At present, approximately 160 acres are a seasonally flooded wet meadow and marsh system. Historically this wetland complex was ditched to dry it out to improve hay production for livestock. This wetland provides habitat for the rare plant species *Senecio hydrophiloides* and *Utricularia minor*, though a complete floristic inventory of this unique area has not been conducted and other significant species could be present. In addition, recent surveys in the meadow have also discovered an undescribed species of spring snail.

Systematic archaeological and historic research on Papoose Meadows is limited, but available information indicates the area has attracted human habitation for at least the last

several millennia. Archaeological sites recorded within the meadow and at its margins suggest seasonal use of meadow resources by prehistoric aboriginal populations. A proliferation of groundstone artifacts at several sites demonstrates that prehistoric resource extraction was focused on plant foods endemic to the meadow itself (probably epos, *Perideridia* sp.), which figures prominently in ethnographic accounts of plant processing at the meadow). One archaeological site contains rock rings indicative of long term habitation or consistent seasonal use of the area over a period of time.

Ethnographically, Papoose Meadows falls within the ancestral territories of both the Maidu and the Northern Paiute, although it is unlikely that either group established permanent villages in the immediate area. Papoose Meadows and neighboring Eagle Lake were most likely used as seasonal hunting and plant gathering locations by several tribes with no firm territorial boundary attributable to one or the other. It is certain, however, from both the ethnographic and archaeological records that Papoose Meadows provided prehistoric people with needed resources, minimally on a recurring seasonal basis.

Recent history mentions several tribes camping at the meadow for short durations or simply traveling through the area, but Northern Paiute remain the most historically linked to meadow. In 1866, a small group of Native Americans camped at Papoose Meadows was attacked by Euro-Americans from the nearby town of Susanville. Euro-American and Native accounts of the tragedy differ, but it is clear that several Native Americans were killed and at least one, whose Northern Paiute descendants still live in Susanville today, survived by evading the attackers. Though a minor incident in the period of intense Indian-white conflict in northeastern California between 1848 and 1880, the “Papoose Meadows Massacre”, as it is known today, figures significantly in the local traditions of contemporary Indians and whites in Honey Lake Valley (Budy 1982). Local lore additionally has it that the meadow was named for another potential survivor of the massacre: a baby found cradled in a papoose.

During the latter part of the 19th century, Papoose Meadows was increasingly utilized by Euro-American settlers who effectively pushed out the Native Americans. The meadow was homesteaded in 1873, and multiple structures were built around the meadow. It was used as a dairy operation until it was sold in December of 1886. At some point, prior to 1941 (Figure 1), at least two ditches were constructed into the meadow to channelize the water, most likely to increase the available forage in the meadow for livestock grazing (Map 1). A variety of structures and corrals still exist adjacent to the meadow. Historic archaeological sites in and around the meadow also show a significant Basque presence probably around the turn of the century. In addition, remnants of the Susanville-Eagle Lake road can be seen just northwest of the meadows.

The meadow system is maintained by a set of large springs that discharge from the natural lava outcrop on the eastern edge of the wetland. At least two of the springs were channelized to flow north out of the wetland into Papoose Creek, preventing water depths from reaching historic levels and reducing the area of meadow that is wetted each year.

The wetland was grazed nearly continually since it was homesteaded, and in recent years approximately 70 cow/calf pairs used the wetland annually during the summer and fall seasons. In addition to impacts from grazing, there were significant impacts from trailing as cattle moved back and forth to the springs, which was the primary water source in the allotment. In 2006 Papoose Meadows was closed to grazing. To completely return it to a proper functioning condition the ditches must be filled and the wetland returned to its original hydrologic condition, and vegetation.

Objectives:
The project objective is to restore Papoose Meadows to its pre-settlement hydrologic and vegetation condition. The project tasks would include: (1) assess the impacts of the ditches on the area of wetland, the water level, and vegetation, (2) determine the restoration potential, (3) design and implement the restoration, and (4) implement a post restoration monitoring plan to assess the effectiveness of the restoration. Historically the meadow included 270 acres of wetland. Today approximately 160 acres are wetland, and this project could realize a total net wetland gain of 110 wetland acres (Figure 2).

Description:
This project will characterize the current condition of Papoose Meadows, design the restoration project, work with Forest Service staff to implement the restoration, and provide post-restoration monitoring to quantify the changes.

Scope of Work;
(1) Assess the impacts of the ditches on the area of wetland, the water level, and vegetation. Historic ground and air photos would be analyzed to determine the current and historic area of the wetland. This analysis would provide a project goal for area of wetland that could be restored. Based upon a cursory analysis of the site, between 30 and 110 acres could be restored (Figure 2). We would also analyze the soil seed bank to determine whether viable seeds of desirable wetland plants occur in the currently drained areas of the former wetland. Seed bank analysis involves collecting soils from drained areas that we suspect were part of the wetland. These soils are spread on trays in a greenhouse and watered to mimic wetland conditions. Then we identify the species that germinate and compare them with the modern vegetation. The seeds of many wetland species can survive a century or more in the soil, and germinate when hydrologic conditions are suitable. If desirable wetland plant seeds are present in the drained areas, then a rapid recovery of the sites vegetation at the site can be anticipated. If not, some transplanting of desirable species from intact parts of the wetland may be necessary.

(2) Determine the site restoration potential. The site restoration potential would be determined using topographic surveying, the results of the soil seed bank analysis, and the air photograph mapping. We would determine the elevation that water would pool once the ditches are blocked and filled. This elevation would be mapped through the wetland basin to determine the final wetland size. This increase in pool area would also increase the water depth in the interior of the basin, and could cause shifts in the zonation of vegetation. We would analyze and map site plant communities and measure water depth in these communities during the summer prior to ditch filling. A gradient analysis would be created which would indicate the distribution of communities along a water table depth gradient. This gradient analysis would be used, along with a future water depth map of the basin, to predict where each plant community would establish in the post-restoration years.

(3) Design and implement the restoration. Ditches would be mapped, their depth and cross sectional area measured and the fill stored adjacent to the ditches calculated (Figures 3-7). These data would give us an estimate of the volume of fill needed to completely fill the ditches, and the volume of material stored on site from the period when the ditches were excavated. Due to erosion during the past several decades, it is unlikely that all of the material excavated to construct the ditches is still in place. Hence Lassen NF staff would either have to import fill to completely fill the ditches, or just plug the ditch in a number of places. It is most desirable to completely fill the ditches, because that will completely and finally restore the meadow. We will work with Forest Service staff to plan a temporary path for vehicles to bring the necessary fill into the site in late summer when water levels are at the annual low. The fill would be carried

onto the stockpiled fill along the ditch margins by a front end loader. When the necessary fill is in place, a loader or track hoe would push the stockpiled material into the ditch progressing from south to north. The project design would identify the volume of fill needed

(4) Implement a post restoration monitoring plan to assess the effectiveness of the restoration. A post restoration monitoring program would be implemented. This plan would include staff gauges to measure water depth in the basin. Long-term plots would be established to measure water levels, vegetation establishment, and stability of the ditch restoration. In addition, the US Forest Service meadow monitoring program conducted by David Weixelman has two existing plots within Papoose Meadows that we will use to develop a long-term data set on past composition. Aspen monitoring transects have also been conducted along the southeastern shore by the Eagle Lake Ranger District Ecologist, Bobette Jones. Monitoring will continue throughout the project to determine the effects of the restoration process on this species as well. Annual progress reports and a final monitoring report will also be developed and provided throughout project implementation.

The Lassen National Forest will contribute time to assist with the collection of vegetation data, project coordination, and consultation with local tribes, as well as NEPA documentation time and development. In addition, long-term plot monitoring (Weixelman), aspen monitoring, as well as permit administration activities are also contributed funds. Total contributed fund from the Lassen National Forest total approximately $21,000.

In addition, Dr. David Cooper will contribute matching funds for Section 404 Permit compliance with the U. S. Army Corp of Engineers. Total contribution could provide a match of approximately $5,000.

Task Number	Task Identification	Projected Start and End Dates
1	Assess the impacts	August-October 2007
2	Determine restoration potential	October-December 2007
3	Design and implement the restoration	April-September 2008
4	Implement a post restoration monitoring	August 2008-August 2009

Key Personnel:

Allison Sanger, Forest Botanist, Project Manager, budget and grant coordinator, Forest Service Liaison.

Dr. David Cooper Senior Research Scientist, Department of Forest, Rangeland and Watershed Stewardship, Colorado State University, Fort Collins, Colorado. Technical lead for pre-restoration site analysis, restoration design, restoration implementation and post-restoration monitoring and report writing.

Evan Wolf, M.S. Research Assistant, Department of Forest, Rangeland and Watershed Stewardship, Colorado State University, Fort Collins, Colorado. Works with Cooper on all technical aspects of the restoration data collection, implementation, and analysis.

Grary Helpinstine, Road Maintenance Supervisor, Lassen NF, LNF Road crew supervision for ditch work.

Terrie Veliotes, Civil Engineer Tech, Lassen NF, Implementation advisor for ditch work.

Chris O'Brien, Forest Archeologist, Tribal Consultation and Liaison, Archeology mitigation.

References:

Budy, E. (1982) The Papoose Meadows Massacre: Comparative Analysis of Indian and White Narrative Reconstruction of the Past. Paper presented at the 18th Great Basin Anthropological Conference. Reno, Nevada.

