

INITIAL STUDY AND MITIGATED
NEGATIVE DECLARATION

Yellow Creek Watershed Restoration Project
Plumas County, California

*Prepared by Leslie Mink, Plumas Corporation (agent)
for
Lassen National Forest, Almanor Ranger District (applicant)*

Adopted 12 August 2021

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PROJECT INFORMATION

Project Title & Description: Yellow Creek Watershed Restoration Project. The 450-acre project includes woody debris and complete fill channel treatments, meadow restoration, and vegetation management.

Lead Agency/Contact: Lynn Coster, Regional Water Quality Control Board (RWQCB)
364 Knollcrest Drive, Suite 205 Redding, CA 96002
530-224-2437

Project Location: Lassen National Forest (LNF), Almanor Ranger District. The project encompasses approximately four miles of Yellow Creek within the Upper Feather River Watershed in Plumas County, CA and falls within Township 27 North, Range 6 East, Sections 27, 34, and 35 Mount Diablo Base Meridian (MDBM). The largest meadow complex within the Yellow Creek subwatershed is Humbug Valley, which is owned by both private and federal stakeholders. This project encompasses 450 acres of federal land and includes six meadow segments, all of which drain into Humbug Valley. Humbug Valley is the ancestral land of the Mountain Maidu who refer to the valley as Tásmam Koyóm. The attached Yellow Creek Watershed Restoration Project Environmental Assessment (EA) (Attachment 2) includes a map of the project vicinity (Figure 1, p.1).

Description of the project: Channel, riparian, and meadow restoration, and timber stand fire resilience management on 450 acres of LNF in the vicinity of Yellow Creek upstream of Humbug Valley.

Project Sponsor: Russell Nickerson, Almanor District Ranger
900 East Highway 36 PO Box 767 Chester, CA 96020
530-258-2141

Agent: Leslie Mink, Plumas Corporation
PO Box 3880 Quincy, CA 95971
530-283-3739

General Plan: USA

Zoning: General Forest

Surrounding Land Uses and Setting: Timber production is the primary land use, with dispersed recreation use by the public. The project area is comprised of riparian stringer meadow floodplains within timbered uplands.

Other Public Agencies Whose Approval May be Required:

Central Valley Regional Water Quality Control Board- Clean Water Act Section 401 Water Quality Certification; U.S. Army Corp of Engineers - Clean Water Act Section 404 Permit (Under Nationwide Permit 27), Lassen National Forest, Almanor Ranger District, National Environmental Policy Act Decision (Finding of No Significant Impact)

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.

<input type="checkbox"/>	Aesthetics	<input type="checkbox"/>	Agriculture/Forestry Resources	<input checked="" type="checkbox"/>	Air Quality
<input checked="" type="checkbox"/>	Biological Resources	<input checked="" type="checkbox"/>	Cultural Resources	<input checked="" type="checkbox"/>	Geology & Soils
<input type="checkbox"/>	Greenhouse Gas Emissions	<input checked="" type="checkbox"/>	Hazards & Hazardous Materials	<input checked="" type="checkbox"/>	Hydrology / Water Quality
<input type="checkbox"/>	Land Use / Planning	<input type="checkbox"/>	Mineral Resources	<input checked="" type="checkbox"/>	Noise
<input type="checkbox"/>	Population / Housing	<input type="checkbox"/>	Public Services	<input type="checkbox"/>	Recreation
<input checked="" type="checkbox"/>	Transportation/Traffic	<input checked="" type="checkbox"/>	Utilities/Service Systems	<input type="checkbox"/>	Mandatory Findings of Significance
<input checked="" type="checkbox"/>	Energy	<input checked="" type="checkbox"/>	Tribal Cultural Resources	<input checked="" type="checkbox"/>	Wildfire

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 will be prepared.
- I find that although the Proposed Project could have a significant effect on the environment, there will 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 will 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

PROJECT DESCRIPTION & BACKGROUND

The LNF is proposing to restore aspen, meadows and upland forests on 450 acres within the Upper Feather River Watershed. These actions are proposed to be implemented within the Almanor Ranger District of the LNF. An EA (Attachment 2) has been prepared to determine whether implementation of these forest management activities may significantly affect the quality of the human environment and thereby require the preparation of an environmental impact statement.

Background

The purpose, need and project activities presented here were developed in partnership with Lassen National Forest, Plumas Corporation, the Design Sub-committee of the Sierra Meadows Partnership (SMP), Sierra Fund, and the Maidu Summit Consortium to address the purpose and need for the project identified by the. The SMP Design Sub-committee identified this project for use in a collaborative effort with the objective of refining and expanding the existing suite of commonly used restoration techniques.

The need for this project comes as a result of the 2000 Storrie Fire, which led to an increase in erosion and sedimentation to the North Fork Feather River watershed, including the Yellow Creek subwatersheds and tributaries. This project provides a unique opportunity to improve the hydrologic function of headwater meadows, springs, fens and other riparian habitats which contribute to downstream hydrologic flows and help to reduce sedimentation to downstream areas. In addition, there is a need to improve the health and resiliency of the surrounding upland forests and reintroduce fire as an ecological process. This project has two purposes:

1. To restore meadow form and function to a dynamic and self-sustaining state that is resilient to a range of future climatic conditions.
2. To restore aspen, meadow and upland forests to reflect a condition influenced by natural fire regimes and reintroduce fire as an ecological process.

Existing Conditions

Yellow Creek is a spring fed perennial stream system high in the North Fork Feather River watershed. Less than a mile from the source springs, a series of riparian and discharge slope meadows feed into Humbug Valley. What were historically meadows with valley-wide, multi-threaded, shallow channels are now meadows with a single-thread incised channel. Although there is evidence of historic beaver dams, beavers no longer persist in the project area and their influence on valley-wide flows has been lost. Large wood is currently lacking in many reaches, though it likely played an important role in providing grade control and bank stability in the past. Fens occurring throughout the meadow complex are at risk due to the incision of adjacent channels and associated changes to hydrology that may lead to peat loss if soils do not remain saturated throughout the growing season.

Although the grazing allotment has been vacant since 1999, a history of grazing impacts like ditching and trailing are still present and affecting hydrologic function. Absent grazing pressures, meadow and riparian vegetation is robust. Yet, it is primarily confined to the narrow, inset floodplain rather than across the wider valley as a result of a drop in the water table from channel degradation. Valley-wide, vegetation is transitioning to invasive or ruderal grasses and forbs, while late seral meadow species are decadent and not regenerating well. In addition, conifer encroachment is taking hold in many areas, competing with riparian hardwoods and meadow vegetation. Past restoration actions from the early 1990s and 2000s attempted to arrest headcuts and

address incision. Along the mainstem of Yellow Creek past actions included the installation of a box culvert, berms, fill, off channel ponds, log weirs and headcut rock treatments. These attempts have had localized mixed success but failed to address the meadow complex and systemic hydrologic degradation as a whole. The Forest Service has identified risk factors to resources in the project area, including degraded channel conditions, headcuts, gullies, ditches, conifer encroachment, and forest density and fuel levels that are not likely to survive wildfire.

Project Overview

The project area is comprised of six meadow areas within forested upland. The project description is organized by two broad treatment categories: hydrologic restoration and vegetation treatment. Hydrologic treatments are presented first, and are further broken down into meadow areas. Treatment details are described below. Figure 8 in Attachment 2 (p.17) displays a project overview, including meadow areas and vegetation treatment units.

Hydrologic Restoration Treatments

Project partners and LNF would monitor hydrologic treatments for a minimum of five years and would apply adaptive management strategies to ensure that project objectives are being met and infrastructure is functioning as desired. Fill material would be sourced from an off-site commercial source; none would be excavated on-site, with one exception for maintenance of the box culverts. All disturbed vegetation would be preserved and replanted before equipment leaves the site. Disturbed areas that are bare after re-planting would be seeded with native, locally sourced species, and covered with locally sourced mulch (forest duff). Dilapidated barbed wire fencing would be removed from around the meadows.

YC05 and YC04

YC05 is on the main stem of Yellow Creek from the upper property boundary down to the 27N04 box culverts. A detailed map of the proposed treatments in YC05 and YC04 can be found in Attachment 2, Appendix A, Figure 10 (p.61). Treatment in this area is proposed to begin at the upstream boundary of the project area with a series of debris jams, built to mimic natural woody debris in channels. These structures would add complexity to the stream channel to improve riparian and aquatic habitat. One side channel gully is proposed for complete fill in order to reconnect an aspen stand on the terrace peninsula to subsurface hillslope flow. Treatment includes maintenance of the box culvert crossing to remove debris and vegetation in front of the floodplain culverts.

YC04 is a shrub wetland in good condition on a tributary into YC05, however, if the existing culvert and 27N04B1 road crossing berm were to fail, a headcut would likely migrate into the wetland. A rock apron will be constructed below YC04 and the road will be decommissioned.

YC01 and YC03

The YC01 reach of Yellow Creek extends from the 27N04 culverts down to the property boundary. Similar to YC05, the channel would also be treated with a series of debris jams. A detailed map of the proposed treatments in YC01 and YC03 can be found in Attachment 2, Appendix A, Figure 11 (p.62). Decadent willows on the terraced floodplain would be pruned following traditional ecological guidelines from Maidu partners in order to re-invigorate willow populations. Additionally, the abandoned water diversion ditch located to the north of the main incised gully would be filled in order to limit unintended impacts to the fen

resources below YC02B, where the ditch leads. The abandoned rock gabion and associated infrastructure in this lower reach of YC01 would also be removed to accommodate continued development of the incised floodplain.

An existing access route parallels the north side of the meadow and has two spurs that drop into the floodplain to access dispersed camping areas. This route currently has significant ruts that would be further affected when heavy equipment travels on it to enter the meadow. In order to rehabilitate this access route, the ruts would be filled with base rock and a series of ten minor swales and small rolling dips would be incorporated. This would shuttle the water that is currently running down the ruts and eroding the access route across the road and down the hillslope on the other side, thus reducing erosion and assisting in reducing further hydrologic degradation of the small meadows on the north side of the road.

YC03 is a small pocket meadow tributary to YC01. The multiple small channels in YC03 are mostly connected to the floodplain, except in the vicinity of the road, and up-valley of the wet meadow area. The 27N04 road crossing in YC03 has caused some minor headcutting up the meadow and has created channelized flow below the meadow. Sod plugs are proposed in the channelized flow paths in the vicinity of the road. Sod plugs would effectively slow flow velocity out of YC03 from the 27N04 culverts. The ditch coming from the 27N04B culverts would be filled.

YC02A and YC02B

Both YC02 meadow areas are on a tributary to Yellow Creek that joins with the mainstem of Yellow Creek down-valley on private land, outside of the project area. The two meadow areas are divided by the 27N40 road (YC02A is above the road, YC02B is below the road). Detailed maps of the proposed treatments in the YC02 meadows can be found in Attachment 2, Appendix A, Figures 12 and 13 (pp.63-64).

Incised channels and ditches would completely filled. The vast majority of fill material would be imported, except ditch berms, which would be removed and incorporated into the fill. Some gaps in intermittent segments may result, depending on implementation access, equipment, or available fill. This treatment would restore a dynamic, multiple channel system on the surface of the meadow floodplain.

Table 1. Hydrologic restoration treatment summary.

Actions	Number of Locations*	Acres*	Affected Length of Existing Channel (ft)*
Meadow Hydrologic Restoration:	6 meadows	76	20,452
Channel-Span Structures	69	n/a	10,298
Semi-Span Structures	30		
Complete or Partial Channel Fill	4	2.24	4,142
Rock Apron	1	n/a	150
Sod Riffles	17	n/a	400
Bank Stabilization	1	n/a	39
Fill Ditches	4	n/a	7,355 feet of ditches
Install Subsurface Road Drainage	1	n/a	300 feet of road
Infrastructure Removal:			
Rock Gabion Removal	1	n/a	n/a
Berm Removal	1	n/a	17 feet of berm

Dilapidated Fence	3	n/a	12,532 feet of fences
Culvert Removal	2	n/a	n/a

*Numbers, acres, lengths, and locations are estimations based on thorough field review however these may be modified upon implementation due to the dynamic nature of the unstable channels.

Vegetation Treatments

The goal of vegetation treatments is to restore meadow habitat, aspen stands, and improve resilience to fire. All treatments include retention of conifers greater than 30” diameter. The project includes 148 acres of vegetation in upland forest areas, including: mechanical variable density thinning, which would retain larger trees and decrease forest density; grapple piling which would reduce fuel loading prior to under-burning; mechanical individual tree selection which would be used only for selected debris jam material; mechanical thinning of three plantation areas planted in 1975; and prescribed fire which includes low intensity under-burning.

Aspens (18 acres), meadows and fens (158 acres) would be treated with mechanical and hand-thinning, under-burning, and fencing of aspen stands. Trees prioritized for retention would be those that may serve as future material for hand-built woody structures, as well as those that may naturally recruit as woody debris into the channel in the future. Woody material may be left in place, incorporated into fill, lopped and scattered, placed for bird perching, or transported to adjacent upland for pile burning.

Table 2. Vegetation treatment summary.

Treatment Type	Acres*
Upland Forests (A)	148
Mechanical- VDT** (hand thin, pile burn, underburn) (Grapple pile and pile burn)	91 (87)
Mechanical -ITS** (underburn)	26
Plantation Mechanical Thin (underburn)	19
Underburn Only	12
Aspen (B)	18
Mechanical thin (hand thin, hand pile and burn and indirect underburn)	18
Meadows (C)	158
Mechanical thin (hand thin, hand pile and burn and indirect underburn)	48
Mechanical Thin (Individual tree selection for debris jams)	39
Hand thin only (follow up hand pile, pile burn and indirect underburn)*** (Fen)	71 (1)
Underburn Only (to reduce thatch)	<5
Total	324

*Acres may vary slightly during the final layout due to topography, stand condition, and rounding etc.

** VDT is Variable Density Thinning ITS is Individual Tree Selection

***Hand thinning in some meadow areas may include hand thinning within small aspen stands throughout the meadow area.

Road Treatments

The project includes road work to improve hydrologic function within the project area. The following treatments are proposed for the 27N40 road where it crosses the YC02 meadows: removing two culverts that have caused headcutting, filling resultant ditches and

channelization, and installing subsurface floodplain drainage. The subsurface drainage would consist of excavating 1.5 ft depth of the road prism and filling the excavated area with permeable rock fill over geotextile cloth. The road base would be sloped to match the native existing grade, and allow the water that was previously funneled through the culverts to spread across the road surface during winter and spring flows to re-wet a larger cross-section of the meadow, thereby contributing to restored meadow hydrology. The project also includes minor improvement to a rutting campground access next to a meadow, which is filling ruts with base rock to prevent overland flow from running down the road.

ENVIRONMENTAL CHECKLIST

I. AESTHETICS

Except as provided in Public Resources Code Section 21099, would the project:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) In non-urbanized areas, substantially degrade the existing character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The project area is located within the Lassen National Forest, Butt Creek Management Area, as described in the LNF Land and Resource Management Plan (LRMP). There are no visual quality objectives for the project area. Humbug Valley is designated as a scenic area in the Plumas County General. The project area is adjacent and up-valley from the open Humbug Valley area, and is not visible from Humbug Valley. Meadows in the project area are generally small, without any vistas. The farthest sight line in the project area is approximately 500 feet.

Discussion

a) The project includes restoration activities along Yellow Creek and in meadows, and vegetation management in meadows and uplands, resulting in short-term visual impacts, such as the presence of equipment and trucks and ground disturbance during project activities (three weeks each in 2021 and 2022). There will be no permanent borrow area excavations, as all fill material will be imported from a commercial source. Since there are no vistas, there is **no impact**.

b) The project is not located within or adjacent to a state scenic highway, therefore, there is **no impact**.

c) The project is located on National Forest in General Forest zoning. It is not in an urbanized area. Project activities are consistent with General Forest zoning, and visible from Forest Service roads 27N04 and 27N40, which are travelled by infrequent dispersed recreationists. Project will include the use of heavy equipment and hand crews for approximately three weeks in late summer/early fall in 2021 and 2022. The project area is located in a setting of working public and private timber lands, where logging equipment and trucks are normally seen. No project activities will be visible from Humbug Valley.

Results of the project are expected to be an improvement in the health of aspen stands, riparian areas, and stream channels with invigorated vegetation, and the surrounding forest by removal of an overcrowded understory, thus improving the aesthetics of the area. Once project activities with heavy equipment are completed, the project will not degrade, but will enhance, the existing character and quality of public views of the site and its surroundings, therefore there is **less than significant impact**.

d) The project will not result in any sources of light or glare, therefore there is **no impact**.

II. AGRICULTURE AND FOREST 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. In determining impacts to forest resources including timberland are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature that could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Setting

This project site is located on the LNF, within Plumas County, with a General Forest zoning. The project area proposed for restoration is a complex of riparian meadow floodplains surrounded by forested uplands that are actively managed for timber production. Important farmland is mapped by the Department of Conservation Farmland Mapping and Monitoring Program (FMMP). However, Lassen and Plumas counties are not included in the FMMP database.

Discussion

a) As defined by the FMMP, there is no prime farmland, unique farmland, or farmland of statewide importance within the project vicinity or the project site. The project site has been historically used for timber harvest and livestock grazing. The project will not convert the use of the project site. The project will not convert farmland to a non-agricultural use, therefore there is **no impact**.

b) The project site is federal land; there is no Williamson Act contract for the property. The project will not conflict with the General Forest zoning of the project site, therefore there is **no impact**.

c) The project is located in a mosaic of meadows and forested uplands on National Forest lands. The project does not conflict with, or cause rezoning of, General Forest zoning. The project would not result in conversion of forest to a non-timber growing use, therefore there is **no impact**.

d) Project activities such as thinning, underburning, and removal of lodgepole pine encroaching into meadows, are expected to enhance the fire resiliency of the forest, thus enhancing its value as forest land. The project will not result in a permanent loss of forestland or the conversion of forestland to non-forest use, therefore there is **no impact**.

e) Project objectives include meadow restoration and forest resiliency to enhance the existing environment, and will not result in permanent conversion of farmland or forestland to non-agricultural or non-forest uses. However, the enhancement of 26.39 acres, and re-establishment of 5.25 acres of palustrine wet meadow in the primary YC02 meadow may be less conducive to future cattle grazing than the existing condition, which was previously ditched to drain the wet meadow. The project would close existing eroding drainage ditches.

The restoration of naturally evolved meadow and forest conditions result in a **less than significant 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:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Setting

The project site is located in Plumas County within the Mountain Counties Air Basin (MCAB). The Northern Sierra Air Quality Management District (NSAQMD) provides regulatory oversight for air quality regulations, and is required to achieve and maintain federal and state ambient air quality standards which have been established to protect human health. Most of the air pollution generated in the NSAQMD is from vehicles and wood consumption, with ozone, particulate matter, and air toxins as pollutants of concern, as reported on the NSAQMD website.

In the MCAB, regional airflows are affected by the mountains and hills, which direct surface airflows, causing shallow vertical mixing, and creating areas of high pollutant concentrations by hindering dispersion. Inversion layers, where warm air overlays cooler air, frequently occur and trap pollutants close to the ground. In the winter, these conditions can lead to carbon monoxide (CO) “hotspots” along heavily traveled roads and at busy intersections. During summer’s longer daylight hours, stagnant air, high temperatures, and plentiful sunshine provide the conditions and energy for the photochemical reaction between reactive organic gases (ROGs) and nitrogen oxides (NOx) that results in the formation of ozone (O₃). Because of its long formation time, ozone is a regional pollutant rather than a local hotspot problem. In the summer, the strong upwind valley air flowing into the basin from the Central Valley to the west transports ozone precursors, and ozone generated in the Bay Area and the Sacramento and San Joaquin valleys. These transported pollutants predominate as the cause of ozone in the MCAB and are largely responsible for the

exceedances of the state and federal ozone ambient air quality standards some areas of the MCAB (Caltrans 2016), though not in Plumas County.

Of the seven important pollutants with federal or state air quality standards (O₃, CO, NO_x, sulfur dioxide, PM₁₀ (particulate matter less than 10 microns diameter), PM_{2.5} (particulate matter less than 2.5 microns diameter), and lead), Plumas County is classified by the California Ambient Air Quality Standards (CAAQS) as “non-attainment” for PM₁₀, and “attainment” or “unclassified” for all the others. “Non-attainment” indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event (such as wildfire), as defined in the criteria. Plumas County’s largest sources of PM₁₀ are unpaved road dust, prescribed burning, and residential fuel. Primary contributors to these pollutant emissions include wildfires, use of woodstoves, forestry management burns, residential open burning, vehicle traffic, and windblown dust. The varying topography of the air basin also contributes to localized air quality issues within valleys (ibid).

Discussion

a) There is no air quality plan that is applicable to this portion of Plumas County, therefore there would be no conflict or obstruction of a plan, and **no impact**.

b) Plumas County is classified as “non-attainment” for PM₁₀. Project implementation activities will generate fugitive dust, primarily from transport and placement of fill material, and controlled burning activities (mechanical thinning and worker trips would also generate dust, but to a lesser extent). PM₁₀ is the pollutant of greatest concern associated with dust. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Without proper control measures, dust and smoke generated from project activities could have an adverse effect on air quality. PM₁₀ emissions from heavy equipment work would depend on soil moisture, silt content of soil, wind speed, and the amount of equipment operating, and thus are difficult to quantify and predict. With mitigations, fugitive dust would not result in any adverse air quality impacts. Since Plumas County is in attainment for all other current NAAQS, conformity requirements for those emissions do not apply. PM₁₀ emissions would be mitigated by following NSAQMD reasonable precautions for smaller projects (because this project does not include excavation or clearing of ground) (**AQ-1**).

During controlled burning activities, Forest Service and California Air Resources Board smoke-dispersal forecasting would be used as part of the project-specific burn plan to mitigate effects within the regulatory framework (**FIR-1**). During operations, a sign shall be posted for the public to contact the NSAQMD or project personnel to complain about fugitive dust (**AQ-2**). This impact is **less than significant with mitigation**.

c) Sensitive receptors (e.g., children, senior citizens, and acutely or chronically ill people) are more susceptible to the effect of air pollution than the general population. Land uses that are considered sensitive receptors typically include residences, schools, parks, childcare centers, hospitals, convalescent homes, and retirement homes. The closest community to the project area is Chester, which is approximately ten air miles from the project site. The project will not expose sensitive receptors to substantial pollutant concentrations because there are none near the project area, therefore, there would be **no impact**.

d) There are not substantial numbers of people in the vicinity of the project area to be affected. Construction would occur during normal working hours when dispersed

recreationists would be less likely to travel through the area, and be exposed to other emissions from diesel equipment. However, heavy equipment used for project activities would result in minimal daily emissions of ROG, CO, NO_x, SO₂, PM₁₀, PM_{2.5}, and odor from consuming diesel fuel (an analysis of greenhouse gas emissions is discussed in Section VIII). Emissions would occur during implementation only, and would quickly disperse away from operating equipment. Emissions from diesel equipment would be minimized by employing mitigation measures (AQ-3). Therefore, this impact would be **less than significant with mitigation**.

Air Quality Mitigation Measures:

AQ-1. NSAQMD “reasonable precautions” for small projects would be taken to reduce fugitive dust:

- All material excavated, stockpiled, or graded shall be sufficiently watered, treated, or covered to prevent fugitive dust from leaving the property boundaries and/or causing a public nuisance. Watering during summer months should occur at least twice daily, with complete coverage of disturbed areas.
- All areas with vehicle traffic shall be watered or have dust palliative applied as necessary to minimize dust emissions.
- All onsite vehicle traffic shall be limited to a speed of 15 mph on unpaved roads.
- All land clearing, grading, earth moving, or excavation activities on a project shall be suspended as necessary to prevent excessive windblown dust when winds are expected to exceed 20 mph.
- All inactive portions of the development site shall be covered, seeded, or watered, or otherwise stabilized, until a suitable cover is established.
- All material transported offsite shall be either sufficiently watered or securely covered to prevent it being entrained in the air, and there must be a minimum of six inches of freeboard in the bed of the transport vehicle.
- Utilize wheel washers, rumble grate, and paving of internal roads or use of dust palliatives on roads to eliminate track out.
- Paved streets adjacent to the project shall be swept or washed at the end of each day, or more frequently if necessary, to remove excessive accumulations or visibly raised areas of soil which may have resulted from activities at the project site.
- The applicant shall re-establish ground cover on the site through seeding and watering.

AQ-2: A publicly visible sign shall be posted with the telephone number and person to contact regarding fugitive dust and/or odor complaints. This person shall respond and take corrective action within 24 hours. The Air District’s phone number shall also be visible to ensure compliance with applicable regulations.

AQ-3. Implement the following measures to reduce exhaust emissions to the greatest extent practicable:

- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points.
- All equipment shall be maintained and properly tuned in accordance with manufacturer’s specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

- All diesel-powered equipment greater than 50 horsepower (hp) shall be equipped with engines that meet or exceed CARB Tier 3 or better off-road emission standards with the most efficient Verified Diesel Emissions Control Strategies available for the engine type, such as Level 3 Diesel Particulate Filters.

IV. BIOLOGICAL RESOURCES

Would the project:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on state or federally protected wetlands (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption or other means?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The following table, which displays California Wildlife Habitat Relationships (CWHR) habitat types in the project area, is adapted from the Biological Evaluation of Terrestrial Wildlife Species for the Yellow Creek Watershed Restoration Project (available from the Almanor Ranger District coye.burnett@usda.gov). The project area is surrounded by upland forest, and is adjacent to the upstream edge of Humbug Valley, which includes open meadow habitat.

CWHR (Type/Size/Canopy)	Project Area Existing Acres
Forested Habitats	
Early-seral Coniferous Forest, Size 1-3 (JPN ² , PPN, SMC, WFR) all canopy closures ¹	56
Mid-seral Coniferous Forest, Size 4 (JPN, SMC, WFR, RFR) all canopy closures ¹	279
Late-seral Closed Canopy Coniferous Forest (JPN, SMC) Size 5+, all canopy closures ¹	21
Hardwood Forest (MHC), Size 4, canopy closure D	0
Riparian Habitats	
Lacustrine (LAC)	0
Montane Riparian (MRI)	49
Aspen (ASP)	0
Wet Meadow (WTM)	42
Other Habitats	
Montane Chaparral (MCP)	0
Annual Grassland (AGS)	3
Barren (BAR)	0
TOTAL	450

¹ acres from LNF Existing Veg project area GIS project database 2/10/21

² abbreviations: JPN=Jeffrey Pine; PPN=Ponderosa Pine; SMC=Sierra Mixed Conifer; WFR=White Fir; Size classes 1-3 ≤ 10.9”; Size class 4=11-23.9” diameter; Size class 5≥24”; Canopy closure D ≥ 60% cover.

Discussion

a) Wildlife - Both the California Natural Diversity Database (CNDDDB) query, and a US Fish and Wildlife Service were queried for a list of species that may occur, or have habitat in the project area. These lists, in addition to the U.S. Forest Service Lassen National Forest Sensitive Species, Migratory Birds, and Management Indicator Species lists include the species that were analyzed for the project. The table below summarizes the status of each species, their presence or potential habitat in the project area, and the determination of impacts. Reasoning for the determinations follows the table. Impacts were analyzed both for the 450-acre project area, and a broader 9,698-acre Wildlife Analysis Area (WAA), which extends approximately one mile beyond the project area boundary.

Wildlife Species	Listing Status* (Fed/State)	Habitat	Species or potential suitable habitat present	Determination
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Fish				
Delta Smelt (<i>Hypomesus transpacificus</i>)	FT / SE	Cold, brackish water in Sacramento-San Joaquin River Delta	Does not occur in project area or WAA. Species located far enough downstream that there will be no measurable effects to this species or its habitat.	No impact
Hardhead (<i>Mylopharodon conocephalus</i>)	FSS / SSC	Low to mid-elevation rivers and streams	Does not occur in project area or WAA. Species located far enough downstream that there will be no measurable effects to this species or its habitat.	No impact
Amphibians				
Southern long-toed salamander (<i>Ambystoma macrodactylum sigillatum</i>)	--/ SSC	High elevation meadows and lakes.	Known to occur within project area and WAA based on CNDDDB records. Suitable habitat is present.	Less than significant impact with mitigation
Sierra Nevada yellow-legged frog (<i>Rana sierra</i>)	FE, FSS / ST, SSC	High elevation low-gradient streams and small ponds above 4,500 feet	Known historical presence and potential to occur within the project area and WAA. Potential suitable habitat is present.	Less than significant impact with mitigation
Cascades frog (<i>Rana cascadae</i>)	FSS / Candidate SE, SSC	Perennial streams, lakes, ponds, wetlands, and fens	Historic presence within project area and WAA. Potential suitable habitat is present.	Less than significant impact with mitigation
Foothill yellow-legged frog (<i>Rana boylei</i>)	FSS / SE, SSC	Perennial rocky streams in valley-foothill forests, chaparral and wet meadows.	Not known to occur in the project area or WAA. Suitable habitat present, but low potential within project area and WAA.	No impact
Reptiles				
Western Pond Turtle (<i>Emys marmorata</i>)	FSS / SSC	Perennial streams, lakes, and ponds	Not known to occur in the project area. Suitable habitat present, but low potential within project area and WAA.	No impact
Invertebrates				
Western bumble bee (<i>Bombus occidentalis</i>)	FSS / Candidate SE	Access to flowering plants and abandoned rodent burrows	Not known to occur in the project area, but suitable habitat present.	Less than significant impact with mitigation
Black juga (<i>Juga nigrina</i>)	FSS /--	Perennial streams and springs	Known to occur in Lassen National Forest. Potential suitable habitat is present.	Less than significant impact with mitigation
Birds				
Bald eagle (<i>Haliaeetus leucocephalus</i>)	FSS /SE, CFP	In western North America, coniferous forests within 1 mile of a water body	No known bald eagle nests within project area or WAA. Suitable habitat	No impact

			present, but low potential within project area and WAA.	
California spotted owl (<i>Strix occidentalis occidentalis</i>)	FSS, MIS / SSC	Late seral closed canopy coniferous forest	Known to occur in the project area.	Less than significant impact with mitigation
Great gray owl (<i>Strix nebulosa</i>)	FSS / SE	Late seral closed canopy coniferous forest adjacent to wet meadows	Not known to occur in or adjacent to the project area, but suitable habitat present	Less than significant impact with mitigation
Greater sandhill crane (<i>Antigone canadensis tabida</i>)	FSS / ST, CFP	Summers in open terrain near shallow lakes or freshwater marshes; winters in plains and valleys near bodies of fresh water	Known to occur within the project area.	Less than significant impact with mitigation
Northern goshawk (<i>Accipiter gentilis</i>)	FSS / SSC	Coniferous forest and aspens are typical nest trees.	Known to occur within the project area.	Less than significant impact with mitigation
Olive-sided flycatcher (<i>Contopus cooperi</i>)	--/ SSC	Conifer forests, burns, clearings, especially around the edges of open areas.	Known to occur in the project area and/or WAA.	Less than significant impact with mitigation
Vaux's Swift (<i>Chaetura vauxi</i>)	--/ SSC	Nests in large hollow trees or snags and shows a preference for foraging over river and wetland habitats; most other activities are conducted in the air	Not known to occur in the project area. Available suitable habitat is marginal.	No impact
Willow flycatcher (<i>Empidonax traillii</i>)	FSS / SE	Riparian areas and large, wet meadows with abundant willows for breeding; usually found in riparian habitats during migration	Known to occur in the project area.	Less than significant impact with mitigation
Yellow rail (<i>Coturnicops noveboracensis</i>)	FSS / SSC	Grassy marshes and wet meadows	Not known to occur in project area or WAA. Suitable habitat present, but low potential within project area and WAA.	No impact
Yellow warbler (<i>Dendroica petechial</i>)	MIS/BSSC	Primarily nests in riparian habitats adjacent to creeks and rivers in thickets.	Known to occur in the project area.	Less than significant impact with mitigation
Mammals				
American badger (<i>Taxidea taxus</i>)	--/ SSC	Drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	Not known to occur in the project area or WAA. Suitable habitat present, but low potential within project area.	No impact

California wolverine (<i>Gulo gulo luteus</i>)	Proposed FT, FSS/ST, CFP	Remote, high elevation, tree-line habitat and areas of deep snowpack	Not known to occur in the project area and suitable habitat not present.	No impact
Gray wolf (<i>Canis lupus</i>)	FE / SE	Habitat generalist, including coniferous forests and wet meadows	Not known to occur in or near the project area, but suitable habitat present.	Less than significant impact with mitigation
Pacific fisher – West Coast DPS (<i>Pekania pennanti</i>)	FE, FSS / ST, SSC	Intermediate to large-tree coniferous forests and deciduous-riparian areas with high percent canopy closure. Uses cavities, snags, logs, rocky areas for cover and denning. Large areas of mature, dense forest.	Surveys have detected fisher within the project area. Suitable foraging habitat present, with little denning habitat and required structural components: multiple size classes, large logs, snags, and trees	Less than significant impact with mitigation
Pacific marten (<i>Martes caurina</i>)	FSS / --	Same habitat as fisher, but typically found at higher elevation (>4,900 ft)	Surveys have not detected marten within the project area.	Less than significant impact with mitigation
Sierra Nevada mountain beaver (<i>Aplodontia rufa californica</i>)	-- / SSC	Dense growth of small deciduous trees and shrubs in riparian areas, wet soil, abundance of forbs.	Not known to occur in the project area, but suitable habitat is present	Less than significant impact with mitigation
Sierra Nevada red fox (<i>Vulpes vulpes necator</i>)	Proposed FE, FSS / ST	Mainly mountain meadows and woodlands near treeline. Some winter use of high elevation coniferous forest	Not known to occur in the project area. Low potential due to habitat suitability is marginal in the project area and WAA.	No impact
Pallid bat (<i>Antrozous pallidus</i>)	FSS / SSC	Most common in open, dry habitats with rocky areas for roosting (rocky outcrops, cliffs and crevices)	Known to occur in Lassen National Forest. Suitable habitat is present.	Less than significant impact with mitigation
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	FSS / SSC	Occupy a variety of habitats with distribution strongly correlated with availability of caves and cave-like roosting habitat. Foraging associated with edge habitats along streams and adjacent to and within wooded habitats.	Known to occur in Lassen National Forest. Suitable habitat is present.	Less than significant impact with mitigation
Fringed myotis (<i>Myotis thysanodes</i>)	FSS / SSC	Most common in mid-elevation drier woodlands (oak, pinyon-juniper, ponderosa pine). Roost in crevices in buildings, underground mines, rocks, cliff faces, bridges, and old large trees and snags.	Known to occur in Lassen National Forest. Suitable habitat is present.	Less than significant impact with mitigation
Western red bat (<i>Lasiurus blossevillei</i>)	--/ SSC	Use a variety of habitats; strongly associated with riparian habitats, with tree	Known to occur near the WAA. Suitable habitat is present.	Less than significant impact with mitigation

		roosts often in edge habitats adjacent to streams.		
<p>*Status definitions: FE or SE = Listed as Endangered under the federal or state Endangered Species Act FT or ST = Listed as Threatened under the federal or state Endangered Species Act SSC = California species of special concern CFP = California fully protected species FSS = United States Forest Service Sensitive Species MIS = United States Forest Service Management Indicator Species</p>				

General Wildlife Impacts

The following discussion of impacts is organized by species. Impacts will be reduced to **less than significant with mitigation**, which are detailed below.

The effects of the project to the species listed in the above table are not expected to extend beyond the WAA boundary. All direct effects would occur within the project area, and indirect and cumulative effects discussed would occur within the project area and/or WAA. The direct and indirect effects of the project together with the additive or cumulative effects of prior or future planned actions have been considered in evaluating impacts to all species considered. Implementation of the project is expected to alter existing habitat and induce disturbance (equipment activity and resulting noise) within the treatment areas. The direct effects to existing habitat include: relocating channel flows from the existing incised channel to the remnant channel(s) on the meadow floodplain, removal and replanting of existing meadow and riparian vegetation (sedges, grasses, willows where available), removal of trees to build channel structures, and restore aspen, meadow and upland forest vegetation to improve fire resiliency, and use of prescribed fire to reintroduce fire as an ecological process. Direct disturbance, including mortality to individual animals addressed in this analysis is highly unlikely, due to survey efforts for selected species, inclusion of LOPs where appropriate, and implementation of Forest standards and guidelines.

Indirect effects include those that occur later in time and/or in another location than the project, such as changes in prey availability. For example, indirect effects due to the elimination of sections of the existing aquatic/meadow habitat may result in possible short-term reductions in prey species availability for foraging bat and bird species due to the reduction of in-stream macro-invertebrates, which complete their life cycle as reproductive terrestrial, winged insects.

Late seral-stage coniferous forest habitats are expected to benefit in the long-term from proposed treatments, which in turn could improve habitat conditions for species dependent on these habitat types. Thinning may improve habitat suitability in the long-term within the treated areas. Reducing tree density would allow for improved growing conditions of the remaining trees, allowing them to increase in size through time. Long-term, late seral habitat features would develop as trees grow and develop decadence. Thinning and fuels reduction would contribute to the ability to safely manage wildfire and improve the sustainability of developing late seral features and structure. All of the proposed vegetation treatments, regardless of their occurrence in suitable or unsuitable habitat, would accelerate the treated areas towards suitable habitat for late-seral stage dependent species, benefitting these species in the long-term, and/or improving the resiliency of all habitat types to wildfire.

The **Delta smelt, hardhead, western pond turtle, foothill yellow-legged frog, bald eagle, Vaux's swift, yellow rail, American badger, California wolverine, and Sierra**

Nevada red fox will not be further discussed based on lack of species distribution and/or lack of designated critical habitat and/or because the habitat and/or ecosystem components for these species are not in the project area or broader wildlife analysis area (WAA). Hardhead, foothill yellow-legged frog, bald eagle, California wolverine, and Sierra Nevada red fox have recorded CNDDDB detections outside of the project area and WAA, but have never been detected in resource surveys of these areas. Suitable habitat for the bald eagle, wolverine, and red fox is lacking or minimal with very low potential in the project area. The Western pond turtle, Vaux's swift, yellow rail, and American badger has neither been detected in resource surveys of the project area and WAA, nor are there any recorded CNDDDB detections in a nine quad query surrounding the project area. Based on these factors, the project would not directly or indirectly affect these species or their habitat. Therefore, the Yellow Creek Watershed Restoration Project will not impact these species.

Amphibians

Southern long-toed salamander (*Ambystoma macrodactylum sigillatum*) – Southern long-toed salamanders (SLTS) prefer montane habitats, including conifer, riparian, and meadow habitats, which all exist in the project area and WAA. Adults remain subterranean for the majority of the year, so detecting their presence is difficult. During the breeding season, typically in late May to early June depending on snowpack, they migrate to ponds to lay their eggs. Aquatic surveys conducted along Yellow Creek and tributaries between 1993-2020 have not detected SLTS. However, CNDDDB records indicate the species is present both in the project area and WAA. There are two ponds within the project area and nine downstream of the project area on private lands that could provide potential breeding habitat; however, they may lack vegetation and bottom debris cover preferred by the aquatic larvae. In addition there are two springs outside of the project area and six fens within the project area. Project activities would not affect springs. Conifers may be hand-removed from approximately seven acres of fen habitat; however, mitigations including controls on equipment access (**Bio-1, Bio-2, Bio-3**), felling (**Bio-4**), and burning (**Bio-5**) would protect fens, and requires surveys (**Bio-6**) before impacting potential suitable habitat for other amphibians (i.e., ranid frogs) and invertebrates (i.e., black juga). Primary threats are introduced predatory trout, which are present in Yellow Creek, including both brown and brook trout. Larvae are also preyed upon by aquatic invertebrates, garter snakes, and other vertebrates, all of which are present within the project area and the surrounding vicinity.

Potential direct effects to the SLTS would result from construction disturbance of subterranean adults or habitat. Because all fill material would be imported, the risk of digging up adults to excavate fill material would be minimized; however, removal of vegetation and top soil within incised channels and ditches prior to filling could potentially disturb subterranean adults. Due to implementation of all proposed meadow treatments occurring in the fall there would be no potential for trampling migrating breeding adults. There is potential to disrupt fall migration to overwintering habitats and impacts to hibernation sites. However, these effects are unlikely to be significant, as SLTS fall migration occurs at night, and construction activities will occur during the daytime hours. There are little data available on hibernation sites for SLTS, but may include aquatic sites for larvae under logs, bottom debris, and subsurface springs and terrestrial locations such as logs for adults. Mitigations would minimize effects to possible hibernations sites by restricting access in riparian zones and other aquatic habitat features that may be utilized by overwintering salamanders (**Hyd-2**). In addition, 10 to 15 tons per acre of large down logs

would be retained where it exists, which could potentially include habitat for overwintering adult salamanders (**Bio-19**). All of the existing ponds that may provide breeding habitat within and outside of the project area would not be directly or indirectly impacted by the proposed project actions. Long-term direct effects to habitat would be beneficial with the creation of pooled habitat created by the installation of woody debris in the channel, and meadow areas staying wetter for a longer period in the spring/early summer.