Appendix A: Budget

Table 1: Proposed Budget, Papoose Meadows Restoration Project:

Cost Categories	Amount
Personnel	
Cooper	$11,500
Wolf	$14,000
Lassen Archaeologist	$2,000
Tribal Minitor	$2,000
Road Crew for implementation	$12,000
Subtotal Personnel	**$41,500**
Direct Expenses (Table 2)	
Equipment (truck rental, trackhoe)	$11,440
Supplies (fill material, wood for stabilization)	$19,275
Subtotal Direct	**$30,715**
Subtotal Personnel and Direct	**$70,215**
Overhead (if applicable)	$ N/A
Contributions	
Long-term meadow and aspen monitoring, NEPA document, permit administration	~$21,000
Section 404-Permit- Cooper	$~5,000
Total Project Costs	**$98,215**
Total Requested	**$72,215**

Table 2: Direct Expenses

Supply and Equipment Costs	Amount
Top Soil- Fill @ $25 yard and transportation from Susanville	$16,275
Other supplies (wood etc..)	$3,000
Supply Total	**$19,275**
Truck Loader @ $6,600 month	$6,000
Belly Dump @ $640/month and $1.60/mile @ 660 miles	$1,370
Dump Truck @ $750/month, $1.85/mile for 660 miles	$1,600
Excavator @$1,508/month, $21.5 hour for 80 hrs	$2,470
Equipment Costs	**$11,440**
Total Requested	**$30,715**

Costs estimated for two weeks of work and 30 miles round trip

Map 1: Papoose Meadows Project Area with ditch locations

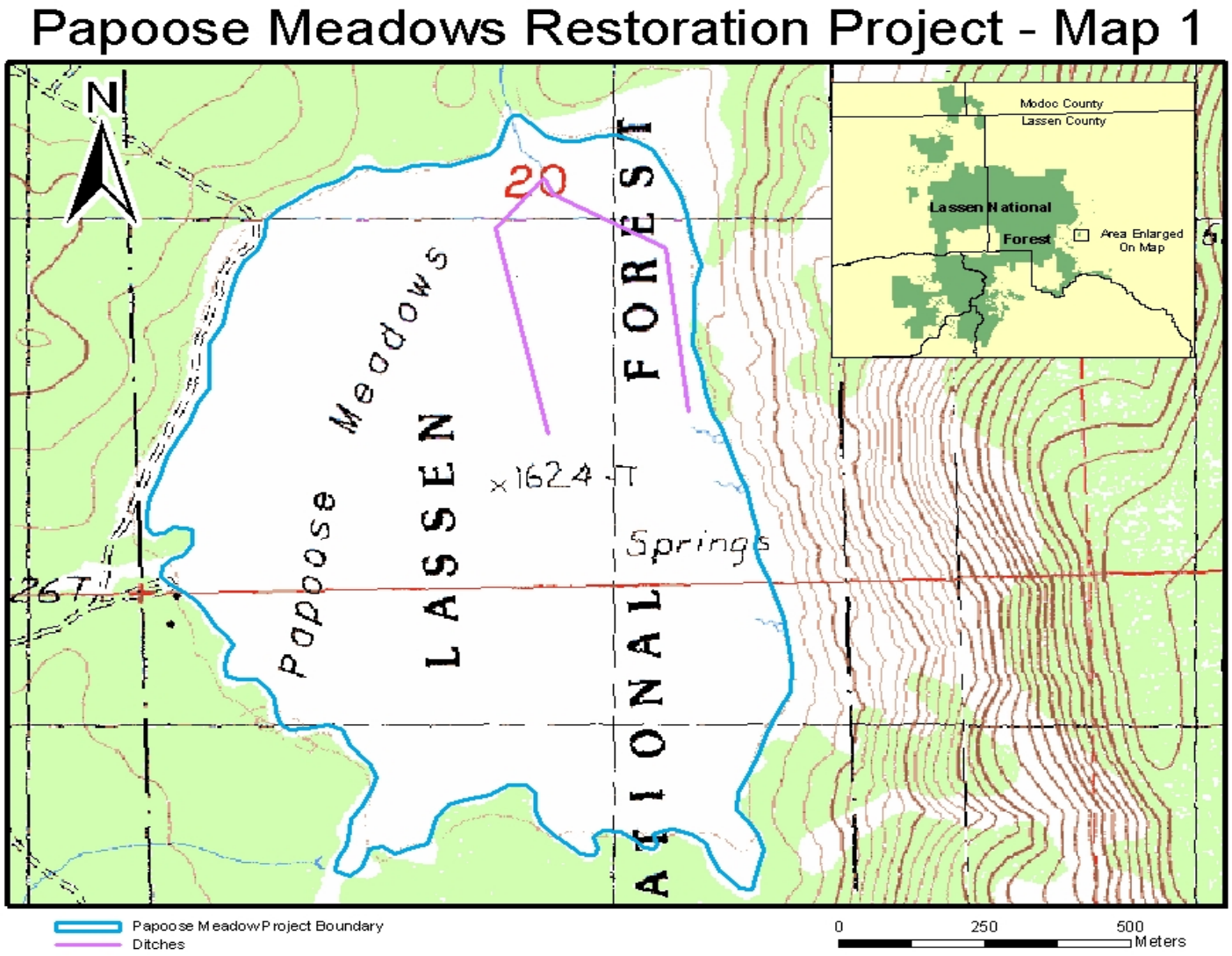


Figure 1: 1941 historic photo of Papoose Meadows showing wetland area.

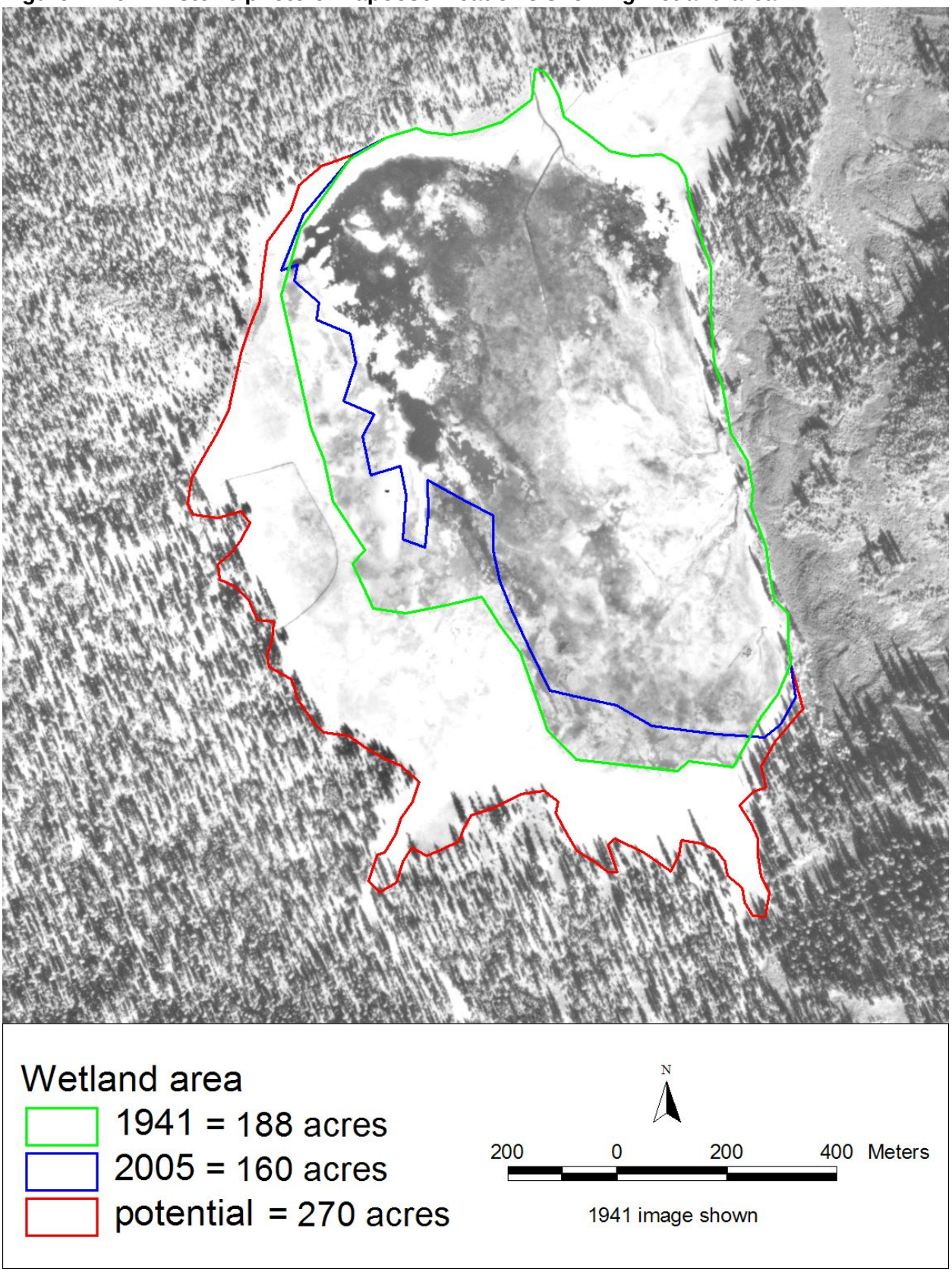


Figure 2: Papoose Meadows, showing current wetland area.

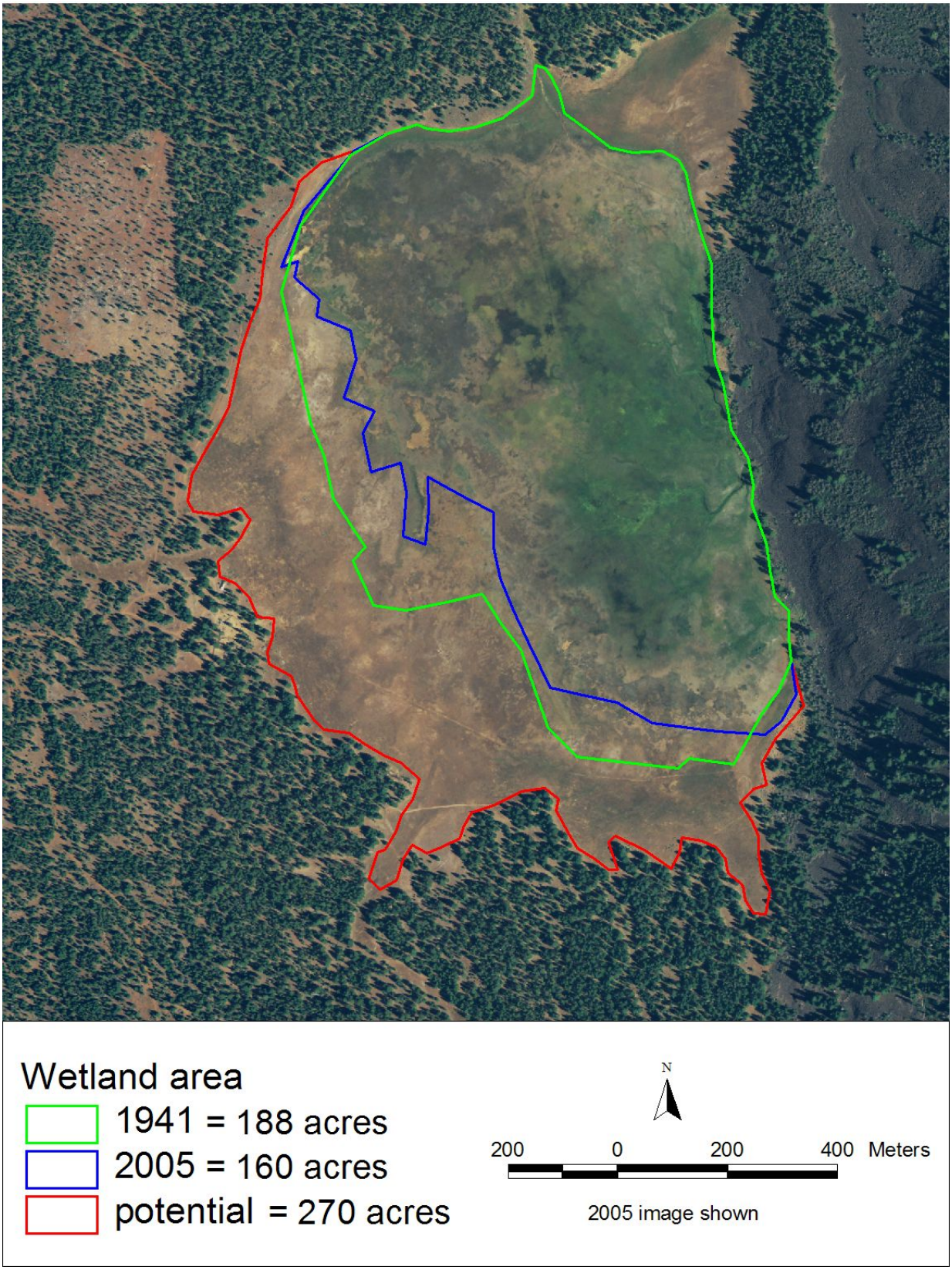


Figure 3: Papoose Meadows at the confluence of both ditches.

Figure 4: Eastern ditch going north toward Papoose Creek, depth ~45 inches.

Figure 5: Eastern ditch looking southeast, depth ~45 inches.

Figure 6: Eastern ditch running parallel to lava, depth ~45-68 inches.

Figure 7: Ditch running north from spring, Depth ~65 inches.

Attachments:

- Support Letter from Dr. David Cooper, Colorado State University, Fort Collins
- *Curriculum Vita*, Dr. David Cooper, Senior research Scientist, Colorado State University

Colorado State University

Department of Forest, Rangeland and Watershed Stewardship
Fort Collins, Colorado 80523
Tel: 970 491-5430
Fax: 970-491-6307

14 May 2007

Allison Sanger
Botanist, Lassen National Forest,
Susanville, California

RE: Papoose Meadow

Dear Allison,

I am very interested in working with you and Lassen National Forest to develop, implement and monitor a restoration plan for Papoose Meadow. This is an extraordinary site, certainly the largest marsh complex we have seen in the mountains of California, and an important site to restore. The ditches that were dug to drain the site could be filled resulting in the restoration of more than 100 acres of high quality wetland.

The proposal you will submit for this work contains ideas and a work plan that I developed in cooperation with you, and it represents an excellent approach for restoration. The budget within the proposal is suitable for our work to assist you.

Sincerely,

David J. Cooper, Ph.D.
Senior Research Scientist
Room 209 Forestry Building
DavidC@cnr.colostate.edu

DAVID JONATHAN COOPER
(*Curriculum Vitae – April 2007)*

EDUCATION

Ph.D. University of Colorado, May 1983. Biology.
B.A. University of Colorado, May 1975. Environmental Biology

EXPERTISE

Wetland and riparian ecosystems studies, wetland restoration, wetland flora and vegetation, wetland hydrology-vegetation interactions

CURRENT POSITIONS

2003-present. Senior Research Scientist, Department of Forest, Rangeland and Watershed Stewardship, Colorado State University, Fort Collins, Colorado 80523. Phone: (970) 491-5430 *DavidC@cnr.colostate.edu*

1996-present. Advising Faculty, Graduate Degree Program in Ecology, Colorado State University, Fort Collins, Colorado 80523.

CURRENT AND RECENT RESEARCH PROJECTS

2007. Design and implement long-term wetland monitoring program for US National Parks in the Sierra Nevada, California. Funded by National Park Service.

2006. Analysis of hydrologic regime and vegetation in Tuolumne Meadow wetlands in Yosemite National Park, California. Funded by Yosemite National Park.

2006. Wetland analysis and restoration planning for Rodeo Lagoon, Golden Gate National Recreation Area, Sausalito, CA. Funded by National Park Service and Golden Gate Conservation Fund.

2006. Restoration plan development for the Flagg Ranch floodplain of the Snake River, Grand Teton National Park, WY. Funded by National Park Service.

2006. Develop protocol and implement long-term monitoring program for Rocky Mt. National Park, Colorado. US National Park Service, Inventory & Monitoring Program, $130,000.

2005. Analysis, development and implementation of a restoration plan for Halstead Meadows, Sequoia National Park, California. Funded by Sequoia National park.

2005. Regional Assessment of Fen Distribution, Condition, and Restoration Needs, San Juan Mountains. Funded by US EPA.

2005. Characterization and classification of bofedales (peatlands) in the northern Andes, Cajamarca, Peru. Baseline study of alpine ecosystems funded by Yanacocha and Newmont Mining Co..

2005. Developing Concepts for Riparian Habitat and Stream Restoration in western National Parks, Canyon de Chelly National Monument. Funded by US National Park Service.

2004. Effects of Flaming Gorge Dam on riparian forests in Dinosaur National Monument. Funded by US Bureau of Reclamation.

2005. Developing a restoration plan for Yosemite Valley, Yosemite National Park, California. Funded by Yosemite National Park.

2004. Influence of livestock grazing on the sustainability of wetlands in the South Sierra Nevada range, California. Funded by Inyo National Forest.

2004. Effects of ground water pumping on wetlands in Crane Flat, Yosemite National Park, California. Yosemite National Park.

2003. Biodiversity in the fens of Yellowstone National Park. Funded by the Canon Foundation, Yellowstone Park Foundation, and Yellowstone National Park.

2003. Characterization and classification of fens in the Sierra Nevada and Cascade Ranges of California. U.S. Forest Service, Region 5.

2001. Willow persistence in Yellowstone National Park: interactive effects of climate, hydrology and herbivory. Funded by National Park Service.

RECENT PEER REVIEW PUBLICATIONS

Wolf, E. C., D.J. Cooper, N.T. Hobbs. **2007.** Beaver, streamflow and elk influence willow establishment and floodplain stability on Yellowstone's northern range. *Ecological Applications.* In press.

DeWine, J. and D.J. Cooper. **2007.** The effect of river regulation on native riparian forest in canyons of the upper Colorado River basin, USA. *Wetlands*. In Press. Patterson, L.S., D.J. Cooper. **2007.** On-site and off-site hydrologic regimes influence mountain fen restoration, Cascade Range, California. *Wetlands*, In press.

Northcott, K., D.C. Andersen, D.J. Cooper. **2007.** The influence of river regulation and land use on floodplain forest regeneration in the semi-arid Upper Colorado River Basin, USA. *Regulated Rivers*. In press.

Wohl, E., D.J. Cooper, L. Poff, F. Rahel, D. Staley, D. Winters. **2007.** Assessment of Stream Ecosystem Function and Sensitivity in the Bighorn National Forest, Wyoming. *Environmental Management.* In Press.

Andersen, D., D. J. Cooper, K. Northcott. **2007.** Dams, Floodplain Land Use, and Riparian Forest Conservation in the Semi-Arid Upper Colorado River Basin, USA *Environmental Management*. In Press.

Willard, B. E., D J. Cooper, B.C. Forbes. **2007.** Natural regeneration of alpine tundra vegetation after human trampling: a 42-year data set from Rocky Mountain National Park, Colorado, U.S.A. *Arctic, Antarctic and Alpine Research* 39: .

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COOPER, D., J. Sanderson, D. Stannard, D. Groeneveld. **2006.** Effects of long-term water table drawdown on evapotranspiration and vegetation in an arid region phreatophyte community. *Journal of Hydrology* **325**: 21-34.

Woods, S. W. and D. J. COOPER. 2005. Hydrologic Factors Affecting Willow Seedling Establishment along a Subalpine Stream, Colorado, USA. *Arctic, Antarctic and Alpine Research* 37: 636-643.

Gage, E. A. & COOPER, D.J. 2005. Patterns and processes of Salix seed dispersal in a browsed environment. *Canadian Journal of Botany* 83: 678-687.

Williams, C.A. and D.J. COOPER. 2005. Mechanisms of riparian cottonwood decline along regulated rivers. *Ecosystems* 12: 382-395.

Chimner, R.A, and COOPER, D.J. 2004. Water sources utilized by native shrubs in an intermountain basin. *Plant and Soil* 260:225-236.

Gage, E. A. & COOPER, D. J. 2004. Constraints on willow seedling establishment in a Rocky Mountain montane riparian floodplain. *Wetlands* 24:908-911.

Arp, C.D. and COOPER, D. J. 2004. Analysis of sediment retention in western riverine wetlands: the Yampa River watershed, Colorado. *Environmental Management* 33:318-330.

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Chimner, R.A. and, D.J. COOPER. 2003. Carbon balances of pristine and hydrologically modified southern Rocky Mountain fens. *Canadian Journal of Botany* 81:477-491.

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Chimner, R. A. and D.J. COOPER. 2003. Influence of water table levels on CO2 emissions in a Colorado subalpine fen: an in situ microcosm study. *Soil Biology and Biochemistry* 35:345-351.

Wurster, F.C., D.J. COOPER, and W.E. Sanford. 2003. Stream/aquifer interactions at Great Sand Dunes National Monument, Colorado: Influences on interdunal wetland disappearance. *Journal of Hydrology* 271:77-100.

COOPER, D.J., D. D'Amico and M.L. Scott. 2003. Physiological and morphological response patterns of *Populus deltoides* to alluvial groundwater pumping. *Environmental Management* 31:215-226.

HONORS - AWARDS

2004 – National Park Service, Intermountain Regional Director's Award for research to support natural resource management.

2004 – National Park Service, Great Sand Dunes National Monument, Special Achievement Award.

2004 – National Park Service, Water Resources Division, Certification of Appreciation.

2004 – Office of Surface Mining, 2004 Abandoned Mine Reclamation People's choice award for restoration of the Snake River Gravel Pit, Grand Teton National Park, Wyoming.

1993 - Colorado Conservation Award. The Nature Conservancy.

1989 - Outstanding Achievement Award. EPA Region VIII.

CURRENT SCIENCE PANELS/COMMITTEES

U.S. Army Corps of Engineers, National Technical Committee for Hydrophytic Vegetation.

U.S. Army Corps of Engineers, Panel to develop a regional wetland delineation manual

for the western mountain and intermountain region of the US.

National Park Service, Rocky Mountain Network National Parks, Inventory and Monitoring Program, Science Advisory Panel

National Park Service, Sierra Network National Parks, Inventory and Monitoring Program, Science Advisor for Meadow Monitoring

RECENT EXPERT WITNESS ACTIVITIES AND TESTIMONY

2007. Expert for US Department of Justice and National Park Service. Effects of the Grand Ditch breach on wetlands of the Colorado River in Rocky Mt. National Park.