Indirect effects from increased ponded/pooled water habitat (lacustrine habitat) within the project area could be detrimental due to the propensity for aquatic invasive species (AIS), such as bullfrogs, to occur in this habitat type. At present, this is unlikely because there are no known nearby bullfrog populations that would move into the project area. The ponds created from past restoration efforts (since 2003), have not been invaded by bullfrogs, or other AIS. Therefore, the likelihood of this adverse effect is minimal. However, by definition, invasive species tend to move, and there is a possibility that they may eventually occupy the area. This could occur with or without additional slow water habitat created by the project. The risk for cumulative effects to the SLTS from project implementation is considered very low when added to past, present and reasonably foreseeable actions. This is because direct effects to the SLTS are highly unlikely, the potential for indirect effects is minimized with the mitigations and, the risk for cumulative watershed effects in the Yellow Creek and Humbug Valley subwatersheds is low.

Sierra Nevada yellow-legged frog (*Rana sierrae*) – Sierra Nevada yellow-legged frog is the only federally listed species with potential suitable habitat (PSH) in the project area (defined as perennial water above 4500 feet elevation with an 82' buffer out from the edge of water). While historic presence is known, this species has not been detected in the project area or WAA in the past 25+ years, during numerous surveys (including 2020). A Biological Assessment (BA) for this species was prepared and submitted to the US Fish and Wildlife Service for their concurrence. A concurrence letter was received on March 15, 2021. The BA and letter are available upon request from the Lassen National Forest (coye.burnett@usda.gov).

No direct effects, in the form of direct mortality or injury from heavy equipment or hand crews, to the Sierra Nevada yellow-legged frog (SNYLF) are anticipated to occur from any project activities within their Potential Suitable Habitat (PSH). This is because it is extremely unlikely that the frog is present within, or anywhere near, the project area. However, in the unlikely event that there are undetected SNYLF in the project area, mitigations have been developed to protect SNYLF, including pre-project (and periodically during the project) biological surveys, including habitat where disturbance is planned and underburn areas (**Bio-6**) and water drafting sites (**Bio-7**). If ranid frogs are detected, all activity would stop at that location until a protection plan is developed (**Bio-8**). Water drafting equipment will utilize a screened intake device and pump with low entry velocity and suction strainers with screen size less than 2 mm (1/8 inch) (**Bio-9**). Because piles of woody debris prepared for burning might attract frogs, which could then perish during burning, no piling or burning will occur within the 82' PSH buffer (**Bio-10**). Unoccupied PSH is expected to be affected by the project, since there are many activities within stream channels and riparian areas. The objectives of the project are to improve resiliency of these habitats, and therefore, a net long-term habitat quality benefit is expected for SNYLF PSH. In the short-term, the use of heavy equipment would be mitigated by not directly crossing perennial waters without protection

such as a culvert or rock (**Bio-11**). The creation of pooled and ponded water habitats behind debris jam structures or fill material could provide habitat for bullfrogs that out-compete and predate upon SNYLF. This adverse long-term effect is expected to be minimal because there have been ponds in the project area for the last 18 years without colonization by bullfrogs, and there is no known nearby source population. The expected increase in habitat complexity is expected to provide refugia for individuals avoiding predation, as well as a variety of basking locations. Long-term habitat complexity improvements also are expected to offset minimal short-term increases in sedimentation from channel adjustments from the introduction of woody debris that may induce some erosion as meanders develop. Potential sedimentation from temporary bare soil areas would be minimized by mitigations discussed below for Geology and Soils (Section XX. **Hyd-1-5**), with restrictions on erosion control netting to protect amphibians (**Bio-12**). Reduced streamflow from water drafting would be minimized by maximum drafting rates, and precluding locations with less than two cfs streamflow (**Bio-13**). Long-term changes in streamflow are expected to be minimal as channel and riparian adjustments would occur in tandem (thus balancing floodplain aquifer release with increased evapotranspiration). Project effects on stream flow and water temperature are being monitored at the downstream end of the PSH. Changes in water temperature could occur through loss of some shading riparian vegetation, and an increase in slow water habitat, which might increase stream temperatures. Temperature increases are expected to be negligible, and offset by the cooling effect of increased groundwater-surface water interactions. Riparian vegetation would remain intact to the greatest extent possible (**Bio-14**). Because of all these factors, implementation of the Yellow Creek Project would pose a negligible risk of direct/indirect effects upon SNYLF and their PSH. The risk for cumulative effects to the SNYLF from implementation of the Yellow Creek Project is considered very low when added to past, present and reasonably foreseeable actions. This is because direct effects to the SNYLF are highly unlikely, the potential for indirect effects to PSH is minimized to a discountable level with mitigations, and the risk for cumulative watershed effects in the Yellow Creek and Humbug Valley subwatersheds is low.

Cascades frog (*Rana cascadae*) - Direct and indirect effects to the Cascades frog are very similar to those discussed above for the SNYLF. Cascades frogs PSH is comprised of all perennial waters in the project area. Here again, this species has not been detected in any surveys in the vicinity of the project, and there is not a plausible source population to colonize the project area. The same impacts to slow water habitats, sedimentation, water temperature, stream flow, and riparian vegetation via actions involving heavy equipment, channel filling, and vegetation management would affect Cascade frogs habitat as discussed above for SNYLF, except that Cascades frogs are even more closely associated with the wetted environment, so impacts discussed above for the 82' buffer around SNYLF waters would not apply to the Cascades frog (i.e. heavy equipment and burning). Mitigations that protect SNYLF would also protect Cascades frog (**Bio-14**), and pertain to all perennial waters in the project area. Similar to the SNYLF, the risk for cumulative effects to the Cascade frog from implementation of the Yellow Creek Project is considered very low when added to past, present and reasonably foreseeable actions. This is because direct effects to the Cascades frog are highly unlikely and the potential for indirect effects to their potential suitable habitat is minimized to a discountable level with mitigations and, the risk for cumulative watershed effects in the surrounding subwatersheds is low.

Invertebrates

Western bumble bee (*Bombus occidentalis*) - Potential direct effects include injury or mortality to bees, burning and/or burying (under slash piles or fallen trees) nest sites, and noise disturbance during construction. Direct short-term effects to habitat include a temporary decrease in flowering plants removed, burned, or trampled during construction within the treatment areas. These effects would be lessened by construction occurring during the fall (meadow treatments and burning) or winter (vegetation treatments) when fewer plants are flowering. However, these periods are when the reproductive female bees (gynes) begin to search for a suitable overwintering site underground. Disturbance or destruction of overwintering sites would affect the following year's reproduction. For meadow treatments, any excavated vegetation and top soil would be transplanted to other areas in the meadow, reducing the direct effects to flowering plants. Vegetation treatments (thinning and burning) would trample and burn plants during operations. Long-term direct effects to habitat would be beneficial with the increased groundwater levels in meadows expanding the extent of flowering plants associated with wet to moist soil conditions. Removing encroaching conifers and reintroducing fire in the meadow would also increase the extent and diversity of flowering plants in the treatment areas. The majority of flowering plants that occur outside the meadow area are found on the open slopes, outcrops, and brush fields, which would not be directly disturbed. Restoring the meadow floodplain hydrology will affect approximately 51 acres of dry meadow habitat, converting it to more mesic plant communities. It is expected that the loss of xeric-associated flowering plants would be replaced with mesic-flowering species, so there would be no net loss of foraging habitat. The expected increase in groundwater levels could potentially decrease rodent burrowing in the meadow. This would indirectly affect the availability of nesting and overwintering habitat for Western bumble bees within the meadow in the project area. However, given the abundance of rodents throughout the project and surrounding area, and open, west-to-southwest facing meadow edges and slopes bordered by conifers that offer other prospective nesting and overwintering sites, the loss of available rodent burrows and drier meadow habitat is not expected to have an adverse effect on the Western bumble bee. For cumulative effects, ongoing Forest Service activities, as well as planned forest health and fuels management activities on both private and public lands within the area that have the potential to decrease the availability of flowering plants for the Western bumble bee include invasive plant treatments, mastication of fuels, and all types of burning (pile, broadcast, and underburn). While these activities may decrease the availability of flowering plants in the short-term, the long-term expectation is a regeneration and potential increase over time for flowering herbaceous and shrub plants. Details of all future vegetation activities are unknown, but site-specific analysis of direct, indirect, and cumulative effects of all planned activities would be documented in a separate analysis for those activities as they are planned.

Black juga (*Juga nigrina*) - Since no mollusk surveys have been conducted in the project area, it is assumed that black juga may occupy all perennial water habitats in the project area (although, none have been detected during aquatic surveys for frogs). The potential for indirect effects would be similar to those discussed above for Cascades frogs. Mitigations discussed above (**Bio-1-14**) for Cascades frog and SNYLF would also protect black juga. Similar to the SNYLF, the risk for cumulative effects to the black juga from implementation

of the Yellow Creek Project is considered very low when added to past, present and reasonably foreseeable actions. This is because there is a low risk of direct effects to black juga, the potential for indirect effects to their potential suitable habitat is minimized to a discountable level with mitigations, and the risk for cumulative watershed effects in the surrounding subwatersheds is low.

Birds

California spotted owl (*Strix occidentalis occidentalis*) - Habitat alterations as a result of the project would only occur within the proposed treatment areas. There is a total of 21 acres of suitable nesting habitat (CWHR size and density 5M) within the project area, with 11 acres proposed for treatment as part of the channel/meadow restoration of YC05. The proposed treatment (Unit 213) involves mechanical removal of individual trees needed for channel structures in YC05. The treatment would not result in a reduction of canopy cover or change in nesting habitat. Suitable foraging owl habitat (CWHR 4M) within the Project area totals 208 acres, with approximately 121 acres proposed for treatment, of which 110 acres fall within a known spotted owl home range. Treatments in suitable foraging habitat are expected to reduce the canopy cover 10% (from 55% to 45%) on 84 acres, with 81 of those acres falling within the spotted owl PL231 home range. Treatments within suitable foraging habitat would not change CWHR averages for either canopy cover or size class, with the exception of 7 acres (Unit 301; within PL231) that would be converted to wet meadow, and 6 acres (Units 308 and 311) that would be converted to aspen. Implementation would occur after the LOP (March 1-August 15) for spotted owls (**Bio-15**). Short-term direct effects from increased noise disturbance are not expected to put the owls at greater risk, as the owls are already accustomed to road noises. Monitoring data over the last 20+ years has not found territorial owls utilizing the proposed treatment areas. However, some proposed treatment areas overlap core breeding areas that have been delineated as Protected Activity Centers (PACs). Approximately 23 acres of a 300-acre owl PAC falls within the project area. Although proposed treatment areas make up a small percentage of the home ranges (<1%), their proximity to the nest core (PACs) may result in disturbance to breeding pairs if treatments were to occur during the breeding season. As previously noted, no heavy equipment operations or tree felling would be allowed during the breeding season and a LOP would apply to all applicable treatments within ¼ mile of the PAC or active nest site. Disturbances resulting from heavy equipment and chainsaw use during thinning operations, machine piling, and construction of channel structures would likely disrupt foraging owls, causing them to move elsewhere. However, these activities would be of short duration and over 90% of the home range would be available for undisturbed foraging. The Project may result in a short- to mid-term effect on 108 acres of foraging habitat by potentially reducing snags and large logs as a result of proposed mechanical treatments, and will convert 13 acres to wet meadow or aspen habitat. The Project does not change the proportions of available suitable habitat as the proposed treatments would either not alter the habitat such that it would fall below suitability thresholds, or they occur in unsuitable habitat. The small acreage conversion of suitable foraging habitat to meadow and aspen habitats is less than one percent of suitable habitat, and therefore has a negligible effect to available suitable habitat proportions. For cumulative effects, there are 5,029 acres of various forest health treatments within the PL231 home range, with an additional 6,083 acres of fuel treatments associated with other projects in the vicinity of this project. It is assumed that future treatments within

and outside the home range would follow Region and Forest guidelines to protect spotted owl habitat. In addition, the USFS recently released a Conservation Strategy for the California Spotted Owl in the Sierra Nevada, published in April 2019. This strategy outlines conservation measures to retain and develop key habitat elements (large trees and snags, dense canopy cover, prey habitats, dense multi-storied stands with small openings) and connectivity, increase habitat resilience and diversity, and minimize non-habitat threats (barred owls and rodenticides) (USDA 2019). Additional mitigations include surveying prior to treatment in PACs, and no treatment in new PACs (**Bio-16**); and designation of new PACs based on any spotted owl nests that may be found (**Bio-17**). The project does not contribute to a loss of suitable habitat due to the small percentage (<1%) of the home range proposed for treatment combined with the negligible change (13 acres) to suitability class post-treatment.

Great Gray Owl (*Strix nebulosa*) - Short-term direct effects from heavy equipment activity and noise disturbance would likely disrupt great gray owl foraging and roosting use of the meadow and immediately adjacent forested habitat during implementation periods. Implementation activities would occur after the nesting period for great gray owl (March 1-August 15) (**Bio-15**). Long-term restoration of the meadow floodplain habitat, increasing the abundance and density of wetland grasses and forbs, would improve foraging habitat for the great gray owl. The project objective to restore meadow and forest habitats is expected to improve both nesting and foraging habitat suitability for the great gray owl in the long-term within the treated areas. Thinning forested stands surrounding the meadow would enhance growing conditions for the remaining trees, allowing them to increase in size and develop late seral habitat features and decadence in the long-term. Short-term indirect effects on prey resources (small mammals) through the removal of existing meadow vegetation, channel filling, and conifer removal in the meadow could disrupt existing prey populations; however, in the long-term the restoration is expected to benefit great gray owl prey species with increased wet meadow vegetation cover and forage. Ninety percent of available wet meadow habitat would remain available for undisturbed foraging within the WAA. For cumulative effects, details of every planned future vegetation activity are unknown, but site-specific analysis of direct, indirect, and cumulative effects of all planned activities would or have been documented in a separate analysis. Mitigations for snag (**Bio-18**) and downed log retention (**Bio-19**) would also protect suitable nesting and foraging habitat attributes for great gray owls. The project does not contribute to a loss of suitable habitat. Conversion of suitable or potential suitable nesting habitat to wet meadow while reducing nesting habitat, increases foraging habitat.

Greater Sandhill Crane (*Grus canadensis tabida*) - The proposed project has the potential to provide forage and resting areas for sandhill cranes, but due to the narrow valley width, the area is not ideal for nesting. In the event nesting cranes were discovered, an LOP would be implemented (i.e., the nesting area would be avoided until fledging - likely August 15 (**Bio-20**)). Short-term direct effects of the project would occur in the fall due to noise disturbance and activity during project implementation. Disturbance from construction could potentially curtail use of the area for resting and foraging during the fall migration. Long-term direct effects to habitat are anticipated to be beneficial by improving and expanding suitable wet meadow habitat for resting, foraging and potential nesting sandhill cranes. Indirect effects on

sandhill cranes from implementing the project could include short-term impacts on food resources through the removal of existing meadow vegetation and construction of channel structures, which could disrupt the existing invertebrate (insect) populations. Because known crane presence is outside the project area, short-term disturbance is not expected to adversely affect sandhill cranes. Long-term food items in the area are likely to be more abundant under the project than under existing conditions. Without treatment, existing meadow habitat conditions would continue to transition to more xeric species versus mesic and wetland plant species, which may directly and indirectly adversely affect habitat conditions for the greater sandhill crane. For cumulative effects, the only ongoing use in the WAA that may affect cranes or their habitat is road maintenance. Roadside ditch maintenance in meadows contributes to on-going degradation; however, the project seeks to remedy these past and on-going actions. Four acres of future aspen/meadow/wet area restoration, and 1,839 acres of aspen fencing within the WAA could potentially affect cranes or their habitat. All other future activities would occur in forested habitats and would not affect crane habitat. The project hydrologic restoration activities are expected to improve or create more suitable nesting and foraging habitat for sandhill cranes in the future. As post-restoration habitat conditions improve, it is anticipated the project area would be used primarily for resting and foraging during spring and fall migration, and the downstream area within the WAA would continue to be used for nesting.

Northern goshawk (*Accipiter gentilis*) - Habitat alterations as a result of the project would only occur within the proposed vegetative treatment areas. A total of 48 acres of suitable goshawk nesting and foraging habitat would be affected by the proposed treatments, with a total net loss of 14 acres to unsuitable habitat types. In the long-term, the Project would contribute to an increase in the health and growth of the remaining “released” trees, and acceleration towards late seral forests that include higher levels of structural complexity, which is currently lacking in the project area. Conversion of suitable forested habitats to wet meadow, aspen stands, and stands with larger trees but less density (4P, 4S) could be beneficial to goshawks by improving forest stand conditions for foraging through the creation of small openings and retention of large woody debris, which would provide cover and habitat for small mammal prey species. There are seasonal restrictions for activities on National Forest lands located near known nest sites (**Bio-21 & Bio-22**). There are no known nest sites within the project area. Should a nest be found, or other evidence of occupancy, the LOP for goshawks would be implemented in order to avoid disruption of nesting and fledging (**Bio-23**). Late seral habitat features such as large trees, canopy cover, snags, and down logs are retained (**Bio-18 & Bio-19**). Without treatment, the resulting conditions are the same as discussed for the California spotted owl.

Olive-sided Flycatcher (*Contopus cooperi*) - Direct effects to olive-sided flycatcher include disturbance to nests or direct mortality from forest treatments, while indirect effects include increased human activity, visual disturbance, and noise from mechanical and hand thinning activities as well as short-term impacts to habitat. Mitigations discussed here and previously will result in less than significant impacts. Meadow treatments will not have any effects on olive-sided flycatcher as they will occur after the nesting period is completed (August 1, which is incorporated into **Bio-15**). Increased productivity of the wet meadows should increase prey abundance for this species. Direct impacts from forest treatments to nesting

olive-sided flycatcher will be mitigated to less than significant levels by retaining snags (which are frequently used as foraging perches) and defect trees (**Bio-18**), and would be avoided entirely by conducting timber harvest outside of the breeding season (i.e., after August 1st (**Bio-24**)). Fuel reduction forest treatments as proposed in this project have been found to result in an increase in olive-sided flycatcher abundance (Burnett et al. 2009). Mechanically thinned areas would employ variable density thinning (VDT), a technique that emulates the effects of mixed severity fire regimes on the landscape in order to improve forest health and resiliency, which would also be expected to benefit this species.

Willow Flycatcher (*Empidonax trailii brewsteri*) - Acres of CWHR riparian habitat would insignificantly increase by approximately one acre as the oversized channel is treated with woody debris to reduce size. There would be no changes to montane riparian habitat canopy cover or size class. Treatments are expected to enhance the vigor of riparian vegetation in the long-term, due to restoration of channel/floodplain connectivity, thus improving moisture availability to riparian vegetation. Maintaining surface water on the meadow floodplain during the breeding season is expected to occur in YC02A/B within one year following restoration due to the complete channel fill treatment raising the water table to the meadow floodplain surface. Channel structures in YC01 on the mainstem are expected in the long-term to increase deciduous canopy cover due to the restored hydrology, but may not necessarily support surface water during the breeding season on the meadow floodplain due to channel incisions remaining 4 to 7 feet below the floodplain; however, standing water would likely be sustained within the inset floodplains along this reach. In the other reaches, deciduous canopy cover is expected to remain similar to current conditions, with wet meadow herbaceous vegetation being the dominant vegetation type, as it was assumed to be prior to channel incision and conifer encroachment. Implementation of the project would occur after the breeding season (**Bio-24**). Short-term late season noise disturbance from construction activity may limit foraging use of riparian and meadow habitats in the project area; although, as a migrant and summer resident, this species would likely be migrating south during implementation. Direct effects to habitat would be beneficial in the long-term, increasing the vigor and canopy closure of riparian habitat, and the extent of wet meadow and willow habitat. Due to the late season construction of the proposed Yellow Creek restoration project and the likelihood that flycatchers would be migrating south, indirect effects to insect prey species for the flycatcher are not expected. Post-implementation indirect effects are expected to be beneficial, with increased wetland habitat creating improved habitat conditions for insect prey. For cumulative effects, four acres of known future aspen/meadow/wet area restoration, within the WAA could potentially affect flycatchers or their habitat. All other known future activities would occur in forested habitats and would not affect flycatcher habitat. Cumulatively, riparian habitats in the WAA have been negatively affected, primarily by roads and past grazing (the allotment is currently vacant), with channel incision being the dominant condition, with a concomitant loss of riparian habitat function and value. Current land management thinking that informs reasonably foreseeable future actions now takes riparian values into greater consideration than it did in the past. Thus, the project is expected to contribute to cumulatively enhancing riparian habitat values and benefitting willow flycatcher.