2006. Expert for State of Colorado and Rio Grande Water Conservation District. District Court, Water Division No. 3, Alamosa, CO on rules governing new withdrawals of ground water in the San Luis Valley Case No. 2004 CW 24. Decision won by State of Colorado. http://www.courts.state.co.us/supct/watercourts/wat-div3/water3index.htm

2003. The Nature Conservancy, Idaho, to evaluate their monitoring program for ground water and surface water protection, Silver Creek Preserve, Sun Valley, Idaho.

2001. EarthJustice Legal Defense Fund, Pikes Peak road erosion and wetland impacts.

2001. Snowmass Capitol Caucus, Snowmass, Colorado, determining the impacts of winter snowmaking water diversions, on floodplain ecosystems.

2001-2005. Friends of Mount Hood, Oregon a consortium of environmental groups analyzing the effects of Mount Hood Meadows ski area on wetlands on Mt. Hood.

1998-2005. EPA and Department of Justice providing analysis of impact to wetland from ski area and golf course development at Telluride Ski area, Colorado.

1993. Testimony before the US Senate subcommittee on Clean Water, Fisheries and Wildlife, Washington, D.C. regarding the functions and values of wetlands in the western US. This testimony was part of the last hearing on the reauthorization of the Clean Water Act. 15 September.

1991. Testimony before the US Senate subcommittee on Environmental Protection, Washington, D.C. on Federal Manual For Identification and Delineation of Jurisdictional Wetlands.

1991. State of Colorado, United States of America (DOJ), and Rio Grande Water Conservation District; On the application of American Water Development, Inc. (AWDI) for water rights in the San Luis Valley, Colorado. November 1991. Testify in Colorado water court.

1988. Holy Cross Wilderness Defense Fund. Testimony in US District Court, and Eagle County, Colorado hearings. 1988. Homestake II Water Project.

CEQA APPENDIX E

BEST MANAGEMENT PRACTICES (BMPS)

USDA Forest Service. 2000. Water Quality Management for Forest System Lands in California: Best Management Practices. USDA Forest Service, Pacific Southwest Region. 138p.

SITE PREPARATION:

- BMP 1.1 Timber Sale Planning Process
  Objective: To incorporate water quality and hydrologic considerations into the timber sale planning process.
- BMP 1.2 Timber Harvest Unit Design
  Objective: To ensure that timber harvest unit design will secure favorable conditions of water quality and quantity while maintaining desirable stream channel characteristics and watershed conditions. The design should consider the size and distribution of natural structures (snag and down logs) as a means of preventing erosion and sedimentation.
- BMP 1.3 Determination of Surface Erosion Hazard for Timber Harvest Unit Design
  Objective: To identify high erosion hazard areas in order to adjust treatment measures to prevent downstream water quality degradation.
- BMP 1.4 Use of Sale Area Maps (SAM) and/or Project Maps for Designation Water Quality Protection Needs.
  Objective: To ensure recognition and protection of areas related to water quality protection delineated on a SAM or Project Map.
- BMP 1.8 Streamside Management Zone Designation
  Objective: To designate a zone along riparian areas, streams and wetlands that will minimize potential for adverse effects from adjacent management activities. Management activities within these zones are designed to improve riparian values.
- BMP 1.10 Tractor Skidding Design
  Objective: By designing skidding patterns to best fit the terrain, the volume, velocity, concentration and direction of runoff, water can be controlled in a manner that will minimize erosion and sedimentation.
- BMP 1.12 Log Landing Location
  Objective: To locate new landings or reuse old landings in such a way as to avoid watershed impacts and associated water quality degradation
- BMP 1.13 Erosion Prevention and Control Measures During Timber Sale Operations
  Objectives: To ensure that the purchasers operations will be conducted reasonably to minimize soil erosion.
- BMP 1.14 Special Erosion Prevention Measures on Disturbed Land
  Objective: To provide appropriate erosion and sedimentation protection for disturbed areas.
- BMP 1.15 Revegetation of Areas Disturbed by Harvest Activities
  Objective: To establish a vegetative ground cover on disturbed sites to prevent erosion and sedimentation.

- BMP 1.16 Log Landing Erosion Control

Objective: To reduce the impacts of erosion and subsequent sedimentation associated with log landings by use of mitigating measures.

- BMP 1.17 Erosion Control on Skid Trails
  Objective: To protect water quality by minimizing erosion and sediment derived from skid trails.
- BMP 1.18 Meadow (Little Merrill Flat Wetlands) Protection During Timber Harvesting
  Objective: To avoid damage to the ground cover, soil and the hydrologic function of wetlands.
- BMP 1.19 Stream course and Aquatic Protection
  Objective:
  1) To conduct management actions within these areas in a manner that maintains or improves riparian and aquatic values.
  2) To provide unobstructed passage of storm flows
  3) To control sediment and other pollutants from entering stream courses.
  4) To restore the natural course of any stream as soon as practicable, where diversion of the stream has resulted from timber management activities.
- BMP 1.20 Erosion Control Structure Maintenance
  Objective: To ensure that constructed erosion control structures are stabilized and working.
- BMP 1.21 Acceptance of Timber Sale Erosion Control Measures Before Sale Closure
  Objective: To ensure the adequacy of required erosion control work on timber sale.
- BMP 2.2 Erosion Control Plan
  Objective: To limit and mitigate erosion and sedimentation through effective planning prior to initiation of construction activities and through effective contract administration during construction.
- BMP 2.3 Timing of Construction Activities

  Objective: To minimize erosion by conducting operations during minimal runoff periods.
- BMP 2.7 Control of Road Drainage
  Objective: Is to minimize the erosive effects of water concentrated by road drainage features; to disperse runoff from disturbances within the road clearing limits; to lessen the sediment yield from roaded areas; to minimize erosion of the road prism by runoff from road surfaces and from uphill areas.
- BMP 2.12 Servicing and Refueling of Equipment
  Objective: To prevent pollutants such as fuels, lubricants, bitumens and other harmful materials from being discharged into or near rivers, streams and impoundments, or into natural or man-made channels.
- BMP 2.13 Control of Construction and Maintenance Activities Adjacent to Streamside Management Zones (SMZs)
  Objective: To protect water quality by controlling construction and maintenance actions within and adjacent to any streamside management zone so that RCA functions are not impaired.
- BMP 2.22 Maintenance of Roads
  Objective: To maintain roads in a manner which provides for water quality protection by minimizing rutting, failures, side casting, and blockage of drainage facilities all of which can cause erosion and sedimentation, and deteriorating watershed conditions.
- BMP 2.23 Road Surface Treatment to Prevent Loss of Materials
  Objective: To minimize the erosion of road surface materials and consequently reduce the likelihood of sediment production from those areas.

- BMP 2.24 Traffic Control During Wet Periods
  Objective: To reduce road surface disturbance and rutting of roads. To minimize sediment washing from disturbed road surfaces.
- BMP 5.1 Soil Disturbing Treatments on the Contour
  Objective: To decrease sediment production and stream turbidity while mechanically treating slopes.
- BMP 5.2 Slope Limitations for Mechanical Equipment Operation
  Objective: To reduce gully and sheet erosion and associated sediment production by limiting tractor use.
- BMP 5.3 Tractor Operation Limitation in Wetlands and Meadows
  Objective: To limit turbidity and sediment production resulting from compaction, rutting, runoff concentration, and subsequent erosion by excluding the use of mechanical equipment in wetland and meadows except for the purpose of restoring wetland and meadow function.
- BMP 5.5 Disposal of Organic Debris
  Objective: To prevent gully and surface erosion with associated reduction in sediment production and turbidity during and after treatment.
- BMP 5.6 Soil Moisture Limitations for Mechanical Equipment Operations
  Objective: The objective of this measure is to prevent compaction, rutting, and gullying, with resultant sediment production and turbidity.
- BMP 5-7 Pesticide Use Planning Process
  Objective: To introduce water quality and hydrologic considerations into the pesticide use planning process.
- BMP 5-8 Pesticide Application According to Label Directions and Applicable Legal Requirements
  Objective: To avoid water contamination by complying with all label instructions and restrictions for use.
- BMP 5-9 Pesticide Application Monitoring and Evaluation
  Objective: To determine whether pesticides have been applied safely, restricted to intended target areas, and have not resulted in unexpected non-target effects.
- BMP 5-10 Pesticide Spill Contingency Planning
  Objective: To reduce contamination of water by accidental pesticide spills.
- BMP 5-11 Cleaning and Disposal of Pesticide Containers and Equipment
  Objective: To prevent water contamination resulting from cleaning, or disposal of pesticide containers.
- BMP 5-12 Streamside Wet Area Protection During Pesticide Spraying
  Objective: To minimize the risk of pesticide inadvertently entering waters, or unintentionally altering the riparian area or the wetland within Merrill Flat.
- BMP 5-13 Controlling Pesticide Drift During Spray Application
  Objective: To minimize the risk of pesticide falling directly into water, or non-target areas.
- BMP 6.2 Consideration of Water Quality in Formulating Fire Prescriptions
  Objective: To provide for water quality protection while achieving the management objectives through the use of prescribed fire.
- BMP 6.3 Protection of Water Quality from Prescribed Burning Effects
  Objective: To maintain soil productivity, minimize erosion, and minimize ash, sediment, nutrients, and debris from entering water bodies.
- BMP 7.3 Protection of Wetlands
  Objective: To avoid adverse water quality impacts associated with destruction, disturbance, or modification of wetlands.

- BMP 7.4 Forest and Hazardous Substance Spill Prevention Control and Countermeasure (SPCC) Plan
  Objective: To prevent contamination of waters from accidental spills.

CONSTRUCTION AND RECLAMATION:

- BMP 2.2 Erosion Control Plan
  Objective: To limit and mitigate erosion and sedimentation through effective planning prior to initiation of construction activities and through effective contract administration during construction.
- BMP 2.3 Timing of Construction Activities
  Objective: To minimize erosion by conducting operations during minimal runoff periods.
- BMP 2-4 Stabilization of Slope Surfaces and Spoil Disposal Areas and

  Objective: To minimize erosion from exposed cut slopes, fill slopes, and spoil disposal areas.
- BMP 2-11 Control of Side cast Material During Construction and Maintenance
  Objective: To minimize sediment production originating from sidecast material during construction.
- BMP 2.12 Servicing and Refueling of Equipment
  Objective: To prevent pollutants such as fuels, lubricants, bitumens and other harmful materials from being discharged into or near rivers, streams and impoundments, or into natural or man-made channels.
- BMP 2-13 Control of Construction and Maintenance Activities Adjacent to SMZs

  Objective: To protect water quality by controlling construction and maintenance actions within and adjacent to any streamside management zone so that the following SMZ functions are not impaired.

- BMP 2-15 Diversion of Flows around Construction Sites:

  Objective: To ensure that all diversions are carefully planned, to minimize downstream sedimentation.
- BMP 2-18 Regulation of Borrow Areas:
  Objective: To limit disturbances and sediment production associated with gravel source development.
- BMP 2-19 Disposal of Right-of-Way and Roadside Debris

  Objective: To prevent blocking or damming of water by debris generated during construction that may act as barriers to aquatic life or cause sudden surges in high peak flow upon failure.

- BMP 2.22 Maintenance of Roads
  Objective: To maintain roads in a manner which provides for water quality protection by minimizing rutting, failures, side casting, and blockage of drainage facilities all of which can cause erosion and sedimentation, and deteriorating watershed conditions.
- BMP 2.23 Road Surface Treatment to Prevent Loss of Materials
  Objective: To minimize the erosion of road surface materials and consequently reduce the likelihood of sediment production from those areas.
- BMP 2.24 Traffic Control During Wet Periods

Objective: To reduce road surface disturbance and rutting of roads. To minimize sediment washing from disturbed road surfaces.

- BMP 2-27 Restoration of Borrow Pits:

  Objective: To minimize sediment production from borrow pits and quarry sites.

- BMP 2-28 Surface Erosion Control at Facility Sites:

  Objective: Reduce the amount of surface erosion taking place on developed sites and the amount of soil entering project area wetlands and streams.
- BMP 5.4 Revegetation of Surface Disturbed Areas
  Objective: To protect water quality by minimizing soil erosion through the stabilizing influence of vegetation foliage and root network.
- BMP 5.5 Disposal of Organic Debris
  Objective: To prevent gully and surface erosion with associated reduction in sediment production and turbidity during and after treatment.
- BMP 5.6 Soil Moisture Limitations for Mechanical Equipment Operations
  Objective: The objective of this measure is to prevent compaction, rutting, and gullying, with resultant sediment production and turbidity.
- BMP 7.3 Protection of Wetlands
  Objective: To avoid adverse water quality impacts associated with destruction, disturbance, or modification of wetlands.
- BMP 7.4 Forest and Hazardous Substance Spill Prevention Control and Countermeasure (SPCC) Plan
  Objective: To prevent contamination of waters from accidental spills.

Delineation of Waters of the United States

±40-Acre Eagle Lake Sewage Pond Site
Lassen County, California

Prepared for: U.S. Army Corps of Engineers

Contracted by: Eagle Lake Ranger District,
Lassen National Forest

January 15, 2009

Submitted by:

FOOTHILL ASSOCIATES

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Table of Contents

1.0 Introduction **1**

2.0 Regulatory Background **2**

2.1 Waters of the United States 3
2.2 The Solid Waste Agency of Northern Cook County (SWANCC) Decision 3
2.3 The Rapanos Decision 4

3.0 Methodology **6**

3.1 Site-Specific References 6
3.2 Research and Field Methodology 6
3.3 Survey Data Integration 7

4.0 Results **8**

4.1 Study Area Description, Land Use 8
4.1.1 Study Area Location *8*
4.1.2 Land Use *8*
4.2 Physical Features 8
4.2.1 Soils *8*
4.2.2 Topography *9*
4.2.3 Regional Hydrology *9*
4.2.4 Site-Specific Hydrology *9*
4.3 Vegetation 9
4.3.1 Mixed Conifer Forest *9*
4.3.2 Emergent Wetlands *9*
4.3.3 Annual Grassland *9*
4.3.4 Developed Land *10*
4.4 Classification of Waters of the United States 10
4.4.1 Depressional Seasonal Wetlands *10*

5.0 Conclusion **11**

6.0 References **12**

List of Tables

Table 1 — Waters of the U.S: Acreage According to Feature 11

List of Figures

Figure 1 — Site and Vicinity 14
Figure 2 — Soils 15
Figure 3 — Delineation Map 16
Figure 4 — Delineation Map and Aerial Photograph 17

List of Appendices

Appendix A — Contact Information
Appendix B — Routine Wetland Determination Data Form

1.0 INTRODUCTION

The purpose of this document is to present the results of a formal delineation of jurisdictional waters of the United States, including wetlands, on the ± 40-acre Eagle Lake sewer pond site located in Lassen County, California (**Figure 1**). This report presents the results of Foothill Associates' review of available literature, aerial photographs, soil surveys, and fieldwork on the site. These results are summarized to depict jurisdictional waters of the United States following the technical guidelines provided in the 1987 U.S. Army Corps of Engineers (Corps) Wetlands Delineation Manual for identifying wetlands and distinguishing them from aquatic habitats and other nonwetlands, the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region, and the *Rapanos* guidelines issued by the Environmental Protection Agency (EPA) and the Corps.

The delineation methodology is described in this report, followed by the results of the delineation. Details regarding soils (**Figure 2**), topography, hydrology, and vegetation are summarized and routine wetland determination data forms are provided in **Appendix B**. A detailed delineation map illustrates waters of the U.S. on the site (**Figure 3**).

2.0 REGULATORY BACKGROUND

The Corps regulates discharge of dredged or fill material into waters of the United States under Section 404 of the Clean Water Act (CWA). "Discharges of fill material" is defined as the addition of fill material into waters of the U.S., including, but not limited to the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; fill for intake and outfall pipes and subaqueous utility lines [33 C.F.R. §328.2(f)].

Section 401 of the CWA (33 U.S.C. 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Section 404 of the Clean Water Act requires approval prior to discharging dredged or fill material into the waters of the United States. Typical activities requiring Section 404 permits are:

- Depositing of fill or dredged material in waters of the U.S. or adjacent wetlands.
- Site development fill for residential, commercial, or recreational developments.
- Construction of revetments, groins, breakwaters, levees, dams, dikes, and weirs.
- Placement of riprap and road fills.

Section 10 of the Rivers and Harbors Act of 1899 requires approval prior to the accomplishment of any work in or over navigable waters of the United States, or which affects the course, location, condition or capacity of such waters. Typical activities requiring Section 10 permits are:

- Construction of piers, wharves, bulkheads, dolphins, marinas, ramps, floats intake structures, and cable or pipeline crossings.
- Dredging and excavation.

Any person, firm, or agency (including federal, state, and local government agencies) planning to work in navigable waters of the United States, or dump or place dredged or fill material in waters of the United States, must first obtain a permit from the Corps of Engineers. Permits, licenses, variances, or similar authorization may also be required by other federal, state, and local statutes.

2.1 Waters of the United States

Waters of the United States includes essentially all surface waters such as all navigable waters and their tributaries, all interstate waters and their tributaries, all wetlands adjacent to these waters, and all impoundments of these waters. Navigable waters of the United States are defined as waters that have been used in the past, are now used, or are susceptible to use as a means to transport interstate or foreign commerce up to the head of navigation. Section 10 and/or Section 404 permits are required for construction activities in these waters. Boundaries between jurisdictional waters and uplands are determined in a variety of ways depending on which type of water is present. Methods for delineating wetlands and non-tidal waters are described below.

Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [33 C.F.R. §328.3(b)]. Presently, to be a wetland, a site must exhibit positive indicators of three wetland criteria: hydrophytic vegetation, hydric soils, and wetland hydrology existing under the "normal circumstances" for the site.

The lateral regulatory extent of non-tidal waters is determined by delineating the ordinary high water mark (OHWM) [33 C.F.R. §328.4(c)(1)]. The OHWM is defined by the Corps as "that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" [33 C.F.R. §328.3(e)].

2.2 The Solid Waste Agency of Northern Cook County (SWANCC) Decision

The Solid Waste Agency of Northern Cook County v. the U.S. Army Corps of Engineers, 531 U.S. 159 (2001), is more commonly referred to as the SWANCC decision. SWANCC involved a challenge to CWA jurisdiction over certain isolated, intrastate, non-navigable ponds in Illinois that formerly had been gravel mine pits, but which, over time, provided habitat for migratory birds. Although these ponds served as migratory bird habitat, they were non-navigable and isolated from the tributary system of other waters regulated under the CWA. In SWANCC, the Supreme Court held that the Army Corps of Engineers had exceeded its authority in asserting CWA jurisdiction pursuant to § 404(a) over the waters at issue based on their use as habitat for migratory birds, pursuant to preamble language, commonly referred to as the Migratory Bird Rule (51 Fed. Reg. 41217 (1986)).

SWANCC squarely eliminates CWA jurisdiction over isolated waters that are intrastate and non-navigable, where the sole basis for asserting CWA jurisdiction is the actual or potential use of the waters as habitat for migratory birds that cross state lines in their migrations. CWA jurisdiction extends to waters, including wetlands, which are adjacent to navigable waters pursuant to the Supreme Court holding in Riverside Bayview Homes, which was endorsed in SWANCC as controlling law. Corps of Engineers and EPA regulations currently define the term adjacent as "bordering, contiguous, or neighboring"

33 C.F.R. § 328.3(b). The case law on the precise scope of federal CWA jurisdiction since SWANCC is still developing.

2.3 The Rapanos Decision

The consolidated cases *Rapanos v. United States* and *Carabell v. United States*, 126 S. Ct. 2208 (2006) are referred to as *Rapanos*. The Supreme Court's decision in these consolidated cases addressed where the federal government can apply the CWA, specifically by determining whether a wetland or tributary is a "water of the United States." The justices issued five separate opinions in *Rapanos*, with no single opinion commanding a plurality of the Court.

The plurality of the Court concluded that the agencies' regulatory authority should extend only to "relatively permanent, standing or continuously flowing bodies of water" connected to traditional navigable waters (TNWs), and to "wetlands with a continuous surface connection to" such relatively permanent waters (U.S. Army Corps and U.S. EPA, 2007). Justice Kennedy concluded that wetlands are "waters of the United States" "if the wetlands, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as *navigable*. When, in contrast, wetlands' effects on water quality are speculative or insubstantial, they fall outside the zone fairly encompassed by the statutory term *navigable waters*" (U.S. Army Corps and U.S. EPA, 2007).

When there is no majority opinion in a Supreme Court case, controlling legal principles may be derived from those principles espoused by five or more justices. Thus, regulatory jurisdiction under the CWA exists over a "water" if either the plurality or Justice Kennedy's standard is satisfied (U.S. Army Corps and U.S. EPA, 2007).

As a result of the *Rapanos* decision, the agencies will assert jurisdiction over the following waters:

- Traditional navigable waters;
- Wetlands adjacent to traditional navigable waters;
- Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months); and
- Wetlands that directly abut such tributaries.