Yellow Warbler (*Dendroica petechial*) - Because willow flycatcher and yellow warbler share the same habitat requirements, impacts to this species are considered the same as impacts to willow flycatcher. Project activities within their habitat will occur outside of the breeding season for willow flycatcher (after August 15) and yellow warbler (after August 1 (both captured in **Bio-24** LOP after Aug 15). These dates are based on local monitoring data for the Lassen area by Point Blue Conservation Science. Thus, with this mitigation, neither of these species would be directly impacted by the meadow treatments. Restoration work is expected to improve habitat for these two species by rewetting wetlands, increasing frequency of floodplain inundation, and increasing riparian shrub cover. Proposed conifer thinning treatments in the meadow, meadow ecotone, and aspen will occur outside breeding habitat and are unlikely to affect non-breeding or dispersing individuals due to timing of activities. Upland forest treatments could directly impact breeding yellow warbler and willow flycatcher through direct disturbance if these activities occurred within 50 meters of nesting sites, and could be avoided entirely by conducting timber harvest outside of the breeding season (**Bio-24**).

Mammals

Gray Wolf (*Canis lupus*)- To date, wolves have not been detected in or around the project area. The most recent project-specific carnivore surveys (wolverine, red fox, gray wolf, fisher, and marten) were conducted in the vicinity of the project area (and partially overlapping) in 2016 and 2017. Surveys were carried out by the Almanor Ranger District using GTR 157 (Zielinski et al 1995b). No wolves were detected. Per the CDFW October 2020 Quarterly Wolf News (California's Known Wolves Past & Present), there is currently one known wolf pack, the Lassen Pack, which occupies a territory in western Lassen and Plumas counties. The pack has produced pups every year since 2017. In summer 2020, the pack count was a minimum of three adults, three yearlings, and nine pups. The March 2021 CDFW website map of approximate area of gray wolf activity shows that resident territories are located approximately 13 miles east of the project area. Since 2017, dispersing wolves have periodically been detected in Modoc, Lassen, Plumas and Siskiyou counties. The CDFW website states, "Dispersing wolves are not settled within a territory, and as such, their movements are unpredictable. They often cover great distances within a 24-hour period." Although Humbug Valley, including the project area, may be a desirable habitat for wolves, the human presence in the valley may exclude it from use as a rendezvous site or suitable den site. Several popular dispersed camping sites exist along the mainstem of Yellow Creek in the project area, and a main thoroughfare (maintenance level 3 road; FS 27N04) bisects the project area. In addition, two summer homes, a county road, and a campground are 1-2.5 miles south of the project.

To ensure wolves have not moved into the area, one month prior to commencement of construction activities CDFW would be notified to query the presence of wolf activity near the project area. If an active den or rendezvous site is located within one mile of the project area, the following conservation measures would be implemented (**Bio-25**):

- a. A limited operating period (LOP) from March 1 through August 15 restricting all noise or smoke generating activities. Further discussions and coordination with CDFW may result in modified distances or more flexible dates for this specific conservation measure. In addition, if the den or rendezvous sites are clearly separated from project-generated disturbances by topographic features or terrain, seasonal

restrictions may be adjusted or eliminated, as approved by CDFW. These conservation measures would avoid or minimize disturbance at active den or rendezvous sites that could disrupt reproductive success or result in adverse effects. Dens that are known to be used in three consecutive years, but not used in the current year may require a LOP if CDFW determines it is necessary.

- b. Early rendezvous sites are typically close to dens: implementing a LOP within 1 mile of den sites will generally mitigate effects to early rendezvous sites when pups are still vulnerable. Again, coordination with CDFW prior to implementation would be done to ensure protection of all known and/or newly discovered den and rendezvous sites.

If an active den is discovered during implementation of the project, an LOP shall be implemented and coordination with CDFW shall be pursued.

Pacific Marten (*Martes caurina*) and Pacific Fisher (*Pekania pennanti*) - Direct impacts to fisher are unlikely because they are mobile and wide-ranging, and could easily avoid human activity. Indirect impacts to fisher include disturbance during project activities and short- and long-term changes to habitat in treatment areas. For the same reason they can avoid direct impacts, fisher could avoid disturbance. It is unknown how long the disturbance must occur to adversely affect individuals, but given their wide-ranging nature, it is unlikely they stay in one place for long. The proposed treatments are outside the typical elevational range of marten and marten were not detected within the WAA; therefore, direct impacts to marten are not expected. However, specific mitigations to avoid impacts to these species include a LOP, after July 31, and a 100-acre avoidance around den sites for marten (**Bio-26**); and a LOP after June 30, and a 700-acre avoidance around den sites for fisher (**Bio-27**), including avoidance of rest sites for both species. Indirect impacts to marten would be the same as they are for fisher. Project area canopy cover would be reduced from 55% to 45% on 84 acres of foraging habitat, with no change to size class. Treatments on 23 acres of suitable foraging habitat would not change CWHR averages for either canopy cover or size class, and 13 acres would be converted to unsuitable habitat (7 acres meadow (Unit 301) and 6 acres aspen enhancement (Units 308 and 311). Overall, these thinning treatments will result in a slight (10%) reduction in canopy cover to 84 acres of low-quality foraging habitat in the short-term, and conversion of 13 acres to unsuitable habitat in the long-term. Eleven acres of suitable denning habitat would undergo removal of individual trees (3-29" DBH) for use in channel structures in YC05. The treatment would not result in a reduction of canopy cover or change in denning habitat. Coarse woody debris (i.e., large logs), which is a component of structural complexity would be reduced through mechanical piling (84 acres) in fisher foraging habitat (size class 4M). After thinning treatments are implemented, jackpots (i.e., fuel concentrations) would be piled and burned, or chipped and hauled, to reduce fuel loading. The main fire concern and fuel loading is focused on small logs (3-9" DBH). All snags and large logs would be retained. Removal of any snags or trees >30" DBH for safety and operability would be left on site as down wood (**Bio-19**). In addition to existing snag retention, defect trees (forked, dead, or broken tops) would be retained if wildlife use is evident in the form of existing cavities and nest structures (**Bio-18**). The treatments in suitable fisher habitat encompass <1% and 3% of male and female home ranges, respectively (home range = 15,382 acres for males and 4,200 acres for females). Marten home ranges are smaller, ranging from 297 acres (summer) to 445 acres (winter) for

females, and 840 acres (summer) to 2,842 acres (winter) for males. Treatments in suitable fisher and marten habitat would encompass a greater percentage of marten home ranges (~29% to 5% for female and male winter ranges, respectively); however, the proposed activities are below the preferred elevational range of marten.

Effects to Connectivity: The entire project area is predicted by the fisher USFWS model (USDI FWS 2016) to be “intermediate” (neither selected for or against). “Selected for” habitat south of the WAA burned in the Chips fire and the vegetation data used to create the USFWS model was measured before the fire occurred (USFWS 2016). The proposed 131 acres of treatment in fisher habitat occurs in “neither selected for or against” modeled habitat. The 10% canopy cover reduction that would occur on 84 acres would slightly reduce the quality of this modeled intermediate selection in the short-term. Reduction in canopy cover and other changes in overstory and understory structure from mechanical thinning may lead to fisher and marten avoiding treated areas and changing movement patterns in the short-term, as well. There are several goshawk and CA spotted owl PACs in the predicted no selection area. These areas that are intended to protect late seral habitat would continue to allow unimpeded fisher movements. Overall, the thinning treatments that would occur in unsuitable fisher conifer habitat and suitable conifer habitat in the Yellow Creek Project area would increase connectivity over the long-term as these stands age at an accelerated rate. For cumulative effects within the project area, effects are expected to be short-term within the treatment units in suitable fisher and marten habitat and positive long-term effects are expected for all proposed treatment units. In addition, the proposed treatments that are in fisher and marten habitat: 1) occur in low suitability habitat (84 acres); 2) occur in a small area of fisher habitat relative to an average home range (<1% to 3%); and 3) all of the treatments, regardless of their occurrence in suitable or unsuitable carnivore habitat, would accelerate the treated areas towards becoming suitable fisher and marten habitat, and benefit both species in the long-term, enhancing overall habitat quality in the broader WAA. There are 4,733 acres of various known future forest health treatments within fisher habitat in the WAA, with an additional 5,779 acres of fuel treatments. It is assumed all future treatments within and outside fisher and marten habitat would follow federal and state management guidelines to maintain late seral stage habitat features (large snags, large down logs, dense canopy cover, multi-storied stands) minimizing negative impacts to habitat for both species. There are four acres of known future aspen/meadow/wet area restoration in fisher habitat on private lands within the WAA that should add to fisher habitat in the long-term invigorating growth; thus, impacts should be short-lived with favorable long-term results to vegetation and stream health, which would increase cover along streams that could be used by fisher or marten as travel and foraging corridors. The removal of conifers would promote deciduous sprouting, leading to new younger trees with better growth, increase regeneration, and maintain or improve the current conditions, resulting in potentially improving habitat diversity, and thus prey diversity in the WAA.

Sierra Nevada mountain beaver (*Aplodontia rufa californica*) - Sierra Nevada mountain beaver habitat consists of dense growth of small deciduous trees and shrubs in riparian areas along with wet soil, an abundance of forbs, an abundant supply of water, and a dense understory for food and cover. There have been no formal surveys for mountain beaver in the project area and no recent beaver sign have been detected during countless hours of project planning activities within potential beaver habitat, including active searching for beaver sign.

There are relict beaver dams on the now-terraced floodplain. Suitable habitat is present within the project area. Beaver sign will continue to be included in pre-project surveys. If beaver are detected at any time, work would cease in the immediate area (100 feet buffer) of the sighting, and Forest Service and California Dept of Fish and Wildlife biologists would be notified to develop protection measures (**Bio-28**).

Bats: Pallid (*Antrozous pallidus*) Townsend's Big-eared (*Corynorhinus townsendii*), Fringed Myotis (*Myotis thysanodes*), and Western red bat (*Lasiurus blossevillii*) - Suitable habitat exists within the WAA for all evaluated bat species. Direct effects from the project would include: disturbance or destruction of active roost sites, short-term disruption of foraging habitat, and disruption and/or potential loss of commuting corridors and roosting habitat. Destruction of active roosts could occur from felling or removal of trees with hollows or loose bark, especially snags. Chain saw activity or the use of heavy equipment causing ground vibrations may cause noise and tremor disturbance significant enough to cause temporary or permanent roost abandonment resulting in lowered reproductive success. These effects would be most severe during the breeding season (May 20 to August 15) when the potential exists for disturbance to active breeding females and maternity colonies. If any of these sensitive bat species breed in the area, project activities during the breeding season could affect individual bats, including direct mortality. California spotted owl and northern goshawk limited operating periods would reduce this risk in those areas, as well as the bat-specific mitigation to survey tree removal sites for roosting bats prior to any activity. If bats are found, steps would be taken to mitigate disturbance effects and protect identified roosting sites (**Bio-29**). Although snag retention is required, incidental removal of snags for safety and operability reasons could result in direct mortality of bat species that may be roosting within a snag. Snag retention requirements are expected to mitigate project impacts to bats. The implementation of land management direction, habitat prescriptions, and previously mentioned mitigations for California spotted owl, northern goshawk, and forest carnivores, including the retention of large trees, snags and large woody debris would protect and/or provide many of the habitat attributes necessary to support these bat species. Additionally, retention of hardwoods (**Bio-14**), and the overall project objective of restoring aquatic/riparian ecosystem processes, would support bat habitat. Thinning within plantations and overstocked forested stands may improve habitat for bats in the long-term. Thinning the forest would allow for maximum growth and increased vigor of remaining trees, leading to the long-term development of suitable roost structures and hibernacula in the form of late seral trees and snags. There would be no habitat disruption of, or modification to, rock outcrops, caves or bridges. No man-made structures that could provide habitat for bats are planned for removal or modification.

Implementation of the project is expected to result in a short-term reduction or disturbance in prey abundance for the Townsend's and Western red bat, who predominately forage within and along the edges of meadow and riparian corridor habitats. The project would result in the removal of some existing meadow and riparian vegetation during channel restoration activities, which could disrupt the existing insect populations that are the prey base for these bat species. Because bats are volant, they have unusually large home ranges for their size and are able to utilize multiple habitat settings for different purposes. Foraging bats will utilize habitat edge areas, both vertical and horizontal. These areas (forest/meadow edges) are used as travel or commuter ways between other habitat types that may be utilized. Over

the long-term, once restored channel reaches develop flora and fauna, they may provide additional foraging habitat that benefit the Townsend’s big-eared bat and Western red bat. For cumulative effects, all of the listed bat species are known to occur within or near the Yellow Creek WAA, but outside the project area. Details of every planned future vegetation activity are not known, but site-specific analysis of direct, indirect, and cumulative effects of all planned activities would be documented in a separate analysis as they arise. Cumulative effects on bats could occur with the incremental loss of the quantity and/or quality of roosting habitat for these species. This project may contribute to incidental loss of snags with other planned and future timber harvest treatments occurring in the area. Collectively, planned and future forest health and fuel reduction project activities may reduce snag densities in thinned or mechanically treated areas, reducing the availability of suitable roost structures. It is assumed all future treatments would follow Forest Service management guidelines to maintain large trees and snags, thus minimizing negative effects to bat roosting habitat.

Migratory Birds: Migratory birds may nest in trees and other vegetation located within or in the immediate vicinity surrounding the project area. All raptors and migratory birds, including common species and their nests, are protected from “take” under the California Fish and Game Code, Section 3503, and 3503.5, and federal Migratory Bird Treaty Act. Large trees within the project area provide potential nesting habitat for migratory birds. LOPs as stated above for other riparian and forest species would also protect migratory birds (**Bio-15 & Bio-24**).

4a) (continued) Botany – A CNNDDB search listed two state endangered plant species that occur in Plumas County: slender Orcutt grass (*Orcuttia tenuis*) and Geyser’s panicum (*Panicum acuminatum* var. *thermale*). Because no known occurrences or potential habitat occurs within the project area for either species, no analysis is required, and they will not be discussed further. The following table lists other species with known or potential habitat in the project area, with a California Rare Plant Ranking (CRPR) of 1B (eligible for state listing) or 2B (rare, threatened in Calif, but more common elsewhere), which warrant further analysis. Two of those species are also Forest Service Sensitive species (FSS). A discussion of each species follows the table.

Species	CRPR Status	FSS Status	Analysis
<i>Betula glandulosa</i> (bog birch)	2B.2	--	Species present in project area. Effects analysis required.
<i>Carex davyi</i> (Davy’s sedge)	1B.3	--	Potential habitat present in project area. Effects analysis required.
<i>Carex lasiocarpa</i> (wooly-fruited sedge)	2B.3	--	Potential habitat present in project area. Effects analysis required.
<i>Drosera anglica</i> (English sundew)	2B.3	--	Species present in project area. Effects analysis required.
<i>Meesia uliginosa</i> (broad-nerved hump moss)	2B.2	FSS	Present in project area. Effects analysis in Yellow Creek Botany BE/BA.
<i>Rhynchospora alba</i> (white-beaked rush)	2B.1	--	Potential habitat present in project area. Effects analysis required.
<i>Scutellaria galericulata</i> (northwestern moonwort)	2B.2	--	Potential habitat present in project area. Effects analysis required.

Species	CRPR Status	FSS Status	Analysis
<i>Silene occidentalis ssp. longistipitata</i>	1B.2	FSS	Potential habitat in project area. Effects analysis in Yellow Creek Botany BE/BA.
<i>Stellaria longifolia</i> (long-leaved starwort)	2B.2	--	Potential habitat present in project area. Effects analysis required.
<i>Utricularia intermedia</i> (flat-leaved bladderwort)	2B.2	--	Potential habitat present in project area. Effects analysis required.
<i>Utricularia ochroleuca</i> (cream-flowered bladderwort)	2B.2	--	Potential habitat present in project area. Effects analysis required.

*.1 =over 80% of occurrences threatened with high immediacy; .2 =20-80% threatened with moderate immediacy; .3= not very threatened with low immediacy.

Meesia uliginosa - Direct effects to *Meesia uliginosa* would involve physical damage to plants or their habitat. Meadow hand thinning treatments and underburning would have the potential to directly affect plants, resulting in mortality, damage to tissue, or reduced spore production through physically breaking, crushing, burning, scorching, or uprooting plants. Mitigation measures **Bio-1-5** (regarding vegetation treatments and access) are specific to fen habitats, and would protect this species. Additionally, no sod removal is allowed within fens (**Bio-30**). These protection measures would significantly reduce the potential for direct effects to this species.

Indirect effects to *Meesia uliginosa* would include changes to the hydrology of fen habitats, as well as hand thinning of lodgepole within fen habitats. While channel incision does not occur in areas directly adjacent to known occurrences of this species, a headcut is just 25 feet from potential habitat in the YC02B meadow. The project would use channel fill to prevent this headcut from continuing its progression toward the fen. This action would preserve fen hydrology by reducing the risk of dewatering should the headcut attain the fen, and would constitute a beneficial indirect effect to *Meesia uliginosa*. This potential habitat would also benefit from hand thinning of small lodgepole pine trees that have encroached into the fen. There are several cohorts of lodgepole pine seedlings and saplings that extend into the fen, many appearing to have established during drought years between 2012-2015. Hand-thinning would set back this encroachment, and prevent lodgepole from shading out fen species or drawing down water levels in fen stands.

The closest invasive plant occurrence to *Meesia uliginosa* is a patch of oxeye daisy approximately 200 ft. from the MEUL70-014B occurrence. The Invasive Plant Risk Assessment for the project (Yellow Creek Project Record available at the Lassen Natl Forest coye.burnett@usda.gov) determined that the project has a moderate to high risk of increasing the establishment and spread of invasive plants (primarily due to the abundance of Canada thistle in the project area). However, no indirect effects to *Meesia uliginosa* from invasive plants are anticipated because of mitigations such as: ensuring that all equipment is weed-free prior to entering the Forest (**Bio-31**), flagging and avoiding known and newly discovered infestations (**Bio-32**), multiple-year post-project monitoring and removal of weeds (**Bio-33**), herbicide treatment of Canada thistle in large infestations near hydrologic treatments prior to disturbance (**Bio-34**), prescribed burning and mechanical treatment would not occur in Canada thistle and cheat grass infestations (**Bio-35**), required Forest Botanist approval of commercial weed-free native seed mixes (**Bio 36**), and requiring that all mulch be obtained on-site (no commercial mulch import) (**Bio-37**). Additionally, fen habitat is generally resilient to invasion by these species due to perennially inundated conditions.

Silene occidentalis ssp. *longistipitata* - Potential habitat also exists within the project area for *Silene occidentalis* ssp. *longistipitata* in upland coniferous forests. Impacts to any occurrences missed by surveys and potential habitat could occur in areas where mechanical equipment is used to implement thinning treatments or mechanical piling, or where pile burning or underburning activities occur. These activities could cause physical damage to plant tissues, although these effects are anticipated to be short-term in nature, scattered across the project area, and not expected to affect the viability of this species. Additionally, if new occurrences are found before or during ground disturbing activities, they would be protected by flag-and-avoid methods (**Bio-38**).

Indirect effects to *Silene occidentalis* ssp. *longistipitata* would include the effects of mechanical thinning and underburning actions that would decrease canopy cover and create areas of bare mineral soil. Thinning activities are anticipated to improve habitat for this species through several mechanisms. Firstly, the creation of openings is expected to increase the amount of light that reaches the forest floor within occurrences. The largest and healthiest occurrences of this species across its range are found within openings or under partial shade, while the occurrences that number just a handful of plants are found under denser forest canopy. Additionally, ground-disturbing treatments may expose patches of bare mineral soil, which have been associated with large numbers of *Silene occidentalis* ssp. *longistipitata* seedlings in areas disturbed by timber harvesting activities

Under-burning may provide an additional beneficial effect to *Silene occidentalis* ssp. *longistipitata* habitat by increasing bare mineral soil and promoting seedling recruitment. While no studies specific to *Silene occidentalis* ssp. *longistipitata* have occurred, fire has been observed to increase seedling recruitment and population numbers in other perennial species of *Silene*, and it is thought that the lack of fire may be limiting seedling recruitment at known sites of *Silene occidentalis* ssp. *longistipitata*. Prescribed fire is a recommended strategy for enhancing populations of this species, particularly in stands within the Yellow Creek Project that are outside of their natural range of variability with respect to fire.