The agencies will decide jurisdiction over the following waters based on a fact-specific analysis to determine whether they have a significant nexus with a traditional navigable water:

- Non-navigable tributaries that are not relatively permanent;
- Wetlands adjacent to non-navigable tributaries that are not relatively permanent; and
- Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary.

The agencies generally will not assert jurisdiction over the following features:

- Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow); and
- Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

The agencies will apply the significant nexus standard as follows:

- A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters; and
- Significant nexus includes consideration of hydrologic and ecologic factors.

3.0 METHODOLOGY

3.1 Site-Specific References

Available information pertaining to the natural resources of the region was reviewed. All references reviewed for this delineation are listed in **Section 6.0**. Pertinent site-specific reports and general references utilized concurrent with the delineation include the following:

- Cowardin, *et al*. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service, Washington D.C.
- Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. U.S. Army Corps of Engineers Waterways Experiment Station. Vicksburg, MS.
- GretagMacbeth. 2000. *Munsell Soil Color Charts*. New Windsor, NY.
- Hickman, James C. 1993. *The Jepson Manual: Higher Plants of California*. University of California Press, Berkeley, CA.
- Natural Resource Conservation Service (NRCS). 1995. *List of Hydric Soils of California*. U.S. Department of Agriculture.
- Reed, P.B., Jr. 1988. *National List of Plant Species That Occur in Wetlands: California (Region 0)*; U.S. Fish & Wildlife Service.
- Sawyer, John O. and Todd Keeler-Wolf. 1995. *A Manual of California Vegetation*. California Native Plant Society (CNPS), Sacramento, CA.
- Kliwer, George F. 1994. *Soil Survey of Lassen National Forest Area, California.* USDA Forest Service Pacific Southwest Region.
- USDA, NRCS. 2003. *Field Indicators of Hydric Soils in the United States*, Version 5.01. G.W. Hurt, P.M. Whited, and R.F. Pringle (eds). USDA, NRCS in cooperation with the National Committee for Hydric Soils. Fort Worth, TX.
- U.S. Geological Survey. 1995. *Pikes Point, California*. 7.5 -minute series topographic quadrangle. U.S. Department of the Interior.

3.2 Research and Field Methodology

This delineation utilized the Corps 1987 three-parameter (vegetation, hydrology, and soils) methodology to delineate jurisdictional waters of the U.S., focusing specifically on jurisdictional wetlands. This methodology requires the collection of data on soils, vegetation, and hydrology at several locations to establish the jurisdictional boundary of

wetlands. Additional methods to identify and delineate other waters of the U.S. (e.g. streams, drainages, lakes, etc.) were used as applicable. The Corps has recently issued a regional supplement to the 1987 manual, the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region.* This supplement provides technical guidance that was used to conduct this delineation.

A review of historic and current aerial photographs, topographic maps and soils survey data was conducted before delineating the site on November 12, 2008. A wetland biologist visually inspected the entire site and collected data on vegetation and hydrology. Because of the timing of the delineation, not all plant species could be identified. Soils were also examined and correlations were developed between the three parameters to make wetland determinations. Specifically, data points were evaluated to determine the composition and identification of dominant plant species. The indicator status of all dominant plant species (as determined by the U.S. Fish and Wildlife Service National List of Plant Species that Occur in Wetlands: 1988 California [Region 0]) was applied and evaluated as part of the vegetation assessment portion of the wetland determination process. Additionally, immediate sub surface soils conditions were examined for hydric attributes or a lack thereof. Observations were made and recorded for both primary and secondary wetland hydrology indicators, if present. The location of each data point is depicted in **Figure 3** and corresponding routine wetland determination data forms are provided in **Appendix B**.

To conduct this jurisdictional determination, these waters were classified on the basis of the agency guidance developed in response to the *Rapanos* decision. These classes of features are either automatically jurisdictional (i.e., non-navigable tributaries that are relatively permanent), generally not jurisdictional (i.e., ditches excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water), or features of unknown jurisdictional status. For this latter group of features, the agencies will decide their jurisdictional status based on a fact-specific analysis regarding whether they have a significant nexus with a traditional navigable water.

3.3 Survey Data Integration

Boundaries of wetlands and other waters of the U.S. within the site were surveyed and mapped with a Trimble GeoXT Global Positioning System (GPS) hand-held unit. This is a mapping-grade GPS unit capable of real-time differential correction and sub-meter accuracy. The GPS data were downloaded from the unit and differentially corrected utilizing Trimble Pathfinder Office software and appropriate base station data, and then converted to ESRI® shape file format. Data are typically exported to the Geographic Information System (GIS) software in the State Plane coordinate system (NAD 83) with units as "survey feet." Within the GIS, data are edited and linear features are built into polygons using recorded width information. All wetland shape files are merged to create a single wetland file with calculated acreages. These results are presented in **Figure 3**.

4.0 RESULTS

4.1 Study Area Description, Land Use

4.1.1 Study Area Location

The site is located in Lassen County, California, approximately 15 miles northwest of Susanville and 2 miles southwest of Eagle Lake. The site occupies the northeast quarter of the northeast quarter of section 21, Township 31 North, Range 10 East of the U.S.G.S. Pikes Point, CA 7.5' quadrangle map (**Figure 1**).

4.1.2 Land Use

Land uses surrounding the site include forestry, recreation, and unpaved gravel roads. The site is the location of several wastewater treatment lagoons, or ponds. Vegetation includes emergent wetlands and mixed conifer forest.

4.2 Physical Features

4.2.1 Soils

The Natural Resources Conservation Service (NRCS) has mapped two soil units on the site (**Figure 2**). The soil units that occur onsite include the following: **Inville-Patio-Trojan families complex, 0 to 35 percent slopes;** and **Wintoner family-Aquolls-Patio families association, 0 to15 percent slopes.** Both of these soil units have hydric inclusions. General characteristics associated with these soils types are described below.

- **Inville-Patio-Trojan families complex, 0 to 35 percent slopes:** These gravelly sandy loam and loam soils occur on mountain sideslopes, ridges, and flats from 5,200 to 7,000 feet in elevation. The soils have moderate permeability and slow runoff and erosion hazard is low to moderate. Typical vegetation consists of mixed conifer forest and chaparral. The **Inville** soils are hydric according to the national hydric soils list, and may have a frequently occurring water table at less than 18 inches from the surface for a significant period.
- **Wintoner family-Aquolls-Patio families association, 0 to15 percent slopes:** These gravelly sandy loam and silt loam soils occur on mountain sideslopes, ridges, meadows and valleys from 5,200 to 7,000 feet in elevation. The soils have moderate to moderately slow permeability, slow to very slow runoff, and erosion hazard is low to moderate. Typical vegetation consists of mixed conifer forest, annual and perennial grasses, and alder, aspen, and willow. The **Wintoner** and **Aquolls** soils are hydric according to the national hydric soils list, and may have a frequently occurring water table at less than 18 inches from the surface for a significant period.

4.2.2 Topography

The topography onsite slopes to the southeast towards Merrill Creek. Elevations of the site range from approximately 5,450 to 5,500 feet above mean sea level.

4.2.3 Regional Hydrology

The site is located in the Merrill Creek basin approximately one-half mile north of Merrill Creek. This creek flows northeast approximately 2.5 miles into Eagle Lake. Because of the size of the basin and amount of snowfall, it is likely that Merrill Creek flows seasonally for at least 90 days and is therefore considered a Relative Permanent Water (RPW).

4.2.4 Site-Specific Hydrology

The southern portion of the site exhibits indications of seasonal inundation and saturation. The majority of the surface water runoff flows across the site in a dispersed manner to wetlands to the south that are abutting Merrill Creek. The wastewater lagoons on the site are hydrologically isolated and have zero discharge.

4.3 Vegetation

The vegetation assemblages and habitat types occurring on the site include the following: mixed conifer forest, emergent wetlands, annual grassland, and developed land. These communities provide habitat to a number of common species of wildlife and may provide suitable habitat for special-status species. Each of the biological communities including associated common plant and wildlife species observed, or that are expected to occur within these communities are described below.

4.3.1 Mixed Conifer Forest

The mixed confer forest is dominated by Jeffrey pine (*Pinus jeffreyi*). Bitterbrush (*Purshia tridentata*), serviceberry (*Amelanchier pallida*) and other shrubs are also found in the mixed conifer forest.

4.3.2 Emergent Wetlands

The emergent wetlands on the site are dominated by rushes (*Eleocharis* sp. and *Juncus mexicanus*), and other forbs. In the Cowardin system, these wetlands would be classified as palustrine emergent wetlands (Cowardin, 1979).

4.3.3 Annual Grassland

This habitat type is either sparsely vegetated or it is covered with grasses and forbs. These include Mexican rush (*Juncus mexicanus*), ripgut brome (*Bromus diandrus*), and thistle (*Cirsium* sp.).

4.3.4 Developed Land

Developed land covers a portion of the study area. This consists of unpaved gravel roads, disturbed ground, buildings, and the wastewater lagoons.

4.4 Classification of Waters of the United States

As discussed previously in **Section 2.0**, jurisdictional waters of the U.S. are classified into multiple types based on topography, edaphics (soils), vegetation and hydrologic regime. Primarily, the Army Corps of Engineers establishes two distinctions: wetland and non-wetland waters of the U.S. Non-wetland waters are commonly referred to as other waters. The potential jurisdictional wetland type mapped within the site is depressional seasonal wetlands. A description of all of the features delineated within the site is provided in the following sections.

4.4.1 Depressional Seasonal Wetlands

A total of **0.89 acres** of depressional seasonal wetlands have been delineated within the site. These wetlands are located in the southern portion of the site (**Figures 3** and **4**).

These wetlands exhibit a hydrologic regime dominated by saturation and is closely associated with seasonal runoff. This hydrologic regime supports hydrophytic plant species and hydric soils. Plant species found within these wetlands include rushes and other forbs.

Given the soils and topography of the area, it appears that these wetlands abut Merrill Creek and are tributary to Eagle Lake, a Traditional Navigable Water (TNW). These wetlands, "in combination with other similarly situated lands in the region," have the potential to significantly affect the integrity of the water quality of Eagle Lake, the nearest TNW. This conclusion is based on the proximity to Eagle Lake and the sensitivity of the lake to pollutant loading, particularly sediments and nutrients. Because the wetlands abut a RPW and because of this "significant nexus" with Eagle Lake, the wetlands will likely be considered jurisdictional by the Corps.

5.0 CONCLUSION

Application of routine wetland delineation techniques and *Rapanos* guidelines revealed the presence of features that appear to conform to the definition of waters of the U.S pursuant to Section 404 of the Federal Clean Water Act. Potential jurisdictional wetlands mapped within the site are depressional seasonal wetlands. No non-jurisdictional waters were mapped within the site.