In summary, *Silene occidentalis* ssp. *longistipitata* has been documented as tolerant of ground disturbance from mechanical equipment, and the effects of thinning and underburning in potential habitat for this species would be beneficial.

Ongoing actions have similar cumulative effects to both *Meesia uliginosa* and *Silene occidentalis* ssp. *longistipitata*. In addition, future projects would incorporate similar design features to avoid direct effects to sensitive plant species unless the project is intended to restore or enhance the species or its habitat, or potential impacts are believed minor. Ongoing actions, such as trail and road maintenance, special uses activities, Christmas tree cutting, public recreation, and recreation maintenance may contribute only incidental effects on these species, if any. As with ongoing actions, future actions on LNF lands would be surveyed to similar standards to ensure that any impacts to sensitive plant species are either beneficial or mitigated so that the long-term viability of the sensitive species on the forest is maintained. Ongoing and future actions on adjacent private lands may also add cumulatively to those affects from implementation the project, but since survey requirements and mitigations are not known on these lands, the type and extent of impacts to these species or their potential habitat cannot be quantified.

In summary, with mitigations, the project would avoid or minimize impacts to known occurrences of *Meesia uliginosa*, and would confer beneficial indirect effects to potential

habitat for this species. No occurrences of *Silene occidentalis* ssp. *longistipitata* are known in the project area, but thinning and prescribed burning activities would have beneficial effects to potential habitat for this species. Although project effects would add cumulatively to the effects of past, ongoing and future actions on this species, these effects would not lead to a loss of viability for this species within the project area or across the LNF for at least the next 20 years.

Betula glandulosa* and *Drosera anglica - There are two occurrences of *Betula glandulosa* within the project area, one occurs within the fens in YC02B, and one is in YC01 at the edge of wet meadow habitat along Yellow Creek. There is one occurrence of *Drosera anglica* within the project area in the fens in YC02B. Mitigations previously discussed to protect fens (**Bio-1-5 & Bio-30**), and rare plants (**Bio-38**) will also protect these species.

Potential habitat for *Carex lasiocarpa*, *Rhynchospora alba*, *Utricularia intermedia*, and *Utricularia ochroleuca* occurs within fens in and near the project area; potential habitat for *Scutellaria galericulata* and *Stellaria longifolia* occurs in wet meadows; and potential habitat for *Carex davyi* occurs at meadow edges or in open lodgepole stands. All potential habitat has been well-surveyed, and no occurrences of these species have been found.

Direct effects to all of these species involve physical damage to plants or their habitat. Thinning treatments and underburning would have the potential to directly affect species associated with fens or meadows, resulting in mortality, damage to tissue, or reduced spore production through physically breaking, crushing, burning, scorching, or uprooting plants. In addition, channel work has the potential to create ground-disturbance in and around rare plant occurrences. However, the potential for direct effects is curtailed by mitigations that exclude mechanical equipment from within 25 ft. of fens (**Bio-1**), exclude piles from within 25 ft. of meadows and riparian features (**Bio-2**), exclude sod removal from fens (**Bio-30**), exclude ignition of prescribed fire within 300 ft. of fens (**Bio-4**), and exclude mechanical equipment from sensitive plant occurrences (**Bio-38**). These protection measures would also reduce the risk for direct effects to undetected individuals with potential habitat within the project area associated with fen habitats (*Carex lasiocarpa*, *Rhynchospora alba*, *Utricularia intermedia*, and *Utricularia ochroleuca*). For species associated with meadow habitats (*Scutellaria galericulata* and *Stellaria longifolia*), piles would be excluded within 25 ft. of potential habitat (**Bio-39**), although there would be some risk to undetected individuals associated with project activities. Impacts to occurrences of *Carex davyi* missed by surveys in lodgepole ecotone habitat could occur in upland or ecotonal areas where vegetation treatments occur, or where ground-disturbing activities occur along with hydrologic restoration activities. These activities could cause physical damage to plant tissues, although these effects are anticipated to be short-term in nature, scattered across the project area, and not expected to affect the viability of these species. Additionally, if new occurrences of any of these species are found before or during ground disturbing activities, they would be protected by flag-and-avoid methods or evaluated for treatments similar to those described for known occurrences (**Bio-38**).

Indirect effects are separated from an action in either time or space. These effects, which can be beneficial or detrimental to rare species, may include changes in environmental conditions within occupied or potential habitat, or changes in invasive plant distribution and abundances as a result of project activities. Indirect effects to *Betula glandulosa*, *Drosera anglica*, *Carex lasiocarpa*, *Rhynchospora alba*, *Utricularia intermedia*, and *Utricularia*

ochroleuca are the same as those discussed above for *Meesia uliginosa*, which also occupies fens. Indirect effects of hydrologic restoration treatments would be beneficial to meadow and riparian associates (*Scutellaria galericulata* and *Stellaria longifolia*) as well. Proposed activities would reconnect the floodplain, increasing the duration of meadow wetness. This has the potential to increase suitable habitat for these species, which are associated with consistently wet meadow conditions and riparian corridors connected with their floodplains. Effects of, and mitigations for, invasive plants for these species is the same as discussed above for *Meesia uliginosa* (**Bio-31-37**).

For botanical resources, the cumulative effects analysis is bounded by the project area boundary. Current inventories of List 1B and List 2B species capture the aggregate impact of past human actions and natural events that have led to the current inventory of these species within the project area. Past human actions and natural events are therefore implicit within existing conditions. Cumulative effects would result when the direct and/or indirect effects of the proposed project on a given species adds incrementally to the effects of past, present, and reasonably foreseeable future actions. Ongoing actions, such as trail and road maintenance, special uses activities, Christmas tree cutting, public recreation, and recreation maintenance may be contributing only incidental effects on List 1B and 2B species, if any (Attachment 2, p.74). As with ongoing actions, future actions on NFS lands would be surveyed to similar standards to ensure that any impacts to 1B or 2B plant species are either beneficial or mitigated so that the long-term viability of sensitive species on the forest is maintained. Ongoing and future actions on adjacent private lands may also add cumulatively to those affects from project implementation, but since survey requirements and mitigations are not known on these lands, the type and extent of impacts to these species or their potential habitat cannot be quantified.

4b) The project seeks to improve riparian habitat by restoring natural channel processes along Yellow Creek (YC01&5), and restoring meadow hydrology in tributary meadows (YC02A, YC02B, YC03), and protecting a shrub wetland from an incipient headcut at a road crossing (YC04). The objective of these actions is to have a long-term beneficial effect on riparian habitat and associated natural communities regulated by the CDFW or USFWS. Numerous mitigations are incorporated into the project to minimize adverse effects. These mitigations have been discussed above, and are listed at the end of this section. Additionally, hydrologic and riparian area mitigations are presented in Section X under the discussion for Hydrology. Therefore, impacts will be **less than significant with mitigation**.

4c) The project area was sampled for federal- and state-protected wetlands, and a wetland delineation report with quantification of benefits and impacts to wetlands was completed (Mink 2021). Project activities include filling ditches that now convey water (channel fill treatment in YC02), however, there will be an overall 12-acre increase in all wetland habitat types (through rehabilitation of degraded hydrology), and an enhancement of existing wetlands. The project would also affect the mainstem of Yellow Creek by installing debris jams, which are expected to improve aquatic and riparian habitat quality and complexity. The project objective is to improve wetlands. Mitigations discussed in Section X (Hydrology)(**Hyd-1-5**), and mitigations presented above for plants in wet meadow (**Bio-30, 38 & 39**) and will minimize adverse effects on protected wetlands of any status; therefore, effects will be **less than significant with mitigation**.

4d) Vegetative treatments and meadow treatments would not impeded terrestrial wildlife movement. Structures in channels will have an effect on aquatic movement, however, the

effects are minimal. The native resident rainbow trout population has been decimated by the presence of the whirling disease parasite, however, non-native brown trout and brook trout are resistant to the disease and can be found in Yellow Creek, although not in high numbers. There are no year-round barriers to aquatic life movement in the project area, except at the YC04 culvert (planned for treatment with a rock riffle drop); there are no fish there, and the shrub wetland terminates in a spring about 300 feet up-valley of the culvert. Woody debris jams may impede fish passage during low flow periods, but these structures would be similar to natural debris structures, and would be passable to fish at high flows, similar to natural beaver dams and debris. For these reasons there would be **less than significant impact**.

4e) This project, on National Forest lands would not conflict with any local policies or ordinances protecting biological resources, therefore there would be **no impact**.

4f) Public comments were received by the Forest Service regarding restoration techniques that might conflict with habitat restoration efforts by the Maidu Summit Consortium (MSC) in Humbug Valley, which will rely on the downstream movement of sediment. In light of these comments, the project was modified to the current design along Yellow Creek which utilizes debris jams to promote natural channel evolution that will allow longitudinal valley sediment transport processes to continue. Other than the known efforts of the MSC, there are no adopted Habitat Conservation Plans, Natural Community, Conservation Plans or other approved local, regional or state habitat conservation plans in the vicinity of the project area. Therefore, there will be **no impact**.

Biological Resource Mitigation Measures

The following mitigations are also included as Integrated Design Features (IDFs) in the EA (Attachment 2) for this project. Where additional measures beyond the IDFs have been added, the addition has been noted.

Bio-1. No mechanical treatments would occur within 25 ft. of fens. Hand treatments would be permitted. Fens would be displayed as a control area on contract maps.

Bio-2. Hand piles would be placed farther than 25 ft. from fen edges.

Bio-3. Main access routes would be a minimum of 100 feet from fens.

Bio-4. Prescribed fire ignition would not occur within the RCAs associated with fens, although fire could back into the RCA.

Bio-5. Conifers within fens and along fen margins would be directionally felled away from the fen.

Bio-6. A visual encounter survey (VES) will be conducted prior to beginning implementation work within any PSH to determine the presence/absence of Sierra Nevada yellow-legged frogs, Cascades frog and black juga. If the presence of these species is detected, work will be delayed, and actions will be re-evaluated to determine how to protect the species.

Bio-7. A fisheries biologist would visit all potential water drafting sites within the project area prior to use to determine presence/absence of Cascades or Sierra Nevada yellow-legged frog tadpoles or egg masses. If tadpoles or egg masses are identified at a potential water drafting site, that site would not be used for water drafting.

Bio-8. If any ranid frog (suspected Sierra Nevada yellow-legged) is observed during project implementation, activities will be stopped and the Forest Service will contact the United States Fish and Wildlife Service to reinitiate consultation.

Bio-9. Use a screened intake device and pumps with low entry velocity and suction strainers with screen less than 2mm (1/8 in) in size to minimize removal of aquatic species, including

amphibian egg masses and tadpoles from aquatic habitats.

Bio-10. There will be no landings or burn piles placed within 82' of the channel edge in YC05.

Bio-11. There would be no crossing of untreated perennial streams by mechanical equipment. Crossing perennial streams would occur over fill treatments.

Bio-12. Tightly woven fiber netting or similar material will not be used for erosion control or other purposes within potential suitable habitat for both frog species.

Bio-13. Water drafting would cease when bypass surface flows drop below 2.0 cubic feet per second.

Bio-14. Riparian species (aspen, cottonwood, alder, willow, dogwood, etc.) would be primarily maintained, and would not be cut or removed except where needed to direct floodplain flow or construct debris jams.

Bio-15. A California spotted owl LOP from March 1st to August 15th would apply to stands within ¼ mile from a spotted owl PAC unless surveys confirm that spotted owls are not nesting. The LOP would be lifted after surveys if no nesting spotted owls are confirmed.

Bio-16. Existing California spotted owl protected activity centers (PAC) would be surveyed prior to treatment and no treatment would occur within an existing or new owl PAC.

Bio-17. If a California spotted owl nest is found within any of the proposed treatment units, the nest would be protected through the placement of a new PAC or the realignment of an existing PAC boundary.

Bio-18. In addition to existing snag retention, defect trees (i.e. forked, broken or dead tops) would be retained when wildlife use is evident in the form of existing cavities and nest structures.

Bio-19. Between 10 and 15 tons per acre of large down logs (>12 inches in diameter and 6 feet in length) would be retained where it exists. Large log retention can be met with either existing logs; or trees 30 inches DBH and larger and snags cut for safety or operability that would be left on site.

Bio-20. (not an IDF) In the event that nesting sandhill cranes are discovered in the project area, the nest area would be avoided until the colts have fledged (likely before Aug 15).

Bio-21. Existing goshawk protected activity centers (PAC) would be surveyed prior to treatments occurring in the PAC or within ¼ mile of the PAC.

Bio-22. If a northern goshawk nest is found within any of the proposed treatment units, the nest would be protected through the placement of a new PAC or the realignment of an existing PAC boundary.

Bio-23. A northern goshawk limited operating period (LOP) from February 15 to September 15 would be applied within ¼ mile of all goshawk PACs or within ¼ mile of a nest if a nest is confirmed. The LOP may be lifted if it is determined that the PAC is not occupied.

Bio-24. Activities affecting vegetation that may have bird nests in or near (within 150 feet) riparian habitat, will not begin until after August 15.

Bio-25. One month prior to commencement of construction activities, CDFW will be notified to verify presence of gray wolf activity near the Project area. If a den or rendezvous site is found within one mile of project activities between March 15 and August 15th, the Forest Service Wildlife Biologist would work with CA Department of Fish and Wildlife and US Fish and Wildlife Service to implement appropriate mitigation measures.

Bio-26. If a marten den site is identified, a 100-acre area consisting of the highest quality habitat in a compact arrangement would be delineated around the den site. The den site area

would be protected from vegetation treatments with a limited operating period (LOP) from February 15 through July 31, as long as habitat remains suitable, or until another Regionally approved management strategy is implemented. No mechanical treatment would be permitted within the 100-acre marten den site area regardless of time of year. Hand treatments may be permitted if existing desired conditions for suitable habitat are retained and timing of treatments abide by the LOP. If a marten rest site (female or male) is found within a treatment unit, the rest site structure, (e.g., log, snag, tree) would be protected from being damaged during project implementation.

Bio-27. If a fisher den site is identified, a 700-acre area consisting of the highest quality habitat in a compact arrangement would be delineated around the den site. The den site area would be protected from vegetation treatments with a limited operating period (LOP) from March 1st through June 30th, as long as habitat remains suitable, or until another Regionally approved management strategy is implemented. No mechanical treatment would be permitted within the 700-acre fisher den site area regardless of time of year. Prescribed burning or other treatments may be permitted if existing desired conditions for suitable habitat are retained and timing of treatments abide by the LOP. If a fisher rest site (female or male) is found within a treatment unit, the rest site structure, (e.g., log, snag, tree) would be protected from being damaged during project implementation.

Bio-28. If beaver are detected at any time, work would cease in the immediate area (100 feet buffer) of the sighting, and Forest Service and California Dept of Fish and Wildlife biologists would be notified to develop protection measures.

Bio-29. (not an IDF) Survey tree removal sites for roosting bats prior to any activity. If bats are detected, steps would be taken to mitigate disturbance effects and protect identified roosting sites.

Bio-30. Sod removal would not occur within fens.

Bio-31. All off-road equipment would be weed-free prior to entering the Forest. Staging of equipment would be done in weed free areas.

Bio-32. Known invasive plant infestations would be identified, flagged where possible, and mapped for this project. Locations would be displayed on contract maps. Identified invasive plant sites within or adjacent to the project area containing isolated patches with small plant numbers would be treated (hand pulled or dug) by forest botany staff prior to project implementation. New small infestations identified during project implementation would be evaluated and treated according to the species present and project constraints and avoided by project activities. If larger infestations are identified after implementation, they would be isolated and avoided by equipment, or equipment used would be washed after leaving the infested area and before entering an un-infested area.

Bio-33. Post project monitoring for implementation and effectiveness of weed treatments and control of new infestations would be conducted as soon as possible and for a period of multiple years after completion of the project.

Bio-34. Hydrologic restoration actions within large infestations of Canada thistle would not occur until an initial herbicide treatment has been completed.

Bio-35. Prescribed burning would not occur in mapped Canada thistle infestations and Larger known patches of Canada thistle and cheatgrass would be excluded from mechanical treatment.

Bio-36. Commercial seed mixes proposed for revegetation would be limited to native species only, would be approved by the district botanist prior to purchase, and would be certified

weed-free.

Bio-37. No mulch materials would be imported from commercial sources. All mulch would be obtained on-site, from weed-free areas. Imported fill would be inspected for invasive plants prior to its transport to the project area.

Bio-38. Mechanical equipment would be excluded from known occurrences of *Betula glandulosa*, *Claytonia palustris*, *Drosera angelica*, *Eriophorum gracile*, *Meesia triquetra*, and *Messia uliginosa*. Trees would be directionally felled away from occurrences of the above species. Locations would be displayed as control areas on all contract maps. New occurrences of threatened, endangered, or sensitive (TES) plant species, CRPR List 1B or 2B species, or fens discovered before or during ground-disturbing activities would be addressed with protection measures (i.e., exclusion through flag and avoid).

Bio-39. No piling of material for burning would occur within 25 feet of an aquatic feature or meadow (addition of meadow not an IDF).

Bio-40. If any segments of channel are de-watered for instream structure installation, aquatic life in the de-watered segment will be captured and re-located to an immediate adjacent segment of channel.

V. CULTURAL RESOURCES

Would the project:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please note that cultural resource information is administratively confidential, and is not available for public review.

Setting

The project area is within an important area to the Maidu, both historically, and currently. The cultural resource analysis for this project included archaeological surveys completed to current standards, and resulted in the identification of thirteen archaeological sites within the project area, as well as consultations with Maidu. Five of the identified sites have been evaluated and determined to be ineligible for the National Register of Historic Places (NRHP), with concurrence from the State Historic Preservation Officer (SHPO). Eight sites have not been evaluated and therefore must be considered potentially eligible for the NRHP and protected from potential adverse effects of project activities.

Discussion

a&b) Direct and indirect effects of the project will be mitigated and reduced to “No Adverse Effect.” These mitigations are Approved Standard Protection Measures pursuant to the US Forest Service Region Five 2018 Programmatic Agreement with the California State Historic Preservation Office. Sites that are determined to need protection may receive any of the appropriate protection measures identified as IDFs in the EA (Attachment 2), and listed below as mitigations (**Cul-1-10**). They are based on the sensitivity, location, and nature of the site. Impacts to historical and archaeological resources will be **less than significant with mitigation**.

c) The project includes ground disturbing activities. As such, unanticipated discovery of human remains is possible. Implementation of **Cul-3** would ensure that any human remains found during construction are handled according to State law and with appropriate sensitivity, and would ensure this impact is **less than significant with mitigation**.

Cultural Resource Mitigation Measures:

Cul-1. A walk-through with a tribal representative will occur prior to construction activities that include importing fill material to the project site.

Cul-2. One or more tribal cultural monitors shall be onsite during meadow restoration activities involving fill.

Cul-3. Proposed undertakings shall avoid historic properties. Avoidance means that no activities associated with undertakings that may adversely affect historic properties, unless specifically identified in the R5 PA, shall occur within historic property boundaries, including any defined buffer zones.

Cul-4. Ground disturbing activities within historic property boundaries would be prohibited except where heritage staff have identified areas that are acceptable for these activities, such as using Forest Service road systems, and where these activities would not have an adverse effect on historic properties.

Cul-5. All historic properties within APEs shall be clearly delineated prior to implementing any associated activities that have the potential to affect historic properties.

- a. Historic property boundaries shall be delineated with coded flagging and/or other effective marking.
- b. Historic property location and boundary marking information shall be conveyed to appropriate Forest Service staff and contractors responsible for project implementation so that pertinent information can be incorporated into planning and implementation documents, contracts and permits.

Cul-6. Linear sites (e.g., historic trails, roads, railroad grades, ditches) may be crossed or breached by equipment in areas where their features or characteristics clearly lack historic integrity.

- c. Crossings are not to be made at points of origin, intersection, or terminus of linear site features.
- d. Crossings are to be made perpendicular to linear site features.
- e. The remainder of the linear site is to be avoided, and traffic is to be clearly routed through designated crossings.

Cul-7. The project manager would walk historic property boundaries located within or near activity areas with operators before project implementation to ensure protection.

Cul-8. Historic properties within or adjacent to planned treatment areas, activity areas, or roads would be monitored during and after project completion.

Cul-9. If heritage resources are identified during project implementation (unanticipated discovery) all work would cease immediately in that area until the situation is reviewed, and an assessment and mitigation plan is instituted to ensure protection of the site.

Cul-10. (Not an IDF) In the event that human remains are encountered, all work must stop in the immediate vicinity of the discovered remains and the County Coroner and a qualified archaeologist must be notified immediately so that an evaluation can be performed. If the remains are deemed to be Native American and prehistoric, the Native American Heritage Commission must be contacted by the Coroner so that a “Most Likely Descendant” can be designated and further recommendations regarding treatment of the remains is provided.

VI. ENERGY

Would the project:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The project area is in a remote location. Under current societal norms, accessing the project area requires energy, usually in the form of fossil fuel use in motorized vehicles. There are on-site dispersed camping areas, which help to reduce the number of trips to the project. The Plumas County General Plan contains a goal for development of a Strategic Energy Plan, but the plan has not yet been developed.

Discussion

a) The project would result in a short-term consumption of energy resources during implementation with heavy equipment, and for personnel to travel to the site. Heavy equipment would be used to treat a large number of forested acres, as well as moving large amounts of earthen material to fill eroded gullies. Worker trips to the project area would be minimized by a number of personnel camping on-site. Mitigations such as reducing engine idling time, and proper maintenance, both included in **AQ-3**, discussed in Section III (Air Quality) would reduce energy use. Therefore, the environmental impact would be **less than significant with mitigation**.

b) The project seeks to restore natural system processes on National Forest, where there are no conflicts for renewable energy plans or energy efficiency, therefore, there would be **no impact**.

Energy Mitigation Measures:

There are no additional energy mitigation measures, as energy would be saved under Air Quality mitigation AQ-3.

VII. GEOLOGY AND SOILS

Would the project:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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 offsite landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Setting

Parent material for soils in the Yellow Creek project area are primarily volcanic in origin. The geologic Arlington Formation underlies the project area. Andesitic volcanic ash and volcanic sand dominate the area. These intrusions alternate andesite and basalt layers of black slate and lava flows. A small amount of volcanic breccia is present. These layers are all complexly folded together with an estimated thickness of about 7,000 feet (Durrell, 1987).

Results of a 2019 Natural Resource Conservation Service Web Soil Survey website interactive map query shows Aquoll soils in the meadows and riparian areas, surrounded by Holland-Skalan family association in the uplands. The meadow alluvial soil is relatively deep with fine grained silty to sandy loam soils. The upland soils are well drained with varying rates of infiltration depending on slope and position. Soils within the project area are typical and do not present any unusual problems for management.

Discussion

a) The project site is located on the Humbug Valley USGS quadrangle, which has not been evaluated for liquefaction or landslides by the State of California. The project area is not located on an earthquake fault, as the nearest fault line is on the east side of Humbug Valley. Therefore, there is no risk of rupture of an earthquake fault (no impact). There are no indications that restoration of the stream channel and meadow floodplains would cause instability, therefore, strong seismic ground shaking, and seismic-related ground failure including liquefaction or landslides is low. The project does not involve buildings, and the restoration techniques to be used mimic natural conditions prior to degradation from channel incision, therefore, they will not result in risk of loss, injury or death to workers at the project site due to geologic hazards (**no impact**).

b) Impacts to soil resources from heavy equipment associated with vegetation management and gully fill activities in the project area could affect soils by increasing compaction, displacing topsoil, and temporarily increasing bare ground. Burning operations would also cause an immediate reduction in soil cover, leading to accelerated runoff, erosion and deposition of sediments if a large precipitation event occurs before revegetation. However, this would be short-lived and cover would be reestablished in one or two years. Needlecast immediately after burning would provide some cover. In seasons following prescribed fire, light underburning can enhance species diversity and plant vigor. On the mainstem of Yellow Creek in YC05 and YC01, soils in the gully walls may mobilize as some debris jams widen the gully (thus recruiting local sediment into downstream jams, and re-initiating deposition).

The gullied stream channels in the project area are the result of substantial soil erosion resulting from previous land use, primarily ditching to drain wet meadows, and road crossings on meadows and stream channels. The erosion is a consequence of the head differential between the excavated or culverted drainage bottom and the floodplain. Under existing conditions, the channel drainage is three to eight feet below the floodplain. Prior to degradation, the naturally evolved, previous, and historic channel drainage elevation was

within one to two feet of the floodplain, as evidenced by numerous remnant channels on the surface of the now-terraced floodplain. These remnant channels also show clear evidence of channel bedload (i.e., gravels and cobbles) deposition. The project hydrologic treatments seek to restore channel/floodplain elevation connectivity in order to restore channel/floodplain depositional processes, rather than the current gully erosion process. This would be accomplished in two primary ways: channel fill in the YC02 tributary meadow, and debris jams on the mainstem of Yellow Creek. Gully fill and debris jam construction will result in some bare soil areas immediately after construction. As in natural floodplains systems, both of these techniques rely on vegetation for long-term stability. Bare ground on imported fill material in and equipment use in mechanical thinning operations may increase possible sediment delivery into the channel until these areas revegetate. However, in meadows, these impacts would be mitigated concurrently with the restoration, with restored hydrology enhancing growing conditions for vegetation. To promote re-vegetation, a number of measures would be employed: harvest and replacement of top soil and intact vegetation (**Geo-1**), bare soil areas would be seeded and mulched (**Geo-2**), excavation of vegetated areas will be minimized (**Geo-3**), and soils would be dry to a depth of ten inches prior to equipment entry (to minimize compaction that leads to run-off and erosion) (**Geo-4**). It should be noted that the channel fill will be imported from an approved commercial source, thus bare areas from excavated borrow sites would not be an impact associated with this project.

The upland vegetation treatments would also employ a number of soil protection (i.e. minimizing compaction) and erosion control measures, as is typical for timber operations: soil moisture conditions would be evaluated for compliance with LNF wet weather operation agreements (**Geo-5**), limiting areal disturbance and compaction to 15% (**Geo-6**), evaluating landings for remediation (**Geo-7**), minimizing soil disturbance in piling operations (**Geo-8**), using existing landings and skid trails (**Geo-9**), and retention on downed large wood (see **Bio-19**). Other measures to protect Riparian Conservation Areas (RCAs), would also contribute to erosion control in these areas. They are discussed and listed in the Hydrology section of this document (Section X). Because of expected project benefits, and mitigations listed below, project impacts related to erosion and loss of topsoil will be **less than significant with mitigation**.

- c) The project area is not located on a geologic unit or soil that is unstable or that would become unstable as a result of the project. Therefore, there is **no impact**.
- d) Soils in the project area are not expansive, and this ecosystem restoration project is not subject to the Uniform Building Code requirements. Therefore, there is **no impact**.
- e) No septic tanks or waste water disposal systems are proposed, therefore there would be **no impact**.
- f) There are no known paleontological resources or unique geologic features at the site. Because there would be no excavation associated with the project, with imported fill used for the eroded voids, the project would not affect areas any potential unknown resources. Therefore, there would be **no impact**.

Geology and Soils Mitigation Measures:

Geo-1. All salvaged vegetation and topsoil that is stockpiled during construction would be reintroduced to the site. The tops of constructed plugs would be first priority in receiving salvaged vegetation and top soil, to inoculate them with mycorrhiza, soil fauna, and the locally adapted seed bank. Any mats of sedges or other rhizomatous vegetation that would be covered by plug construction, drowned by raised water levels, or excavated with borrow areas within the meadow alluvium would be harvested and replanted after construction.

Geo-2. Bare ground would be seeded (with native botanist-approved seed) and mulched (with local material, such as forest duff) to 70% cover. Likely bare areas include, but are not limited to, channel fill and heavily used access routes.

Geo-3. Efforts to reduce excavation within alluvial soils and robust meadow vegetation are taken whenever possible, and would be limited to removal of whole, live vegetation adjacent to fill areas (i.e., bank edges), which would be re-planted.

Geo-4. Soils in the RCA and in meadow treatment areas would be dry to a depth of 10” prior to equipment entry. If over-snow treatments are utilized, snow conditions and depth would be sufficient to protect soils from compaction.

Geo-5. In treatment units outside of RCAs, soil moisture conditions would be evaluated using Forest-established visual indicators before equipment operation proceeds. Lassen National Forest (LNF) Wet Weather Operations and Wet Weather Haul Agreements would be followed to protect the soil and transportation resources.

Geo-6. Areal extent of detrimental soil disturbance in uplands would not exceed 15 percent of the area dedicated to growing vegetation. Following implementation, the mechanical treatment units would be evaluated by a qualified specialist to determine if detrimentally compacted ground exceeds the LNF Land and Resource Management Plan standard of 15 percent areal extent. If restoration is needed to achieve compliance, an appropriate subsoiler, ripper or other implement would be used to fracture the soil in place leaving it loose and friable.

Geo-7. In mechanical treatment units, landings within treated areas no longer needed for long-term management would be evaluated by a qualified specialist to determine whether remediation is needed to restore productivity and hydrologic function. If so, appropriate remediation would be implemented. Where landing construction involved cut and fill, the landing would be re-contoured to match the existing topography.

Geo-8. Machine piling operations would remove only enough material to accomplish project objectives and would minimize the amount of soil being pushed into burn piles. Duff and litter layers would remain as intact as possible, and the turning of equipment would be minimized. Piles would be constructed as tall as possible, within limits of safety and feasibility. A mixture of fuel sizes in each pile is preferred, avoiding piles of predominately large wood when practicable.

Geo-9. To the extent possible, existing landings and skid trails would be used.

VIII. GREENHOUSE GAS EMISSIONS

Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The project is located in rural Plumas County, on National Forest land, with adjacent private timberlands and Maidu cultural land. The primary on-going sources of greenhouse gases (GHG) are infrequent emissions from diesel and gas engines associated with infrequent mechanized timber harvest, dispersed recreation, and degradation of wetland soils (Reed et al. 2020) (see discussion below).

Discussion

a) The following discussion on GHG emission from the project is both qualitative and quantitative, based on a known quantification methodology for meadow restoration, and assumptions for debris jam treatments, vegetative management, and controlled burning.

Plumas Corporation has been actively involved with greenhouse gas research as a partner in the Sierra Meadow Partnership. While each site is different, a net benefit of GHG sequestration has been observed in restored meadows (ibid). It has also been observed that effects on nitrous oxide (N₂O) and methane (CH₄) are miniscule to a discountable level, compared to carbon dioxide (CO₂). Plumas Corporation has estimated that an average one metric tonne (MT) of carbon (C) is generated from all activities involving project planning, implementation, and monitoring, and the associated use of GHG-generating fuel for vehicles. Because implementation of this project involves a significant departure from most Plumas Corporation projects, in that gully fill material will be hauled in trucks from an off-site source, this estimate is increased to 1.2 MT of C per restored acre (multiplied by 3.6663 to get CO₂ = 4.4 MT of CO₂ is the estimated emission per restored acre for this project, which includes importing fill material in trucks). The entire project area, including upland treatments is 450 acres, therefore, a very rough estimate of emissions for the project are 1980 MT of CO₂. This is a short-term emission over approximately six years (two years of planning, two years of implementation and two years post-project monitoring).

For the expected GHG benefit (sequestration) calculation of the project, only those acres of re-established shrub or herbaceous wetlands were considered (12 acres), which provides a very conservative benefit estimate. The project is also expected to beneficially affect 46 acres of meadow wetlands through preservation and enhancement, but the quantification of GHG sequestration in enhanced or protected wetlands is unknown. However, these acres will not only continue to annually sequester carbon, but they will also reduce the potential for emissions from wetland soil loss and degradation of wetland hydrology (ibid).

To quantify the amount of additional CO₂ that would be sequestered, a figure of 578 grams of C sequestered per square meter per year was used, based on the most recent and relevant

science (ibid). This converts to 2.33 MT/acre, multiplied over 12 acres of re-established wetland = 27.96 MT of C, which converts to 102.5 MT of CO₂ would be additionally annually sequestered by project outcomes, plus the unquantified benefits of eliminating the project area as a source of carbon through wetland soil degradation. Just counting the additionality, it would take approximately 19 years for carbon sequestration to offset the CO₂ expected to be generated by project activities. The annual sequestration of carbon in the soil is expected to accrue and last in perpetuity, as long as the hydrology of the meadow remains in the restored state.

Forest management activities have not been factored into the GHG emission calculation, but not the benefit calculation. The activities include use of controlled on 148 acres, which will emit CO₂. Quantification of CO₂ associated controlled burning areas is difficult because the fuel loads vary widely across the underburn units. But the use of fire and other vegetation management activities must be considered a net benefit to GHG sequestration, because they are designed specifically to reduce the impact of a potentially catastrophic wildfire, which would emit much more CO₂. Considering these factors, project emissions would have a **less than significant impact** on the environment.

b) Neither the Northern Sierra Air Quality Management District nor Plumas County have developed guidelines for evaluating GHG emissions from proposed projects, nor do they have thresholds for assessing the significance of impacts. There are no known plans, policies, or regulations that would conflict with the project, therefore there would be **no impact**.

IX. HAZARDS AND HAZARDOUS MATERIALS

Would the project:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport/use/disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Expose people or structures to a significant risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Setting

The project area is in a natural setting. There are no known hazards, nor hazardous materials, in the project area. Potential past sources of hazardous materials could be diesel fuel leaks from equipment used for infrequent timber harvest in the area, gasoline leaks from vehicles used by recreationists, or garbage left behind by dispersed campers.

Discussion

- a) The only source of hazardous materials from project activity would be diesel fuel used by trucks and heavy equipment, hydraulic fluid used by heavy equipment, and gasoline used by worker vehicles, and, potentially, chainsaws. These substances are a normal part of transportation and use activity in the project area. The roads are regularly maintained and used. These materials are consumed, not disposed of, and therefore there will be **no impact**.
- b) Because of the hazardous materials used in equipment for project implementation, there is a potential for an accidental spill. Mitigation measures, including no-site fuel storage (**Haz-1**), re-fueling and servicing equipment away from riparian areas (**Haz-2**), keeping hazmat clean-up materials on-site (**Haz-3**), as well as maintaining equipment in good working order (**Nrg-2**) would reduce the impacts to **less than significant with mitigation**.
- c) The project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste. The nearest schools are in Chester, approximately ten miles away, therefore there would be **no impact**.
- d) The project area is not on any list of hazardous materials sites and will not create a significant hazard to the public or the environment, therefore there will be **no impact**.
- e) The nearest airport is in Chester, therefore there would be **no impact**.
- f) There are no emergency response plans or evacuation plans for the area. The project does include some minor road work, but vehicles will be able to pass during road improvement operations, therefore, there will be **no impact**.
- g) Because the project will increase activity in the area with internal combustion engines, there is a slight risk of increased wildfire. Project work includes the use of a water truck, and vegetation management (including burning) follow strict Forest Service routine wildfire prevention requirements, outlined in the Section XX (Wildfire) (**Fir-1&2**). The project does not involve building structures or encouraging human presence in the area therefore, there impacts will be **less than significant impact with mitigation**.

Hazards and Hazardous Materials Mitigation Measures:

Haz-1. No fuel would be stored on-site.

Haz-2. Equipment will be re-fueled and serviced outside of the riparian area.

Haz-3. Hazmat materials (booms and pads in a 55-gallon drum), consisting of oil-dri material will be kept at the project site during all construction activities involving heavy equipment.

X. HYDROLOGY

Would the project:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces in a manner which would:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) result in substantial erosion or siltation on or offsite;	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or offsite?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) 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; or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) In flood hazard, tsunami, or seiche zones, risk of release of pollutants due to project inundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Setting

Yellow Creek and its tributaries in the project area are spring fed stream systems high in the North Fork Feather River (NFFR) watershed. The project area is a complex of low-gradient riparian channels and meadow floodplains, surrounded by upland forests.

There are no 303(d)-listed water bodies in the project area. Beneficial uses designated by the 2018 Central Valley RWQCB Basin Plan are:

- Municipal and Domestic Supply- MUN
- Power- POW
- Recreation, with body contact to the water (i.e. swimming)- REC-1
- Recreation, including canoeing and rafting recreation near water, but with no body contact to the water (i.e. camping, picnicking)- REC-1
- Non-Contact- REC-2
- Cold freshwater habitat- COLD
- Cold water spawning- SPWN
- Wildlife habitat- WILD

What were historically multi-threaded, shallow channel systems in the project area, has degraded into single-thread, incised channels. Large wood is currently lacking in many reaches, though it likely played an important role in providing grade control and bank stability in the past. Conifer encroachment within the historically wetter meadows has shaded hardwood and understory plants and reduced soil moisture. These developments result in a decline in the vigor of these important ecological community elements, which also affects hydrology. A decrease in deep-rooted sedges has reduced infiltration and bank stability, resulting in channel incision. This leads to further drying of the meadows and increases conifer encroachment. This degradational cycle threatens the resilience of important wetlands, which are relatively rare, but disproportionately important, communities. The ongoing loss of these features reduces the ecological services afforded by this landscape. Biodiversity; water quality; stream flow timing and yield; recreational values; soil health; and overall ecosystem resilience all continue to decline in function and ecological value.

Discussion

a) The project seeks to restore functional hydrology, which would improve water quality in the long-term. In the short-term, and before re-vegetation becomes established, there is a potential for sedimentation into stream channels, which degrades water quality and the quality of the aquatic environment. Sources of sedimentation would be bare soil areas (including fill areas) and equipment operations near stream channels that disturb soils and cause erosion. Mitigations discussed above under Geology and Soils (Section VII) to protect soil resources, are designed to keep soil in place, thus reducing erosion that would enter the channel and cause degrading sedimentation. An accident involving hazardous materials could also degrade water quality, which is discussed above with mitigations, under Hazardous Materials (Section IX). Mitigations to protect aquatic life and habitat, are discussed and presented under Biological Resources (Section IV). Additional measures to protect water quality include the special considerations (IDFs discussed in the EA (Attachment 2)) for operations with Riparian Conservation Areas (RCAs), which are 300 feet from perennial water features and meadows, and 150 feet from intermittent channel features. These considerations are presented here as mitigations, and include: retention of streambank

stability and future debris jam natural recruitment trees (**Hyd-1**), and minimized equipment entry, turning, and overall footprint in RCAs (**Hyd-2**).

Projects on National Forest lands, including this project, follow BMPs, which are described in *National Best Management Practices for Water Quality Management on National Forest System Lands, Volume 1: National Core BMP Technical Guide*. Additionally, a permit from the Regional Water Quality Control Board will be required for the project (Hyd-3), which will contain required additional water quality protection measures, such as monitoring and reporting, a diversion plan if operating in water, and a stormwater plan. Because of these measures, impacts to water quality will be less than significant with mitigation.

b) One of the benefits of the project would be improved seasonal infiltration of precipitation into the groundwater in the shallow floodplain aquifer. In YC02, this would be accomplished by eliminating the incised gullied channel and drainage ditches that were excavated to dry out this wet meadow area, and allowing flow back into the channel swale on the surface of the meadow. On the mainstem of Yellow Creek, this would be accomplished by increasing depositional areas, where infiltration would improve over time. The project does not require the use of groundwater, or decrease groundwater supplies, or interfere with groundwater recharge such that the project may impede sustainable groundwater management, thus there would be no impact.

c) The project seeks to restore flood flows to the surface of the floodplain. In the current condition, floods flows are mostly confined within an eroded gully, and are rapidly conveyed off site via drainage ditches. In YC02, the existing gully would be eliminated by complete fill. Flood flows and low flow would still continue down the same meadow wetland, thus enhancing and reestablishing riparian palustrine wetland associated with the existing channel swale. On the mainstem of Yellow Creek, low flows would remain in the existing channel alignment. Flood flows would more frequently access the floodplain in depositional areas thus enhancing and reestablishing floodplain wetland habitat. The general pattern of flow throughout the project area would remain within the same channel/floodplain system that naturally evolved on this landscape, and will not result in change to the overall natural drainage pattern of the area. The project will not create impervious surfaces, and is expected to improve infiltration by increasing soil porosity via functional floodplain processes including reinvigorated deep-rooted wetland vegetation. The following items address this question in more detail, to reduce impacts to **less than significant with mitigation**:

i) The project could result in short-term erosion or siltation before stabilizing vegetation becomes established. Erosion and siltation during construction would be minimized through the use of BMPs and the mitigation measures discussed above under Section VII (Geology and Soils) (**Geo-1-9**). Additionally, **Hyd-2&3** would protect soils from erosion that could cause siltation on-site and in downstream areas, making the impact **less than significant with mitigation**.

ii) One of the main objectives of the project is to restore meadows by restoring the hydrology of meadow floodplains, which occur on the landscape because they flooded on a regular basis prior to degradation. The project seeks to restore floodplain function in this wildland setting, thus incrementally contributing to decreased flood peak intensity and duration in downstream areas. The project would fill gullied channels and close excavated ditches that were dug to increase the rate of run-off from the site (most likely

to decrease wetland vegetative species and enhance grass production for cattle grazing). Project activities will occur during the lowest flow time of year (late summer to September). Reducing (not increasing) fall/winter/spring storm-related run-off is expected to be an immediate outcome after construction. Therefore, **no impact** is expected.

- iii*) The project seeks to restore floodplain function which will decrease the rate of stormwater run-off. No impervious surfaces would be associated with the project, nor would there be any additional source of polluted run-off in this wildland setting. There are no stormwater drainage systems in, or planned for, this project area. Therefore, there would be **no impact** to these concerns.
- iv*) The project would not impede or re-direct flood flows out of the naturally evolved channel/floodplain system in which they occur now, therefore there would be **no impact**.
- d**) The project is not located in a tsunami or seiche zone. Project construction would occur during the driest time of year, and therefore would not pose a risk for release of pollutants due to inundation. Therefore, there would be **no impact** for these concerns.
- e**) Water quality would be protected during construction by operating during the lowest flow time of year (**Hyd-4**) and pumping live streamflow around work areas that have a potential to increase turbidity or degrade water quality in any way (**Hyd-5**). Adherence to any and all permit requirements will ensure that the project does not obstruct implementation of a water quality control plan, however, there are currently no water quality control plans that cover the project area. There is no sustainable groundwater plan for this area. This impact will be **less than significant with mitigation**.

Hydrology Mitigation Measures:

Hyd-1. Retention of streambank stability and natural recruitment trees.

Hyd-2. The following actions would be minimized to the extent possible within RCAs: equipment entry, equipment footprint, turning of equipment. No water bars would be installed on entry trails into an RCA.

Hyd-3. Follow all applicable BMPs. Notify the Waterboard of the project, and apply for water quality permits as needed (Clean Water Act § 401 Water Quality Certification or a Waste Discharge permit). Adhere to all permit requirements.

Hyd-4. Conduct hydrologic project activities during the lowest flow time of year.

Hyd-5. Pump water around work areas if there is a potential to degrade water quality.

XI. LAND USE AND PLANNING

Would the project:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Setting

The project site is located within the LNF. Zoning in the project area is General Forest. Private lands surrounding the project area are zoned Timber Production Zone. Land use in the area is timber production and dispersed recreation.

Discussion

a) There is no established community in the project area. There are two houses on the other side of Humbug Valley (1.8 miles to the east), neither of which are occupied year-round. The project would not affect these residences, therefore the project will not physically divide an established community, and there is **no impact**.

b) The project is consistent with the land use designations of the area, and is consistent with standards and guidelines in the Lassen National Forest Land and Resource Management Plan. The project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. There is no conflict with any land use plan, policy or regulation, therefore there is **no impact**.

XII. MINERAL RESOURCES

Would the project:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

California’s Surface Mining and Reclamation Act of 1975 (SMARA) Mineral Lands Classification data portal was queried, which showed no studies or designated mineral resource areas in Plumas County.

Discussion

- a) The project will not result in the loss of availability of a known mineral resource of value to the region or residents of the state. The channel/meadow restoration project neither involves extraction of mineral resources nor would preclude future mineral extraction if a discovery were made, therefore, there is **no impact**.
- b) There are no mineral resource recovery sites delineated in any plans that include the project area, therefore there would be **no impact**.

XIII. NOISE

Would the project result in:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) For a project within the vicinity of a private airstrip or 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The project would occur in a wildland setting on National Forest surrounded by working private timber lands. Part of the mainstem of Yellow Creek runs adjacent to Forest Road 27N04, and Forest Road 27N40 bisects the YC02 meadows (both roads are graveled). There is also dispersed camping area located along Yellow Creek. Existing noise sources in the area include timber harvesting with mechanical equipment, dispersed recreationists with generators at their campsite, and off-highway vehicles on the two graveled roads. Recent activity (2019-20) on adjacent private land included a feller buncher cutting machine, a wood chipper, and trucks to transport logs and chips. Continued logging may occur on adjacent lands in 2021. There are two part-time residences 1.8 miles east of the project on the edge of Humbug Valley.

The Plumas County General Plan designates maximum noise levels for residential, commercial and public facilities, and industrial land use areas. Maximum noise levels for

General Forest and Timber Production zones (in which the project is located) are not addressed in the General Plan.

Discussion

a) The project will result in temporary, short-term increases in ambient noise levels during hydrologic construction and forest treatment activities, which will cease when the project is completed. Noise will be generated from heavy equipment, including a feller buncher, dump trucks, excavators, and loaders, which are likely to run about 81-90 decibels at approximately 50 feet distance, and decrease rapidly with distance in this vegetated area (Plumas County 2013). The closest sensitive land uses would be in Chester, which is ten miles away, and therefore not be affected.

Noise from the project could be audible to users recreating and camping in the project vicinity. Although equipment could be audible, noise levels from the project will not exceed Plumas County daytime construction noise standards for public facilities (90 decibels) (ibid). Activities are proposed to occur during the daytime hours of 7:00 a.m. to 6:00 p.m. and will not result in nighttime disturbance (**Noi-1**). The short-term, temporary increase in ambient noise levels from the project will be **less than significant with mitigation**.

b) Project equipment would not include vibration action. While trucks and heavy equipment will generate levels of vibration that are perceptible in the immediate vicinity of each work area, vibration and groundborne noise from project activities will not be detectable at the location of the part time residences across the valley (1.8 miles away), nor at the dispersed campsites in the project area. Impacts related to groundborne vibration and noise will be **less than significant**.

c) The project is not within an airport land use plan, or within two miles of a public airport, or within the vicinity of a private airstrip. The project will not expose people residing or working in the project area to excessive noise levels from aircraft. **No impact**.

Noise Mitigation Measures:

Noi-1. Construction shall occur between the hours of 7 a.m. and 6 p.m., Monday through Friday, and, on rare instances on weekends or holidays between 8 a.m. and 5 p.m.

XIV. POPULATION AND HOUSING

Would the project:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Induce substantial unplanned 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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Setting

This project is located in a wildland setting within LNF. The closest town is Chester, approximately ten miles away.

Discussion

- a) This restoration project would not induce unplanned population growth in the area or include the expansion of major roads or infrastructure. The project will not generate commercial activities that would induce substantial growth in the project area. **No impact.**
- b) The project site includes only federally-owned undeveloped forest land, surrounded by private timberlands with Timber Production Zoning. The project will not displace substantial numbers of people requiring the construction of replacement housing elsewhere. **No impact.**

XV. PUBLIC SERVICES

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:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

This project is located in a wildland setting within LNF. The closest town is Chester, approximately ten miles away, where the closest public services are available.

Discussion

Project activities include forest, meadow and watershed restoration. The project will not result in population changes that would require new or physically altered schools, parks, or other public facilities. The project will not result in an impact to service ratios, response time or other performance objectives for fire or police protection which would require the

construction of new or physically altered governmental facilities. The project will have **no impact** to public services.

XVI. RECREATION

Would the project:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

Lassen National Forest offers a wide variety of year-round recreation opportunities, including camping, hunting, fishing, boating, hiking, wildlife viewing, horseback riding, scenic trails and drives, winter sports, water activities, OHV use, bicycling, climbing, historic lodges and gold mining. In the project area, recreational uses consist primarily of dispersed camping (i.e., camping not in a campground with facilities) OHV use, and hunting.

Discussion

a) There are no recreational facilities in the project area. Since the project does not include increasing the number of visitors in any way, there would be no impact on recreation in, or adjacent to, the project area; therefore, the project will have **no impact** related to recreation in this area.

b) The project does not include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment, and therefore, **no impact**.

XVII. TRANSPORTATION

Would the project:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict or be inconsistent with CEQA guidelines 15064.3, subdivision?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The primary route to the project area off of Highway 89 is the graveled county Humboldt Road (County Road 308). Thence Forest Road 27N04 crosses the box culverts on Yellow Creek (and is adjacent to YC01), and 27N40 bisects the two YC02 meadows. These roads are regularly maintained by the Plumas County and Forest Service road crews according to their standards for improved gravel roads. Other than the standards, there are no other policies, etc that address these roads. Maintenance includes annual (or more frequent if there is a lot of use) re-grading. The county road and 27N04 are also used by infrequent recreationists (primarily OHVs, pickup trucks, and occasional RVs) as well as trucks and equipment associated with timberland management.

Discussion

a) Other than road maintenance standards, there are no programs, plans, ordinances, or policies addressing the circulation system in the vicinity of the project area. This impact will be **less than significant**.

b) The vehicle miles traveled (VMT) for implementation are estimated based on the following: 9 truckloads/day for 2.5 days at 16 miles round trip (RT) for rock import (from LNF pit); 32 truckloads/day for 7.5 days at 20 mi/RT for soil material import (from Chester pit); equipment haul, worker commuters, and debris jams is 40 trips at 110 mi/RT (from Quincy), and 30 trips from Chester at 10 mi/RT for vegetation management. This results in a total of 9,860 vehicle miles traveled for project implementation in Timber Production Zone over two years, and is not inconsistent with normal land uses in this area. The project is not a land use project or transportation project and will not result in permanent impacts related to VMT. Project-related trips will cease upon project completion, therefore this impact would be **less than significant**.

c) The project includes some road drainage improvements and will result in short-term traffic disruption. Worker commutes and equipment transport to and from the site will be a minor increase in traffic. However, the trucks use to haul in off-site fill material, estimated at approximately 260 trips over 10 days, planned for early September 2021, will be a noticeable increase to users in the area. Mitigation (**Trn-1 & Trn-2**) includes signage, watering for dust abatement, and re-grading if necessary. Road drainage improvements would not close the more-frequented 27N04 road, but would temporarily close the rarely-used 27N40 road (expected less than one day). IDFs identified in the EA include notifying Forest Staff 14 days in advance prior to closure (**Trn-3**), as well as signage. Drainage improvements would

reduce road hazards by completely or partially filling roadside ditches at meadow crossings. The impact on hazards is **less than significant with mitigation**.

d) The project will not change the existing emergency access to the project site or surrounding areas. **No impact**.

Transportation Mitigation Measures:

Trn-1. Post warnings signs on the Humboldt Road and 27N04 of heavy truck traffic.

Trn-2. Use a water truck to control dust on roads. Evaluate the roads after hauling material for potential re-grading.

Trn-3. Notify LNF staff 14 days in advance of any road closure.

XVIII. TRIBAL CULTURAL RESOURCES

Would the project:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe and that is:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1 (k) or	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Setting

The project area is upstream and adjacent to Humbug Valley (Tasmam Koyom), which has recently been returned to the Maidu Summit Consortium for management, in partnership with the California Department of Fish and Wildlife (through a settlement with PG&E). Humbug Valley and the environs are an important cultural resource to the Mountain Maidu.

During project development, members of the Maidu Summit Consortium, and some of the restoration consultants they are working with, attended a three-day design development session for this project in June 2019. As part of the NEPA planning process, a scoping letter for the Yellow Creek Watershed was sent to the following tribal entities on August 24, 2020:

- Susanville Indian Rancheria: Honorable Deana Bovee (Chairwoman), cc: Melany Johnson (THPO), 745 Joaquin Street, Susanville, CA 96130
- Greenville Rancheria: Honorable Kyle Self (Chairman), cc: Lacy Miles (NAGPRA Coordinator)
P.O. Box 279, Greenville, CA 95947
- Maidu Summit Consortium & Conservancy: Honorable Chairman Ben Cunningham (Chairman), cc: Alisha Wilson, Lorena Gorbet P.O. Box 682 Chester, CA 96020
- Redding Rancheria: Honorable Chairman Jack Potter Jr., cc: Melodie Honey
2000 Redding Rancheria Road, Redding, CA 96001
- Maidu Cultural Preservation Association: Honorable Chairman Thaddeus Cason,
4250 Ishi Trail, Yankee Hill, CA 95965
- Mechoopda Indian Tribe of Chico Rancheria: Honorable Chairman Dennis Ramirez, 125 Mission Ranch Blvd., Chico, CA 95926

Substantial public comments were submitted during the scoping process, resulting in the Modified Proposed Action that was presented and analyzed in the Draft EA, and is presented in this document as “the project”. As part of the NEPA process, the Forest Service contacted the tribes again to comment on the Draft EA via letters to the same aforementioned entities dated March 17, 2021 (except the Maidu Cultural Preservation Assoc, because the scoping letter was returned with addressee unknown). An additional cultural resource comment was received by the Forest Service on the Draft Environmental Analysis, which resulted in a minor change to mitigation **Cul-2** (adding the potential for more than one tribal monitor, which is reflected in **Cul-2**).

Additionally, the Regional Water Quality Control Board sent consultation letters to tribes in accordance with Assembly Bill 52 on April 22, 2021.

- Pit River Tribe, Agnes Gonzalez, Chairperson, 36970 Park Avenue Burney, CA 96013
- United Auburn Indian Community of the Auburn Rancheria, Gene Whitehouse, Chairperson, 10720 Indian Hill Road, Auburn, CA 95603
- Greenville Rancheria: Kyle Self, Chairman, P.O. Box 279, Greenville, CA 95947
- Susanville Indian Rancheria: Brandon Gutierrez, Chairperson, 745 Joaquin Street, Susanville, CA 96130
- Honey Lake Maidu: Ron Morales, Chairperson, 1101 Arnold Street, Susanville, CA 96130
- Honey Lake Maidu: Paul Garcia, Chairperson, 7029 Polvadero Drive, San Jose, CA 95119
- Tsi-Akim Maidu: Grayson Coney, Cultural Director, P.O. Box 510, Browns Valley, CA 95918
- Washoe Tribe of Nevada and California: Serrell Smokey, Chairperson, 919 Highway 395 North, Gardnerville, NV 89410
- Enterprise Rancheria of Maidu: Glenda Nelson, Chairperson, 2133 Monte Vista Avenue, Oroville, CA 95966

- Maidu Summit Consortium & Conservancy: Honorable Chairman Ben Cunningham (Chairman), cc: Alisha Wilson, Lorena Gorbet P.O. Box 682 Chester, CA 96020
- Maidu Cultural Preservation Association: Honorable Chairman Thaddeus Cason, 4250 Ishi Trail, Yankee Hill, CA 95965
- Mechoopda Indian Tribe of Chico Rancheria: Honorable Chairman Dennis Ramirez, 125 Mission Ranch Blvd., Chico, CA 95926
- Mooretown Rancheria of Maidu Indians, Benjamin Clark, Chairperson, #1 Alverda Drive, Oroville, CA 95966

Discussion

a) i-ii. The project area is part of an important cultural landscape to the Mountain Maidu. As such, the project was substantially modified to exclude excavation for the gully fill activities, resulting in the importation of commercial fill material as part of the project description. Again, in response to the sensitivity of the area, the Forest Service archeologist has met with and walked the area with interested tribal members to ensure that culturally important areas would be protected even if there are no deposits of cultural resources. Because the importation of fill is part of the project description, no excavation is planned, and all of the other protection measures described in Section V of this document, the impact on tribal cultural resources (**Cul-1-10**) is **less than significant with mitigation**.

XIX. UTILITIES AND SERVICE SYSTEMS

Would the project:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Require or result in the construction of new water or wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

the attainment of solid waste reduction goals?				
e) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The project is located within the LNF, in General Forest, and surrounded by Timber Production zoning, where there are no utilities or service systems. Chester is ten miles away, with a full suite of services.

Discussion

a) Project activities include vegetation management and stream/meadow restoration, which will not require, or result in, the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities that would result in significant environmental effects. Therefore, there will be **no impact**.

b) Water usage will be short-term, primarily for dust abatement with a water truck. If flows within the project area are below two cubic feet per second, water would be drafted from an off-site source on LNF lands that are approved for such use by the Forest Service (**Bio-13**). Therefore, impacts would be **less than significant with mitigation**.

c) The project will not result in the generation of new wastewater requiring treatment. Workers camping on-site will have their own self-contained sanitary facilities. Portable restrooms may be provided at the project site for the duration of activities. Therefore, there will be **no impact**.

d) The project involves earth moving and vegetation management, and will not involve any quantities of solid waste generation. Small, personal quantities of trash generated by the project will be bagged, removed from the site, and transported to the county transfer site for disposal. Therefore, there will be **no impact**.

e) The project will comply with all federal state and local statues and regulations relating to solid waste and disposal. Therefore, there will be **no impact**.

XX. WILDFIRE

If located on or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

concentrations from a wildfire or the uncontrolled spread of wildfire?				
c) Require installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

Most of the project area has not experienced wildland fire in over 100 years. In uplands, conifer dominance has shifted the community structure to a majority of fire-intolerant trees. This condition, together with climate change, increases the probability of high severity fire. Expected effects of such a fire would be greater overstory mortality than would have occurred historically. A lack of disturbance from fire has resulted in degradation of aspen, riparian, and meadow communities in the area. Conifer encroachment is threatening the long-term persistence and vitality of these important habitats. Encroaching conifers are out-competing shade-intolerant hardwoods and meadow understory plant species for light and water. These conditions result in suppressed aspen and riparian hardwood tree regeneration which reduces the abundance and cover of understory plants. Built-up, decadent thatch hinders the growth and spread of new vegetation in meadows.

The project area is on National Forest lands (General Forest) and therefore in a Federal Responsibility Area (FRA). The project area is surrounded by private land with Timber Production zoning, in a State Responsibility Area (SRA). The project is located in a Very High Fire Severity Zone, according to the CalFire website’s Fire Hazard Severity Zone interactive map.

Discussion

- a) Project activities will occur within LNF. There is no emergency response plan or emergency evacuation plan for the area, so there will be **no impact**.
- b) There will be no long-term occupants at the project area. The project area is primarily forested, the terrain is fairly gentle, and does not pose an exacerbated wildfire risk to workers. In the long-term, project activities would lead to a more resilient forest in the event of a wildfire, thus aligning with goals in the LNF LRMP for fire and fuels, which include fuel reduction and effective fire protection to minimize wildfire losses. In the short-term, some of the vegetation management activities include the use of controlled burning, and the use of heavy equipment could cause a spark ignition. The LNF has long conducted controlled burn activities, using strict guidelines, which are summarized here as mitigation **Fir-1**. Additionally, a water truck or water trailer will be on-site at all times that involve heavy equipment to reduce the risk of wildfire (**Fir-2**). The guidelines and the on-site water reduce the impact to **less than significant with mitigation**.
- c) The project will not include installation or maintenance infrastructure that would exacerbate fire risk or result in impacts to the environment, so there will be **no impact**.

d) The controlled burning operations, vegetation management and meadow restoration would reduce the risk of downslope or downstream flooding or landslide in the event of a wildfire by increasing the resiliency of the landscape to fire. The terrain is gentle, so this risk is minimal in the project area under existing conditions, but the existing fuel loads and degraded meadows increase this risk if left untreated. Workers will not be exposed to downslope or downstream flood or landslides as a result of runoff, post-fire slope instability, or drainage changes. There will be **no impact**.

Wildfire Mitigation Measures:

Fir-1. Follow all LNF guidelines that guide controlled burning operations:

- National Best Management Practices for Water Quality Management on National Forest Lands. Volume 1: National Core BMP Technical Guide (FS-990a); April 2012
- Work with Northern Sierra Air Quality District to develop smoke management plan through the Prescribed Fire Information Reporting System (PFIRS).
- Quantify emissions using the PFIRS calculator guide.
- Develop a site & time-specific Burn Plan that includes environmental and fire behavior parameters, and wildlife activity.

Fir-2. Have a water truck or water trailer on-site at all times while heavy equipment is on-site during fire season, that is prepared for rapid-response response to a fire.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially 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, substantially 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

projects, the effects of other current projects, and the effects of probable future projects)				
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

a) Impacts associated with the project have been fully identified in this document. The project has the potential to result in impacts to air quality, biological resources, cultural resources, geology and soils, energy, hazards and hazardous materials, hydrology, noise, transportation, tribal cultural resources, and wildfire. With the implementation of mitigation measures, potential impacts to the quality of the environment, fish and wildlife species, and cultural/tribal cultural resources will be **less than significant with mitigation.**

b) The existing condition of the landscape within and surrounding the project area is a result of the cumulative effects of past management activities, including logging, roads, grazing, recreation, and stream restoration. The proposed activities are aligned with existing land uses, and are designed to increase the ecological resiliency of the forest, channels and meadows to the cumulative effects of on-going and reasonably foreseeable future land uses, and climate change. As such, the cumulative impacts of the project are considerable in combination with the impacts of the other planned management activities. The project design and mitigation measures are designed to reduce negative impacts of the proposed activities in light of past, present and reasonably foreseeable future activities, therefore, cumulative impacts will be **less than significant with mitigation.**

c) Because the area is in a wildland setting, there will be little noticeable impacts on humans. However, all of the environmental and other effects discussed above can either affect humans directly or indirectly. All potentially negative impacts have been reduced with mitigations. No additional mitigation measures beyond those included in this Initial Study will be required for impacts to human beings. The impact is **less than significant with mitigation.**

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ATTACHMENT 1: MITIGATION, MONITORING, AND REPORTING PLAN (MMRP)

Note: Plumas Corporation would be responsible for all mitigations, and timing for any responsible party is **during**, unless noted otherwise in the list below (FS refers to Lassen National Forest):

III. Air Quality

AQ-1. NSAQMD “reasonable precautions” for small projects would be taken to reduce fugitive dust:

- All material excavated, stockpiled, or graded shall be sufficiently watered, treated, or covered to prevent fugitive dust from leaving the property boundaries and/or causing a public nuisance. Watering during summer months should occur at least twice daily, with complete coverage of disturbed areas.
- All areas with vehicle traffic shall be watered or have dust palliative applied as necessary to minimize dust emissions.
- All onsite vehicle traffic shall be limited to a speed of 15 mph on unpaved roads.
- All land clearing, grading, earth moving, or excavation activities on a project shall be suspended as necessary to prevent excessive windblown dust when winds are expected to exceed 20 mph.
- All inactive portions of the development site shall be covered, seeded, or watered, or otherwise stabilized, until a suitable cover is established.
- All material transported offsite shall be either sufficiently watered or securely covered to prevent it being entrained in the air, and there must be a minimum of six inches of freeboard in the bed of the transport vehicle.
- Utilize wheel washers, rumble grate, and paving of internal roads or use of dust palliatives on roads to eliminate track out.
- Paved streets adjacent to the project shall be swept or washed at the end of each day, or more frequently if necessary, to remove excessive accumulations or visibly raised areas of soil which may have resulted from activities at the project site.
- The applicant shall re-establish ground cover on the site through seeding and watering.

AQ-2: A publicly visible sign shall be posted with the telephone number and person to contact regarding fugitive dust and/or odor complaints. This person shall respond and take corrective action within 24 hours. The Air District’s phone number shall also be visible to ensure compliance with applicable regulations. Timing: Prior.

AQ-3. Implement the following measures to reduce exhaust emissions to the greatest extent practicable:

- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne

toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points.

- All equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. Timing: Prior.
- All diesel-powered equipment greater than 50 horsepower (hp) shall be equipped with engines that meet or exceed CARB Tier 3 or better off-road emission standards with the most efficient Verified Diesel Emissions Control Strategies available for the engine type, such as Level 3 Diesel Particulate Filters. Responsible: Contractor. Timing: Prior and During.

IV. Biological Resource Mitigation Measures

The following mitigations are also included as Integrated Design Features (IDFs) in the EA (Attachment 2) for this project. Where additional measures beyond the IDFs have been added, the addition has been noted.

Bio-1. No mechanical treatments would occur within 25 ft. of fens. Hand treatments would be permitted. Fens would be displayed as a control area on contract maps. Responsible: and FS.

Bio-2. Hand piles would be placed farther than 25 ft. from fen edges. Responsible: FS.

Bio-3. Main access routes would be a minimum of 100 feet from fens.

Bio-4. Prescribed fire ignition would not occur within the RCAs associated with fens, although fire could back into the RCA. Responsible: FS.

Bio-5. Conifers within fens and along fen margins would be directionally felled away from the fen. Responsible: FS.

Bio-6. A visual encounter survey (VES) will be conducted prior to beginning implementation work within any PSH to determine the presence/absence of Sierra Nevada yellow-legged frogs, Cascades frog and black juga. If the presence of these species is detected, work will be delayed, and actions will be re-evaluated to determine how to protect the species. Responsible: FS.

Bio-7. A fisheries biologist would visit all potential water drafting sites within the project area prior to use to determine presence/absence of Cascades or Sierra Nevada yellow-legged frog tadpoles or egg masses. If tadpoles or egg masses are identified at a potential water drafting site, that site would not be used for water drafting. Responsible: FS.

Bio-8. If any ranid frog (suspected Sierra Nevada yellow-legged) is observed during project implementation, activities will be stopped and the Forest Service will contact the United States Fish and Wildlife Service to reinitiate consultation. Responsible: and FS.

Bio-9. Use a screened intake device and pumps with low entry velocity and suction strainers with screen less than 2mm (1/8 in) in size to minimize removal of aquatic species, including amphibian egg masses and tadpoles from aquatic habitats. Responsible: Contractor. Timing: During

Bio-10. There will be no landings or burn piles placed within 82' of the channel edge in YC05. Responsible: FS.

- Bio-11.** There would be no crossing of untreated perennial streams by mechanical equipment. Crossing perennial streams would occur over fill treatments.
- Bio-12.** Tightly woven fiber netting or similar material will not be used for erosion control or other purposes within potential suitable habitat for both frog species.
- Bio-13.** Water drafting would cease when bypass surface flows drop below 2.0 cubic feet per second.
- Bio-14.** Riparian species (aspen, cottonwood, alder, willow, dogwood, etc.) would be primarily maintained, and would not be cut or removed except where needed to direct floodplain flow or construct debris jams.
- Bio-15.** A California spotted owl LOP from March 1st to August 15th would apply to stands within ¼ mile from a spotted owl PAC unless surveys confirm that spotted owls are not nesting. The LOP would be lifted after surveys if no nesting spotted owls are confirmed.
Responsible: FS.
- Bio-16.** Existing California spotted owl protected activity centers (PAC) would be surveyed prior to treatment and no treatment would occur within an existing or new owl PAC.
Responsible: FS.
- Bio-17.** If a California spotted owl nest is found within any of the proposed treatment units, the nest would be protected through the placement of a new PAC or the realignment of an existing PAC boundary. Responsible: FS.
- Bio-18.** In addition to existing snag retention, defect trees (i.e. forked, broken or dead tops) would be retained when wildlife use is evident in the form of existing cavities and nest structures. Responsible: and FS.
- Bio-19.** Between 10 and 15 tons per acre of large down logs (>12 inches in diameter and 6 feet in length) would be retained where it exists. Large log retention can be met with either existing logs; or trees 30 inches DBH and larger and snags cut for safety or operability that would be left on site. Responsible: and FS
- Bio-20.** (not an IDF) In the event that nesting sandhill cranes are discovered in the project area, the nest area would be avoided until the colts have fledged (likely before Aug 15).
Responsible: and FS
- Bio-21.** Existing goshawk protected activity centers (PAC) would be surveyed prior to treatments occurring in the PAC or within ¼ mile of the PAC. Responsible: FS
- Bio-22.** If a northern goshawk nest is found within any of the proposed treatment units, the nest would be protected through the placement of a new PAC or the realignment of an existing PAC boundary. Responsible: FS
- Bio-23.** A northern goshawk limited operating period (LOP) from February 15 to September 15 would be applied within ¼ mile of all goshawk PACs or within ¼ mile of a nest if a nest is confirmed. The LOP may be lifted if it is determined that the PAC is not occupied.
Responsible: FS
- Bio-24.** Activities affecting vegetation that may have bird nests in or near (within 150 feet) riparian habitat, will not begin until after August 15.
- Bio-25.** One month prior to commencement of construction activities, CDFW will be notified to verify presence of gray wolf activity near the Project area. If a den or rendezvous site is

found within one mile of project activities between March 15 and August 15th, the Forest Service Wildlife Biologist would work with CA Department of Fish and Wildlife and US Fish and Wildlife Service to implement appropriate mitigation measures. Responsible: and FS.

Bio-26. If a marten den site is identified, a 100-acre area consisting of the highest quality habitat in a compact arrangement would be delineated around the den site. The den site area would be protected from vegetation treatments with a limited operating period (LOP) from February 15 through July 31, as long as habitat remains suitable, or until another Regionally approved management strategy is implemented. No mechanical treatment would be permitted within the 100-acre marten den site area regardless of time of year. Hand treatments may be permitted if existing desired conditions for suitable habitat are retained and timing of treatments abide by the LOP. If a marten rest site (female or male) is found within a treatment unit, the rest site structure, (e.g., log, snag, tree) would be protected from being damaged during project implementation. Responsible: FS

Bio-27. If a fisher den site is identified, a 700-acre area consisting of the highest quality habitat in a compact arrangement would be delineated around the den site. The den site area would be protected from vegetation treatments with a limited operating period (LOP) from March 1st through June 30th, as long as habitat remains suitable, or until another Regionally approved management strategy is implemented. No mechanical treatment would be permitted within the 700-acre fisher den site area regardless of time of year. Prescribed burning or other treatments may be permitted if existing desired conditions for suitable habitat are retained and timing of treatments abide by the LOP. If a fisher rest site (female or male) is found within a treatment unit, the rest site structure, (e.g., log, snag, tree) would be protected from being damaged during project implementation. Responsible: FS

Bio-28. If beaver are detected at any time, work would cease in the immediate area (100 feet buffer) of the sighting, and Forest Service and California Dept of Fish and Wildlife biologists would be notified to develop protection measures.

Bio-29. (not an IDF) Survey tree removal sites for roosting bats prior to any activity. If bats are detected, steps would be taken to mitigate disturbance effects and protect identified roosting sites. Responsible: FS

Bio-30. Sod removal would not occur within fens.

Bio-31. All off-road equipment would be weed-free prior to entering the Forest. Staging of equipment would be done in weed free areas. Responsible: and Contractor and FS. Timing: Prior.

Bio-32. Known invasive plant infestations would be identified, flagged where possible, and mapped for this project. Locations would be displayed on contract maps. Identified invasive plant sites within or adjacent to the project area containing isolated patches with small plant numbers would be treated (hand pulled or dug) by forest botany staff prior to project implementation. New small infestations identified during project implementation would be evaluated and treated according to the species present and project constraints and avoided by project activities. If larger infestations are identified after implementation, they would be isolated and avoided by equipment, or equipment used would be washed after leaving the infested area and before entering an un-infested area. Responsible: FS, prior.

Bio-33. Post project monitoring for implementation and effectiveness of weed treatments and control of new infestations would be conducted as soon as possible and for a period of multiple years after completion of the project. Responsible: and FS.

Bio-34. Hydrologic restoration actions within large infestations of Canada thistle would not occur until an initial herbicide treatment has been completed. Responsible: FS, prior.

Bio-35. Prescribed burning would not occur in mapped Canada thistle infestations and Larger known patches of Canada thistle and cheatgrass would be excluded from mechanical treatment. Responsible: FS

Bio-36. Commercial seed mixes proposed for revegetation would be limited to native species only, would be approved by the district botanist prior to purchase, and would be certified weed-free. Timing: Prior

Bio-37. No mulch materials would be imported from commercial sources. All mulch would be obtained on-site, from weed-free areas. Imported fill would be inspected for invasive plants prior to its transport to the project area. Responsible: FS

Bio-38. Mechanical equipment would be excluded from known occurrences of *Betula glandulosa*, *Claytonia palustris*, *Drosera angelica*, *Eriophorum gracile*, *Meesia triquetra*, and *Messia uliginosa*. Trees would be directionally felled away from occurrences of the above species. Locations would be displayed as control areas on all contract maps. New occurrences of threatened, endangered, or sensitive (TES) plant species, CRPR List 1B or 2B species, or fens discovered before or during ground-disturbing activities would be addressed with protection measures (i.e., exclusion through flag and avoid). Responsible: and FS

Bio-39. No piling of material for burning would occur within 25 feet of an aquatic feature or meadow (addition of meadow not an IDF). Responsible: FS

Bio-40. If any segments of channel are de-watered for instream structure installation, aquatic life in the de-watered segment will be captured and re-located to an immediate adjacent segment of channel.

V. Cultural Resource Mitigation Measures:

Cul-1. A walk-through with a tribal representative will occur prior to construction activities that include importing fill material to the project site. Responsible: FS

Cul-2. One or more tribal cultural monitors shall be onsite during meadow restoration activities involving fill.

Cul-3. Proposed undertakings shall avoid historic properties. Avoidance means that no activities associated with undertakings that may adversely affect historic properties, unless specifically identified in the R5 PA, shall occur within historic property boundaries, including any defined buffer zones. Responsible: and FS

Cul-4. Ground disturbing activities within historic property boundaries would be prohibited except where heritage staff have identified areas that are acceptable for these activities, such as using Forest Service road systems, and where these activities would not have an adverse effect on historic properties. Responsible: and FS

Cul-5. All historic properties within APEs shall be clearly delineated prior to implementing any associated activities that have the potential to affect historic properties. Responsible: FS

a. Historic property boundaries shall be delineated with coded flagging and/or other effective marking.

b. Historic property location and boundary marking information shall be conveyed to appropriate Forest Service staff and contractors responsible for project implementation so that pertinent information can be incorporated into planning and implementation documents, contracts and permits.

Cul-6. Linear sites (e.g., historic trails, roads, railroad grades, ditches) may be crossed or breached by equipment in areas where their features or characteristics clearly lack historic integrity. Responsible: and FS

c. Crossings are not to be made at points of origin, intersection, or terminus of linear site features.

d. Crossings are to be made perpendicular to linear site features.

e. The remainder of the linear site is to be avoided, and traffic is to be clearly routed through designated crossings.

Cul-7. The project manager would walk historic property boundaries located within or near activity areas with operators before project implementation to ensure protection.

Responsible: and Contractor

Cul-8. Historic properties within or adjacent to planned treatment areas, activity areas, or roads would be monitored during and after project completion. Responsible: FS

Cul-9. If heritage resources are identified during project implementation (unanticipated discovery) all work would cease immediately in that area until the situation is reviewed, and an assessment and mitigation plan is instituted to ensure protection of the site. Responsible: and FS

Cul-10. (Not an IDF) In the event that human remains are encountered, all work must stop in the immediate vicinity of the discovered remains and the County Coroner and a qualified archaeologist must be notified immediately so that an evaluation can be performed. If the remains are deemed to be Native American and prehistoric, the Native American Heritage Commission must be contacted by the Coroner so that a “Most Likely Descendant” can be designated and further recommendations regarding treatment of the remains is provided.

Responsible: and FS

VI. Energy Mitigation Measures:

There are no additional energy mitigation measures, as energy would be saved under Air Quality mitigation AQ-3.

VII. Geology and Soils Mitigation Measures:

Geo-1. All salvaged vegetation and topsoil that is stockpiled during construction would be reintroduced to the site. The tops of constructed plugs would be first priority in receiving salvaged vegetation and top soil, to inoculate them with mycorrhiza, soil fauna, and the locally adapted seed bank. Any mats of sedges or other rhizomatous vegetation that would be covered by plug construction, drowned by raised water levels, or excavated with borrow areas within the meadow alluvium would be harvested and replanted after construction.

Geo-2. Bare ground would be seeded (with native botanist-approved seed) and mulched (with local material, such as forest duff) to 70% cover. Likely bare areas include, but are not limited to, channel fill and heavily used access routes.

Geo-3. Efforts to reduce excavation within alluvial soils and robust meadow vegetation are taken whenever possible, and would be limited to removal of whole, live vegetation adjacent to fill areas (i.e., bank edges), which would be re-planted.

Geo-4. Soils in the RCA and in meadow treatment areas would be dry to a depth of 10” prior to equipment entry. If over-snow treatments are utilized, snow conditions and depth would be sufficient to protect soils from compaction. Responsible: and FS

Geo-5. In treatment units outside of RCAs, soil moisture conditions would be evaluated using Forest-established visual indicators before equipment operation proceeds. Lassen National Forest (LNF) Wet Weather Operations and Wet Weather Haul Agreements would be followed to protect the soil and transportation resources. Responsible: FS

Geo-6. Areal extent of detrimental soil disturbance in uplands would not exceed 15 percent of the area dedicated to growing vegetation. Following implementation, the mechanical treatment units would be evaluated by a qualified specialist to determine if detrimentally compacted ground exceeds the LNF Land and Resource Management Plan standard of 15 percent areal extent. If restoration is needed to achieve compliance, an appropriate subsoiler, ripper or other implement would be used to fracture the soil in place leaving it loose and friable. Responsible: FS

Geo-7. In mechanical treatment units, landings within treated areas no longer needed for long-term management would be evaluated by a qualified specialist to determine whether remediation is needed to restore productivity and hydrologic function. If so, appropriate remediation would be implemented. Where landing construction involved cut and fill, the landing would be re-contoured to match the existing topography. Responsible: FS

Geo-8. Machine piling operations would remove only enough material to accomplish project objectives and would minimize the amount of soil being pushed into burn piles. Duff and litter layers would remain as intact as possible, and the turning of equipment would be minimized. Piles would be constructed as tall as possible, within limits of safety and feasibility. A mixture of fuel sizes in each pile is preferred, avoiding piles of predominately large wood when practicable. Responsible: FS.

Geo-9. To the extent possible, existing landings and skid trails would be used. Responsible: and FS and Contractor.

IX. Hazards and Hazardous Materials Mitigation Measures:

Haz-1. No fuel would be stored on-site.

Haz-2. Equipment will be re-fueled and serviced outside of the riparian area. Responsible: and Contractor.

Haz-3. Hazmat materials (booms and pads in a 55-gallon drum), consisting of oil-dri material will be kept at the project site during all construction activities involving heavy equipment.

X. Hydrology Mitigation Measures:

Hyd-1. Retention of streambank stability and natural recruitment trees.

Hyd-2. The following actions would be minimized to the extent possible within RCAs: equipment entry, equipment footprint, turning of equipment. No water bars would be installed on entry trails into an RCA.

Hyd-3. Follow all applicable BMPs. Notify the Waterboard of the project, and apply for water quality permits as needed (Clean Water Act § 401 Water Quality Certification or a Waste Discharge permit). Adhere to all permit requirements. Timing: and prior.

Hyd-4. Conduct hydrologic project activities during the lowest flow time of year.

Hyd-5. Pump water around work areas if there is a potential to degrade water quality.

XIII. Noise Mitigation Measures:

Noi-1. Construction shall occur between the hours of 7 a.m. and 6 p.m., Monday through Friday, and, on rare instances on weekends or holidays between 8 a.m. and 5 p.m.

Responsible: and FS.

XVII. Transportation Mitigation Measures:

Trn-1. Post warning signs on the Humboldt Road and 27N04 of heavy truck traffic.

Responsible: and Contractor.

Trn-2. Use a water truck to control dust on roads. Evaluate the roads after hauling material for potential re-grading. Responsible: and Contractor.

Trn-3. Notify LNF staff 14 days in advance of any road closure. Timing: Prior.

XX. Wildfire Mitigation Measures:

Fir-1. Follow all LNF guidelines that guide controlled burning operations: Responsible: FS.

- National Best Management Practices for Water Quality Management on National Forest Lands. Volume 1: National Core BMP Technical Guide (FS-990a); April 2012

- Work with Northern Sierra Air Quality District to develop smoke management plan through the Prescribed Fire Information Reporting System (PFIRS).

- Quantify emissions using the PFIRS calculator guide.

- Develop a site & time-specific Burn Plan that includes environmental and fire behavior parameters, and wildlife activity.

Fir-2. Have a water truck or water trailer on-site at all times while heavy equipment is on-site during fire season, that is prepared for rapid-response response to a fire. Responsible: and FS.

**ATTACHMENT 2: YELLOW CREEK WATERSHED RESTORATION
PROJECT ENVIRONMENTAL ASSESSMENT**

A copy of Attachment 2: Environmental Assessment will be provided upon request by contacting the Central Valley Regional Water Quality Control Board via email at Lynn.Coster@waterboards.ca.gov or by phone at (530) 224-2437.