The final determination of the extent of Corps' jurisdiction on the property pursuant to Section 404 of the Federal Clean Water Act will depend on the results of field verification by the Corps. Areas deemed jurisdictional will then be subject to the regulatory requirements of the Federal Clean Water Act including permitting and mitigation, as required.

Table 1 below provides acreage per class and summarizes the total acreage of wetlands and waters on the site.

Table 1 — Waters of the U.S: Acreage According to Feature

CLASS	TOTAL ACREAGE	JURISDICTIONAL	NON-JURISDICTIONAL
Depressional Seasonal Wetland	0.89	0.89	0.0
TOTAL	0.89	0.89	0.0

6.0 REFERENCES

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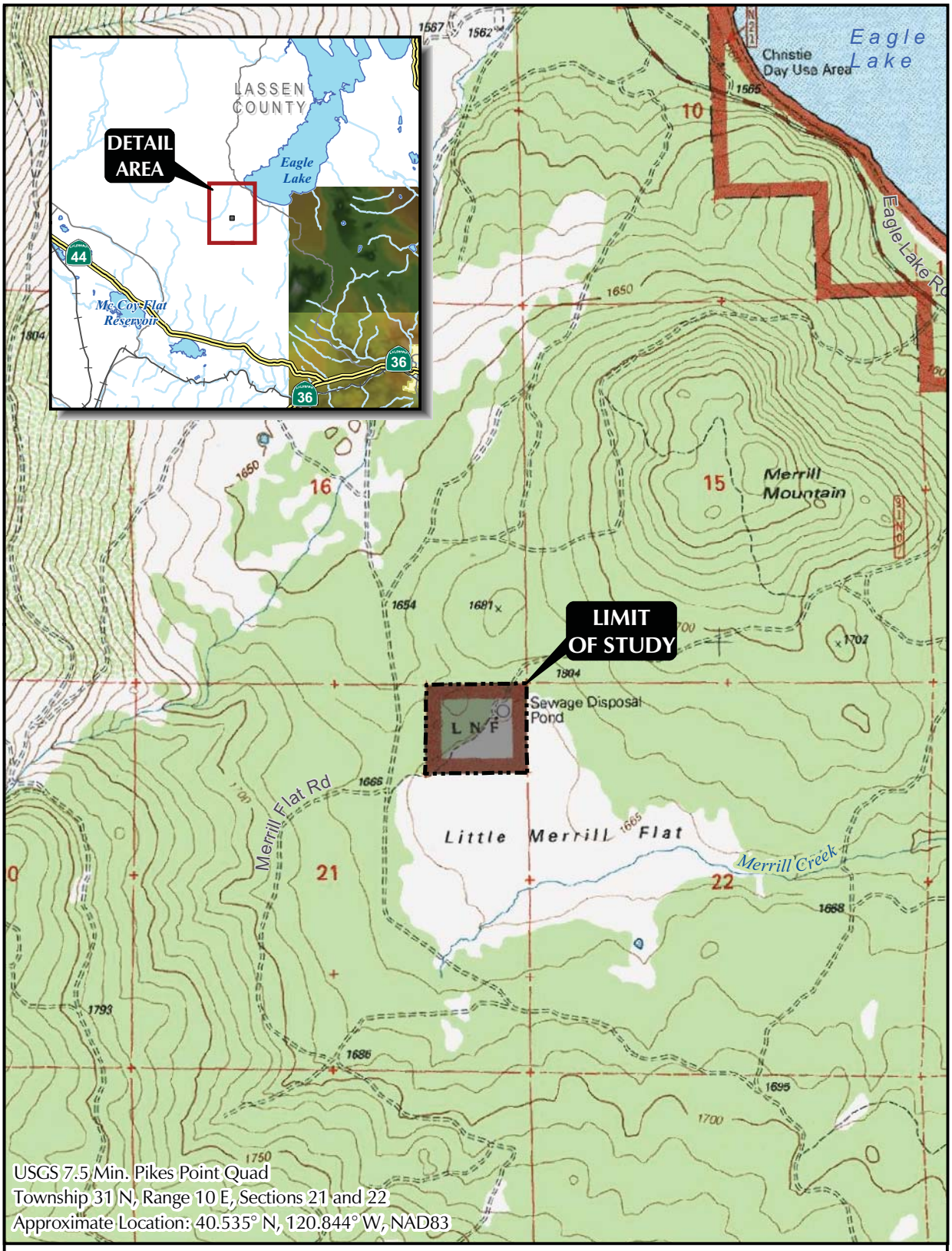


SITE AND VICINITY

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

N

0 1000 2000
SCALE IN FEET

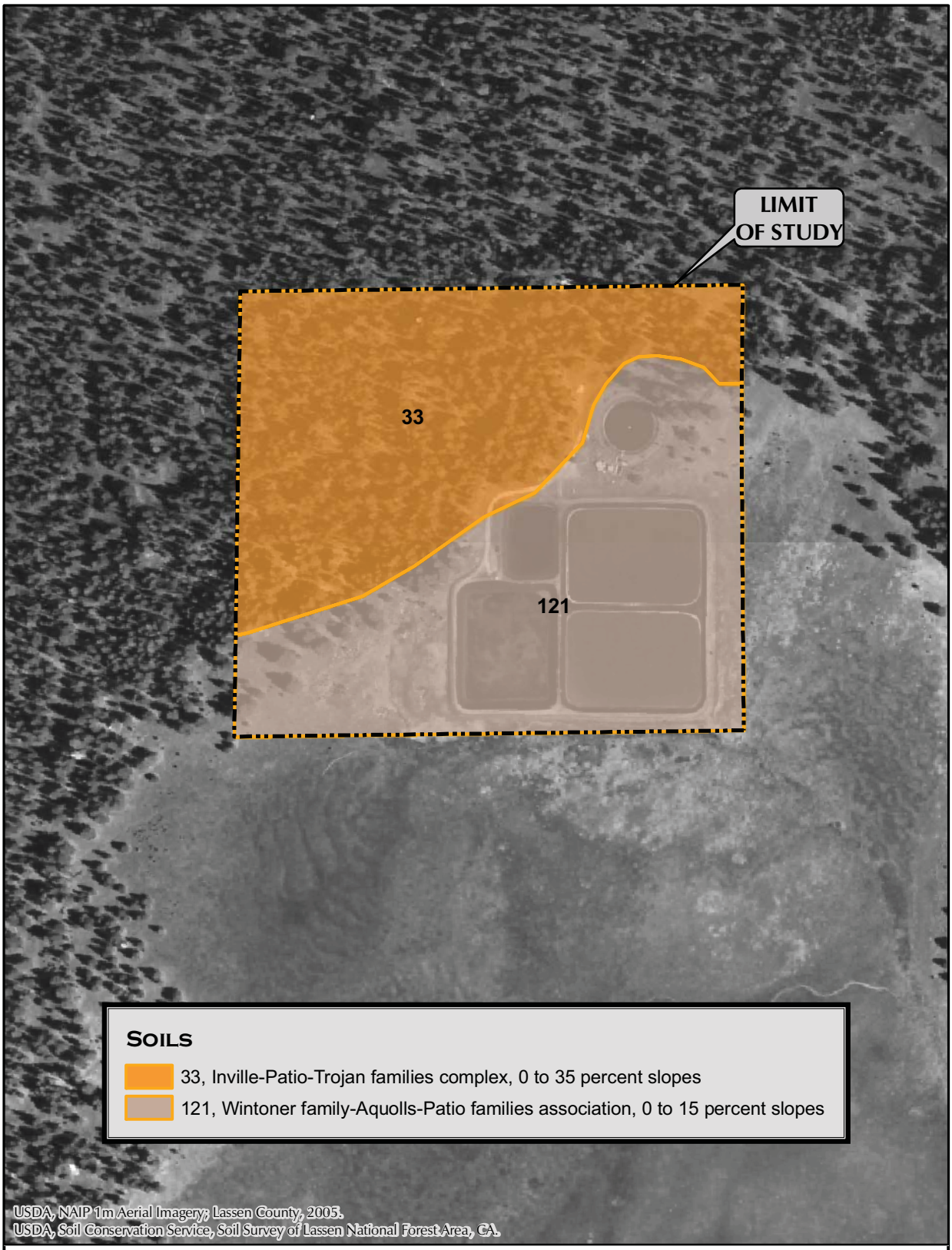
Drawn By: PDL
Date: 11/05/08

FIGURE 1

EAGLE LAKE SEWAGE POND SITE

site_and_vicinity.mxd

© 2008



SOILS

FOOTHILL ASSOCIATES
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

N

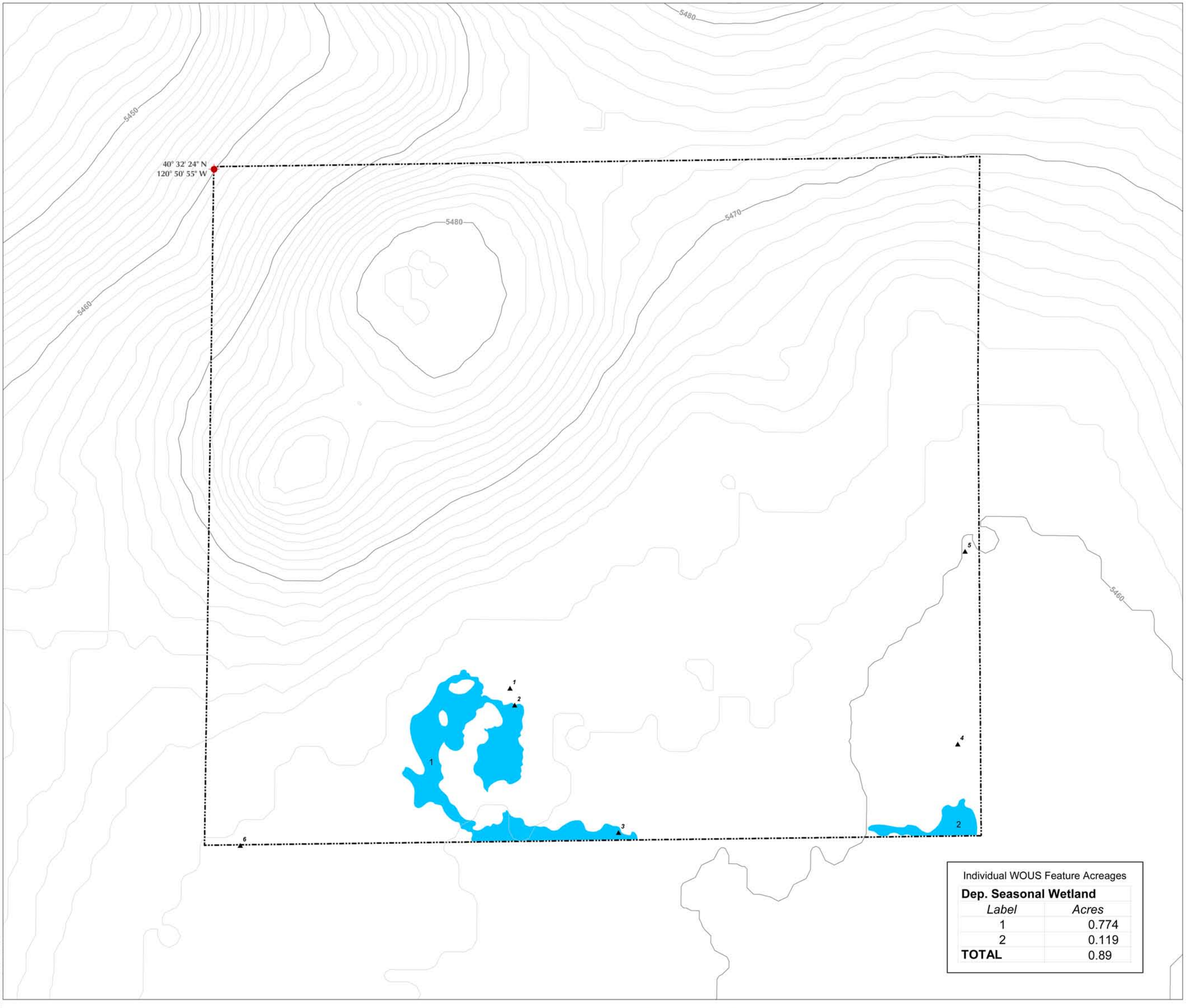
0 200 400
SCALE IN FEET

Drawn By: PDL
Date: 11/06/08

FIGURE 2

EAGLE LAKE SEWAGE POND SITE

soils.mxd
© 2008



Individual WOUS Feature Acreages

Dep. Seasonal Wetland	
Label	*Acres*
1	0.774
2	0.119
TOTAL	0.89

WATERS OF THE U.S.	
CLASSIFICATION	ACREAGE
DEPRESSIONAL WETLANDS	
Seasonal Wetland	0.89
TOTAL	0.89

OTHER FEATURES

- Data Points
- Project Boundary

NOTES

- Waters of the U.S. are subject to U.S. Army Corps of Engineers verification.
- Contour lines generated frok USGS 10m DEM for the Pikes Point quad. Contour interval is 1 foot.
- The Hydrologic Unit Code for this site is 180080003.
- This delineation utilizes the Corps' 1987 three-parameter methodology and the Western Mountains, Valleys, and Coast Region Interim Regional Supplement to delineate jurisdictional waters of the U.S.
- Waters of the U.S. were mapped using a Trimble Global Positioning System (GPS).

0 100 200

SCALE IN FEET

FIGURE 3

Eagle Lake Sewage Pond Site

DELINEATED WATERS OF THE U.S.

FOOTHILL ASSOCIATES

ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

© 2008

DATE:	11/24/08	FILE NAME:	Wetland Delineation.MXD
REVISION:		DRAWN BY:	PDL
		DELINEATED BY:	JCH

PROJECT NAME: Eagle Lake FILE NAME: Wetland_Delineation.MXD DATE: 11/24/08

P 24X24

Individual WOUS Feature Acreages

Dep. Seasonal Wetland	
Label	*Acres*
1	0.774
2	0.119
TOTAL	0.89

WATERS OF THE U.S.	
CLASSIFICATION	ACREAGE
DEPRESSIONAL WETLANDS	
Seasonal Wetland	0.89
TOTAL	0.89

OTHER FEATURES

- Data Points
- Project Boundary

NOTES

- Waters of the U.S. are subject to U.S. Army Corps of Engineers verification.
- Contour lines generated frok USGS 10m DEM for the Pikes Point quad. Contour interval is 1 foot.
- The Hydrologic Unit Code for this site is 180080003.
- This delineation utilizes the Corps' 1987 three-parameter methodology and the Western Mountains, Valleys, and Coast Region Interim Regional Supplement to delineate jurisdictional waters of the U.S.
- Waters of the U.S. were mapped using a Trimble Global Positioning System (GPS).

N

0 100 200

SCALE IN FEET

FIGURE 4

Eagle Lake Sewage Pond Site

DELINEATED WATERS OF THE U.S.

FOOTHILL ASSOCIATES

ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

© 2008

DATE:	11/24/08	FILE NAME:	Wetland Delineation.MXD
REVISION:		DRAWN BY:	PDL
		DELINEATED BY:	JCH

PROJECT NAME: Eagle Lake FILE NAME: Wetland_Delineation.MXD DATE: 11/24/08

P 24X24

Appendix A — Contact Information

Client Contact Information:	Christine Hill Eagle Lake Ranger District Lassen National Forest 477-050 Eagle Lake Road Susanville, CA 96130
Delineation Conducted by:	John Heal, Certified Professional Wetland Scientist #00001386 Foothill Associates 590 Menlo Drive, Suite 1 Rocklin, CA 95765

Appendix B — Routine Determination Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Eagle Lake City/County: Lassen Sampling Date: 11/12/2008

Applicant/Owner: Lassen NF State: CA Sampling Point: 1

Investigator(s): JCH Section, Township, Range: 21, Township 31 North, Range 10 East

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): concave Slope (%): < 1%

Subregion (LRR): MLRA22A Lat: 40 deg 32' 24" N Long: 120 deg 50' 55" W Datum: _____

Soil Map Unit Name: Wintoner family-Aquolls- Patio families association NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Bromus diandrus	80	Y	NL
2. Cirsium vulgare	5	N	FACU
3. unid forb	15	N	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0%	x 1 = _____
FACW species	0%	x 2 = _____
FAC species	0%	x 3 = _____
FACU species	0%	x 4 = _____
UPL species	0%	x 5 = _____
Column Totals:	0% (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14	7.5YR 3/2.5		N/A					Gravelly silt loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Eagle Lake City/County: Lassen Sampling Date: 11/12/2008

Applicant/Owner: Lassen NF State: CA Sampling Point: 2

Investigator(s): JCH Section, Township, Range: 21, Township 31 North, Range 10 East

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): concave Slope (%): < 1%

Subregion (LRR): MLRA22A Lat: 40 deg 32' 24" N Long: 120 deg 50' 55" W Datum: _____

Soil Map Unit Name: Wintoner family-Aquolls- Patio families association NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Navarretia leucocephela	10	Y	OBL
2. Eleocharis sp.	15	Y	*
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	25 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0%	x 1 = _____
FACW species	0%	x 2 = _____
FAC species	0%	x 3 = _____
FACU species	0%	x 4 = _____
UPL species	0%	x 5 = _____
Column Totals:	0% (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

* Assumed to be hydrophytic.

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14	10 YR 3/3							Silty clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ✓ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

manganese nodules

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✓ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): _____

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Drift lines indicate that the plot location is inundated and saturated during the early growing season.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Eagle Lake City/County: Lassen Sampling Date: 11/12/2008

Applicant/Owner: Lassen NF State: CA Sampling Point: 3

Investigator(s): JCH Section, Township, Range: 21, Township 31 North, Range 10 East

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): concave Slope (%): < 1%

Subregion (LRR): MLRA22A Lat: 40 deg 32' 24" N Long: 120 deg 50' 55" W Datum: _____

Soil Map Unit Name: Wintoner family-Aquolls- Patio families association NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Juncus mexicanus	40	Y	FACW
2. Deschampsia danthanoides (?)	15	Y	FACW
3. unid forb	10	N	
4. unid forb	5	N	
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0%	x 1 = _____
FACW species	0%	x 2 = _____
FAC species	0%	x 3 = _____
FACU species	0%	x 4 = _____
UPL species	0%	x 5 = _____
Column Totals:	0% (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14	7.5 YR 3/2	90	5 YR 4/6	10			silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ✓ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Eagle Lake City/County: Lassen Sampling Date: 11/12/2008

Applicant/Owner: Lassen NF State: CA Sampling Point: 4

Investigator(s): JCH Section, Township, Range: 21, Township 31 North, Range 10 East

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): concave Slope (%): < 1%

Subregion (LRR): MLRA22A Lat: 40 deg 32' 24" N Long: 120 deg 50' 55" W Datum: _____

Soil Map Unit Name: Wintoner family-Aquolls- Patio families association NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Deschampsia danthanoides (?)	60	Y	FACW
2. Poa sp.	15	N	
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0%	x 1 = _____
FACW species	0%	x 2 = _____
FAC species	0%	x 3 = _____
FACU species	0%	x 4 = _____
UPL species	0%	x 5 = _____
Column Totals:	0% (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14	7.5YR 2.5/2	100	N/A				silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology indicated by water stained vegetation may have occurred outside of the growing season or for insufficient duration.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Eagle Lake City/County: Lassen Sampling Date: 11/12/2008

Applicant/Owner: Lassen NF State: CA Sampling Point: 5

Investigator(s): JCH Section, Township, Range: 21, Township 31 North, Range 10 East

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): concave Slope (%): < 1%

Subregion (LRR): MLRA22A Lat: 40 deg 32' 24" N Long: 120 deg 50' 55" W Datum: _____

Soil Map Unit Name: Wintoner family-Aquolls- Patio families association NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Carex sp.	100	Y	*
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0%	x 1 = _____
FACW species	0%	x 2 = _____
FAC species	0%	x 3 = _____
FACU species	0%	x 4 = _____
UPL species	0%	x 5 = _____
Column Totals:	0% (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

* Assumed to be hydrophytic.

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14	7.5 YR 2.5/2	100	N/A				silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology indicated by water stained vegetation may have occurred outside of the growing season or for insufficient duration.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Eagle Lake City/County: Lassen Sampling Date: 11/12/2008

Applicant/Owner: Lassen NF State: CA Sampling Point: 6

Investigator(s): JCH Section, Township, Range: 21, Township 31 North, Range 10 East

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): concave Slope (%): < 1%

Subregion (LRR): MLRA22A Lat: 40 deg 32' 24" N Long: 120 deg 50' 55" W Datum: _____

Soil Map Unit Name: Wintoner family-Aquolls- Patio families association NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Carex sp.	100	Y	*
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0%	x 1 = _____
FACW species	0%	x 2 = _____
FAC species	0%	x 3 = _____
FACU species	0%	x 4 = _____
UPL species	0%	x 5 = _____
Column Totals:	0% (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

* Assumed to be hydrophytic.

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14	7.5 YR 2.5/2	100	N/A				silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators.