Appendix J – Vegetation and Wetlands Specialist Report

Eriogonum alpinum (photo from California Native Plant Society, Eric White 2010)

VEGETATION AND WETLAND RESOURCES TECHNICAL REPORT

INCLUDING A BIOLOGICAL EVALUATION FOR SPECIAL STATUS PLANT SPECIES, WETLANDS, AND OTHER VEGETATION RESOURCES

TRINITY RIVER WATERSHED RESTORATION PROJECT

CGB-ED-2025-034
DOI-BLM-CA-N060-2025-0010-EA
PROJECT #63121 (FOREST SERVICE)

MAY 2025

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U.S. Department of the Interior, Bureau of Land Management
U.S. Department of Agriculture, Forest Service

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ACRONYMS

ACS	Aquatic Conservation Strategy
ARCS	Aquatic and Riparian Conservation Strategy
AEAM	Adaptive Environmental Assessment and Management
BiOp	Biological Opinion
BLM	U.S. Bureau of Land Management
BMPs	best management practices
Cal-IPC	California Invasive Plant Council
CBM	Condition-based Management
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CM	Conservation Measure
CNDDB	California Natural Diversity Database

CNPS	California Native Plant Society
CVP	Central Valley Project
DOI	U.S. Department of the Interior
EA	Environmental Assessment
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
GPM	General Protection Measure
HUC	Hydrologic Unit Code
HVT	Hoopa Valley Tribe
LRMP	Land Resource Management Plan
LUB	lacustrine unconsolidated bottom
LUS	lacustrine unconsolidated shore
NEPA	National Environmental Policy Act
NNIS	non-native invasive species
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NWFP	Northwest Forest Plan
NWI	National Wetlands Inventory
PAB	palustrine aquatic bed
PEM	palustrine emergent wetland
PFO	palustrine forested wetland
Project	Trinity River Watershed Restoration Project
PSS	palustrine scrub-shrub wetland
PUB	palustrine unconsolidated bottom
PUS	palustrine unconsolidated shore
RC	Resource Center
Reclamation	Bureau of Reclamation
Regional Water Board	North Coast Regional Water Quality Control Board
RFO	Redding Field Office
ROD	Record of Decision
RMP	Resource Management Plan
RSB	riverine streambed
RSI	remote site incubator

RUB	riverine unconsolidated bottom
RUS	riverine unconsolidated shore
STNF	Shasta-Trinity National Forest
TCWMC	Trinity County Weed Management Cooperative
TMDL	Total Maximum Daily Load
TRD	Trinity River Division
TRFES	Trinity River Flow Evaluation Study
TRRP	Trinity River Restoration Program
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geologic Survey
WMAs	Weed Management Areas

1. Executive Summary

This Technical Report analyzes the effects of restoration activities proposed to be implemented in the Trinity River Watershed as part of the Trinity River Watershed Restoration Project (Project). The following vegetation and wetland resources were reviewed and analyzed:

- National Land Cover types
- National Wetland Inventory (NWI) wetland types
- Federal Endangered Species Act (ESA) listed species
- California Endangered Species Act (CESA) listed species
- U.S. Forest Service (USFS) sensitive or watch lists
- Bureau of Land Management (BLM) sensitive or watch lists
- Non-native invasive species (NNIS)

ESA-listed, CESA-listed, USFS sensitive, and BLM sensitive species are collectively referred to as special status species in this document. Vegetation resources were described for sixteen hydrological unit code 10 (HUC 10) watersheds within the Trinity River watershed and effects were qualitatively described. Table 1-1 summarizes the effects on vegetation and wetland resources, including NWI-mapped wetland habitat, riparian reserves, special status plant species, and NNIS. A detailed list of all general protection measures (GPMs), design guidelines, and conservation measures (CMs) by resource is included in Appendix B of the Environmental Assessment (EA). GPMs apply Project-wide, design guidelines are activity-specific, and CMs are resource-specific.

Table 1-1. Summary of effects on vegetation resources

Vegetation Resource	Effects Summary[1]
Wetland habitat	Short-term minor effect from construction dewatering during instream activities, access roads and staging areas in the floodplains, implementing the suite of road activities, especially culvert removal, and NNIS management; long-term beneficial effect from restoration, enhancement, NNIS removal, road decommissioning, water conservation measures, and revegetation.
Riparian habitat within riparian reserves	Short-term minor effect from construction dewatering during instream activities, access roads and staging areas, the suite of road activities, and NNIS management; long-term beneficial effect from restoration, enhancement, NNIS removal, road decommissioning, water conservation measures, and revegetation.
Federal ESA-listed plant species: Whitebark pine (*Pinus albicaulis*)	With the implementation of CM V-3, project activities would not affect whitebark pine.
Special status plant species within riparian reserves and/or adjacent to roads	Project activities may affect individuals but are not likely to result in a trend toward Federal listing or loss of viability for special status plant species within riparian reserves and adjacent to roads. Some effects may be measurable and minor, but with the implementation of CMs V-1 and V-2, project activities would have no effect on most special status plant species.

Vegetation Resource	Effects Summary[1]
Special status plant species outside of riparian reserves and road corridors	With the implementation of CMs V-1 and V-2, Project activities would not affect special status plant species that occur outside of riparian reserves and road corridors.
Non-native invasive species	For most non-native invasive species, control and management would be a minor benefit. For other species that resprout more vigorously with manual and mechanical control, such as Himalayan blackberry, tree of heaven, scotch broom, and yellow star thistle, project activities would result in a minor adverse effect.

[1]No effect/Negligible: Effects would not be measurable and lack perceptible consequences.; Minor: Effects are detectable but are small and localized; Moderate: Effects are detectable, can be measured, and cover a larger area (e.g., a tributary stream); Major: Effects are easily measured, regional, and at the population-or community scale
For non-federally listed special status species (i.e. USFS- or BLM- sensitive species), the following determinations were also used to describe effects on species: Project activities would not affect special status species; Project activities may affect individuals but are not likely to result in a trend toward Federal listing or loss of viability for the special status species; Project activities may affect individuals and are likely to result in a trend toward Federal listing or loss of viability for special status species.

2. Introduction

The purpose of this technical report is to evaluate the effects of the Trinity River Watershed Restoration Project (Project) on vegetation and wetland resources, which include general wetland, riparian, and aquatic habitat and special status plant species with known occurrences in the Project activity area. The potential for the Project to prevent or spread non-native invasive species (also referred to as NNIS or noxious weeds) is also discussed, and an NNIS risk analysis is included in this report. Proposed restoration activities would occur within the Trinity River watershed, including along the mainstem, tributaries to the mainstem, and the watershed above the Trinity and Lewiston dams. The Bureau of Reclamation's (Reclamation's) Trinity River Restoration Program (TRRP) office, the Bureau of Land Management (BLM), and the U.S. Forest Service (USFS) are preparing an environmental assessment (EA) for the Project.

Special status species include those that are:

- Listed under the Federal Endangered Species Act (ESA)
- Listed under the California Endangered Species Act (CESA)
- Included in the California Native Plant Society (CNPS) lists (1A, 1B, 2, or 4)
- Included in the USFS sensitive or watch lists
- Included in the BLM sensitive or watch lists

Project activities and potential effects would typically occur along roads and within areas designated as riparian reserves under the 1994 Northwest Forest Plan (NWFP; Forest Service 1994) and riparian management areas under the 2024 Northwest California Integrated Resource Management Plan (NCIP, BLM 2024) within the Trinity River watershed in Trinity and Humboldt counties, California. The primary objectives of the Project are to enhance habitat conditions for native anadromous fish species (i.e., salmon, steelhead, Pacific lamprey) within the Trinity River watershed and to support the objectives of the Aquatic Conservation Strategy (ACS), adopted by the BLM and USFS. The two primary objectives of the ACS that would be addressed by the Project are to restore watershed function and to conserve riparian reserves.

3. Proposed Action

TRRP is the lead agency and USFS and BLM are cooperating agencies for the Project, the purpose of which is to improve instream and riparian habitat at a watershed scale and to accelerate the recovery of north coast salmon populations (coho salmon, steelhead, and Chinook salmon), thereby fulfilling tribal trust responsibilities and obligations to local communities as well as recreational and commercial fishing industries (per the Shasta-Trinity National Forest Land and Resource Management Plan (LRMP; USFS Pacific Southwest Region 1995) and state and federal recovery plan goals (NMFS 2014; California Department of Fish and Game 2004).

The following describes the objectives of the Proposed Action:

- Restore and improve instream conditions sufficient to support all life stages of salmonids and other aquatic species;
- Restore upstream and downstream fish passage for all life stages of salmonids;
- Restore continuous paths for wood dispersal, nutrient cycling, sediment transport, and movement of other vegetative material essential for productive aquatic habitat;
- Maintain or restore native plant communities and vegetative structure impacted by invasive plants and pathogens, while rehabilitating eroding streambanks to improve water quality, shade conditions, and large wood recruitment;
- Repair, replace, or remove ineffective instream structures;
- Restore and improve riparian and meadow habitat in order to promote healthy conditions for aquatic and terrestrial wildlife populations;
- Improve late summer/fall base flow conditions through process-based restoration, water conservation improvements, and meadow restoration;
- Increase nutrient inputs through salmon carcass placement in the watershed; and
- Stabilize upslope areas around road infrastructure to minimize erosion and sediment discharges within the watershed to bring the sediment impaired watersheds into compliance with sediment reduction TMDLs for the South Fork Trinity and Trinity Mainstem rivers (EPA 1998 & EPA 2001).

The Proposed Action consists of a suite of instream and riparian restoration activities that are designed to meet the objectives described above. Detailed descriptions of each of the proposed activities are included in Chapter 4 of the Project's EA document. Proposed Activities are grouped into three general categories: instream habitat restoration; upslope habitat restoration; and road maintenance, rehabilitation, and decommissioning activities. The activities proposed under each of these categories are summarized below:

Instream Habitat Restoration

1. Restoration and Enhancement of In-Channel Habitat
2. Floodplain Restoration
3. Removal or Retrofitting of Fish Passage Barriers, Small Dams, Flood Gates, Pilings and Other In-water Structures
4. Water Conservation Projects
5. Salmon Carcass Placement
6. Remote Site Incubators (RSIs)

Upslope Habitat Restoration

7. Bioengineered Bank Stabilization
8. Aquatic, Wetland, Riparian, and Upslope Habitat Enhancement

Road Maintenance, Rehabilitation, and Decommissioning Activities

9. Road Maintenance
10. Road Rehabilitation
11. Road Decommissioning

3.1 Project Location and Timing

The proposed activities would occur within a portion of the Trinity River watershed. Individual restoration actions would take place in and along the mainstem Trinity River and in and along tributaries of the mainstem Trinity River (both above and below the Lewiston and Trinity dams) on both private (with permission of the landowner) and public lands (primarily USFS- and BLM-managed). Vegetation and wetland resources were described for each of the hydrological unit code 10 (HUC 10) watersheds. Table 3-1 lists HUC 10 watersheds within the Project activity area. The locations of Key Watersheds and HUC 10 watersheds are shown on Figure 3-1. Key Watersheds are defined in Section 6.2 The South Fork Trinity River Key Watershed encompasses both the Middle South Fork Trinity River and the Upper South Fork Trinity River HUC 10 watersheds as shown on Figure 3-1.

Because of the presence of anadromous fish, Project activities within any wetted or flowing channel of tributaries of and the mainstem Trinity River below the Trinity and Lewiston dams shall be restricted to the dry season (i.e., June 15 to October 15 for tributaries and July 15 to October 15 for the Trinity River mainstem) before coho begin spawning. Revegetation outside of the active channel is typically implemented during the wet season, between October and April. Work in intermittent streams may continue beyond November 1, as long as weather conditions permit and the stream channel remains dry. Construction and restoration work within intermittent stream channels must be completed before cumulative seasonal rainfall is sufficient to result in surface flow within the channel. Most restoration activities could be completed in a single season except for subsequent weed management, monitoring, and adaptive management actions, but more complex projects could take multiple years.

Table 3-1. HUC 10 Sub-watersheds within the Trinity River Basin.

Subregion (HUC 4)	Basin (HUC 6)	Subbasin (HUC 8)	Watershed (HUC 10)	HUC 10 Number	Acres in Watershed
Klamath-Northern California Coastal 1801	Northern California Coastal 180102	Trinity California 18010211	Big French Creek-Trinity River[1]	1801021111	153,325
			Browns Creek	1801021106	47,110
			Canyon Creek	1801021108	41,033
			Coffee Creek	1801021101	74,835
			East Fork Trinity River	1801021103	74,335
			New River	1801021110	149,597
			Horse Linto Creek-Trinity River[2]	1801021112	0
			North Fork Trinity River	1801021109	97,483
			Stuart Fork	1801021104	88,264
			Swift Creek-Trinity River	1801021105	121,055
			Tangle Blue Creek-Trinity River	1801021102	101,393
			Weaver Creek	1801021107	142,030
		South Fork Trinity 18010212	Lower South Fork Trinity River[3]	1801021205	44,229
			Lower Hayfork Creek	1801021203	142,161
			Upper Hayfork Creek	1801021202	105,697
			Middle South Fork Trinity River	1801021204	145,776
			Upper South Fork Trinity River	1801021201	73,634

1. A portion of Big French Creek is excluded from the Project activity area, namely the Sharber Creek HUC 12 subwatershed. because it is in the Six Rivers National Forest.
2. Horse Linto Creek is located in the Six Rivers National Forest and is not included in the Project activity area.
3. A portion of Lower South Fork Trinity River is excluded from the Project activity area, namely Grouse, Mingo, and Old Campbell creeks (HUC 12 subwatersheds) because they are located in the Six Rivers National Forest.

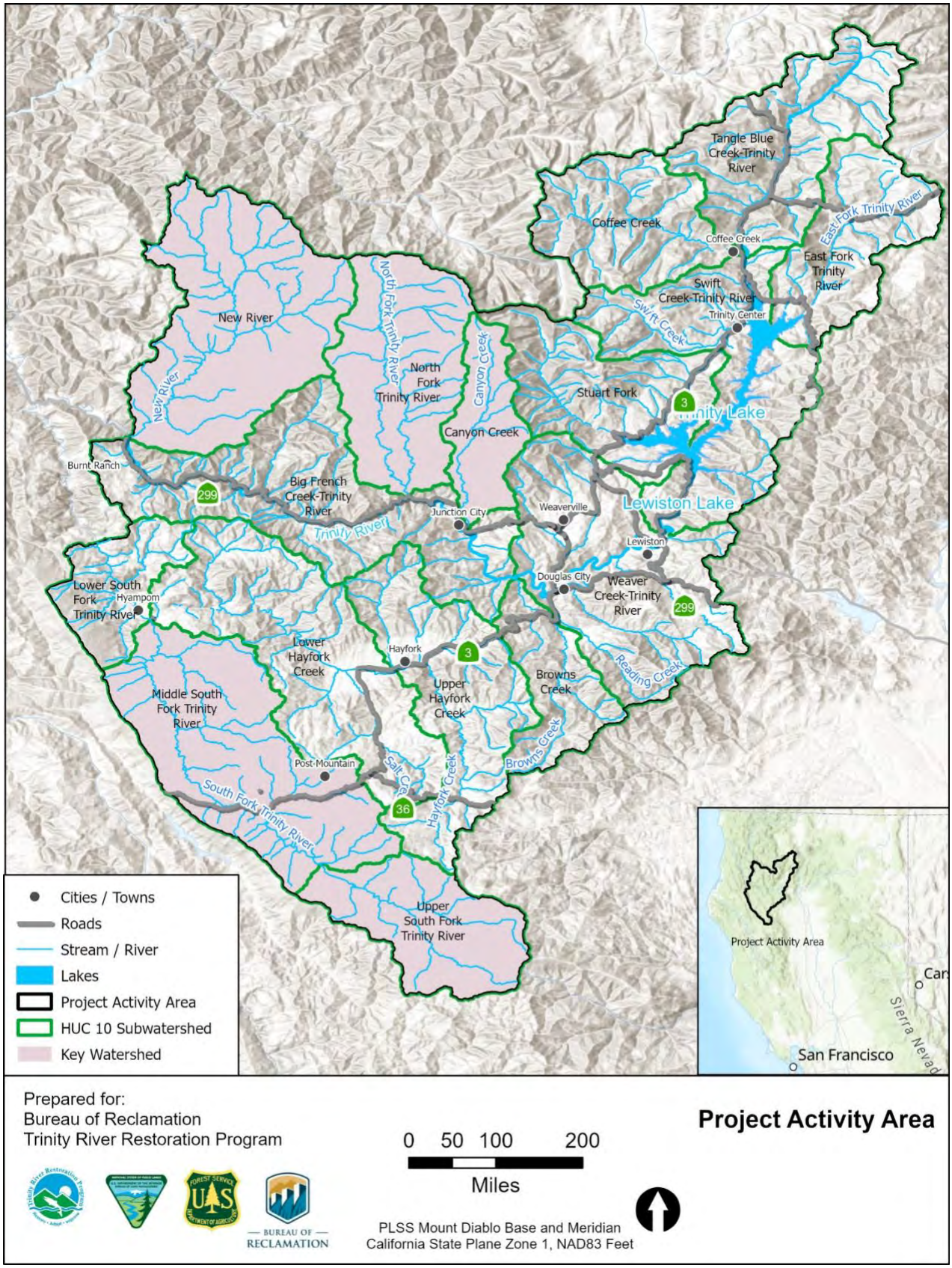

Figure 3-1. Project Activity Area

4. Avoidance and Minimization of Effects on Vegetation Resources

Design guidelines, BMPs, and CMs have been developed for proposed activities and for resources to avoid and minimize effects on ecologically important vegetation communities (land cover types), wetlands, riparian habitat, and special status plant species and to minimize the spread of NNIS. These would be incorporated into the planning, design, and implementation phases of each site-specific project. Many of these have been developed as part of the Project's ESA Section 7 consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) and collaborative Project planning efforts by TRRP, USFS, and BLM. A detailed list of all design guidelines, BMPs and CMs by resource is included in Appendix B of the EA.

4.1 Limits on Proposed Activities Frequency and Location

Due to the large-scale nature of the Project, there are concerns about the potential for direct physical changes to the environment as a result of implementation at the watershed scale. A key design guideline entails setting annual project limits on the number of projects, which would limit adverse effects to ESA-listed species.

The 2020 NMFS Biological Opinion (TRRP BiOp, WCRO-2019-03827) limits instream watershed restoration projects covered by the BiOp annually to:

- 2 fish passage/dam removal projects;
- 8 channel/floodplain rehabilitation projects (4 mainstem and 4 tributary);
- 2 in-stream habitat enhancement projects;
- 3 streambank stabilization projects; and
- 4 road-related projects with in-water activities (i.e. road decommissioning with culvert removal).

TRRP is in the process of reinitiating consultation with NMFS to include all project activity categories described in the Proposed Action that were not previously analyzed in the 2020 TRRP BiOp. Project limitations will also be reviewed during the reinitiated consultation and are anticipated to change. During meetings with NMFS in regard to the ESA Section 7 consultation for this Project, NMFS recommended setting Project limits to control sedimentation and turbidity that would adversely affect ESA-listed salmonids. Preliminarily, it is being proposed that in addition to utilizing GPMs and CMs, such as erosion and sediment control BMPs, effects of turbidity would be controlled by limiting the number of floodplain reconnection projects that are over 100 acres as well as small dam removals, to one site-specific restoration project (of these specific project types) per HUC-12 watershed, per year. However, the latest applicable BiOp should be referred to, to determine current Project limits during site-specific project implementation.

Project limits would provide spatial and temporal flexibility during site-specific restoration project development and watershed planning efforts. Implementors within the watershed would continue to collaborate with the assistance of TRRP, USFS, and BLM to ensure significant regional effects would not occur.

4.2 Vegetation Protection Measures

The USFWS Statewide Restoration Biological Opinion (USFWS Statewide Restoration BiOp, USFWS 2025) and the TRRP Master Environmental Impact Report (EIR) provide vegetation protection measures that have been incorporated into the Project's CMs included in Appendix B of the EA. These measures would be followed and

implemented during site-specific restoration projects and include providing qualified biologists and guidance for conducting preconstruction special status plant surveys; identifying and marking sensitive areas such as wetlands, riparian habitat, and aquatic habitat; revegetation and restoration protocols; and NNIS management. A qualified biologist would ensure compliance with the Project's environmental commitments during restoration activities. The qualified biologist would need to meet general qualifications including a Bachelor's degree, previous experience with similar habitat types and species, as well as prior construction monitoring experience.

Preconstruction surveys would be conducted for special status species within appropriate habitat in the restoration activity area (CM V-1). A qualified botanist would conduct a minimum of two pre-project surveys to determine if special-status plant species occur within the project site (CM V-2). The agencies would develop a tracking system to document the status of surveys, known occurrences and suitable habitats in activity areas. Botanical surveys would be conducted during periods most appropriate for detection and identification of target species. The project botanist would communicate whether surveys were conducted in a sufficient manner and whether known occurrences or suitable habitats are present. If necessary, additional CMs would be developed appropriate for the particular species. If special status plant species are not observed during appropriately timed botanical surveys, the project botanist would communicate botanical clearance results to the implementation team.

Prior to any ground disturbance associated with restoration projects, wetlands and other waters would be delineated based on the 1987 *Corps of Engineers Wetlands Delineation Manual* (1987 Manual; Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE 2010). Potential wetlands as defined by the 1987 Manual would be evaluated using a three-parameter approach: dominance of hydrophytic vegetation, hydric soils, and wetland hydrology. For each restoration project, a wetland delineation report and a Clean Water Act (CWA) Section 404 permit authorization request would be prepared and submitted to the U.S. Army Corps of Engineers (USACE) for compliance with CWA Section 404. Once wetlands are identified in the field, they would be flagged or fenced so that impacts would be avoided and minimized to the extent possible (CM V-2), especially for activities such as staging areas and access roads (CM V-13). Equipment and materials would be stored and stockpiled away from wetlands and surface water features (CM GWH-7).

All equipment operated in or adjacent to the waterbody will be clean of terrestrial and aquatic NNIS (CM NNIS-4) as well as oil and grease. Equipment that will come in contact with the Trinity River or tributaries will be inspected daily (CM GWH-7). Vehicles will receive proper and timely maintenance to reduce the potential for mechanical breakdowns leading to a spill of materials. External oil, grease, and mud will be removed from equipment using steam cleaning. Wash sites must be located in designated upland locations so that dirty wash water does not flow into stream channels or wetlands and in locations that would not cause additional impacts to the upland vegetation community. If possible, temporary wash sites would be constructed. Gasoline engines and pumps operated on the floodplain will be isolated from the ground by an impermeable barrier so that any leaking petroleum products are isolated from the ground (CM GWH-7). Invasive species and noxious weeds will be inventoried prior to any project activities (CM NNIS-1). A Weed Management Specialist would coordinate with the team on how to treat and manage species and how to prevent the spread during construction (CM NNIS -2). All GPMs, design guidelines, and CMs presented in Appendix B would be followed to provide vegetation protection to the greatest extent.

5. Methods

Vegetation communities and other land cover types were obtained from National Land Cover Database provided by the U.S. Geological Survey (USGS) for each HUC 10 watershed in the Project activity area. Wetlands within the Project activity area were assessed using the National Wetlands Inventory (NWI; USFWS 2024b). NWI represents the extent, approximate location and type of wetlands and deepwater habitats as defined by Cowardin et al. (1979). Effects are discussed qualitatively based on what ecologically important vegetation land cover types, including wetland and riparian vegetation, would be likely to be present at the activity areas.

A list of special status plant species and communities was compiled by searching the California Natural Diversity Database (CNDDB) (CDFW 2024) and CNPS Electronic Inventory database and reviewing BLM's special status species list for the Redding Field Office and USFS sensitive species for the Shasta-Trinity National Forest (STNF). A list of federal ESA-listed species (endangered, threatened, or candidate status) potentially occurring within the Project activity area was obtained from the USFWS Information for Planning and Consultation website (USFWS 2024a).

The California Department of Food and Agriculture (CDFA) noxious weed list was reviewed, and data from STNF were used to determine species known to occur within the Trinity River watershed.

5.1 Riparian Reserves/Riparian Management Areas

Under the Aquatic and Riparian Conservation Strategy (ARCS), which was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on all public lands, riparian reserves, otherwise known as Riparian Management Areas, are portions of watersheds where riparian-dependent resources receive primary emphasis and where special standards and guidelines apply. Based on the Project's objectives, riparian reserves are an integral part of project planning to implement best management practices during restoration activities and to increase or restore function of vegetation communities by focusing on ecological processes and conditions within and contributing to the physical and ecological health, function, and resiliency of these areas.

Riparian reserves occur at the margins of standing and flowing water, intermittent stream channels, lakes, ponds, springs, and wetlands, and the location of riparian reserves for the Trinity River Watershed has been estimated based on proximity to water. Quantifying riparian reserves provides an estimate of habitat where restoration and enhancement activities are anticipated (and prioritized) to take place. Potential effects on special status species are estimated based on documented or mapped occurrence within riparian reserves.

5.2 Intensity of Effects

The analysis of potential Project effects to vegetation and wetland resources considers the presence of a species in or near the Project activity area, the scope and nature of Project activities, and the potential effects to these resources associated with those activities. Short-term effects to vegetation and wetlands occurs as a result of construction impacts and are commonly related to ground disturbance within the floodplains, wetlands, meadows, streambanks, and other upslope areas. Long-term effects are caused by the action and are later in time or farther removed in distance. Long-term effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on

air and water and other natural systems, including ecosystems. For the purposes of analysis for this project, the intensity of effects is described using the following terms:

- Negligible/No effect: Effects would not be measurable and lack perceptible consequences.
- Minor: Effects are detectable but are small and localized.
- Moderate: Effects are detectable, can be measured, and cover a larger area (e.g., a tributary stream).
- Major: Effects are easily measured, regional, and at the population or community scale.

Effects have been analyzed for each vegetation resource, including wetland and riparian habitat as well as special status species. Throughout the analysis, all effects are considered adverse unless otherwise stated as beneficial. Effect analyses also consider avoidance and minimization measures that would either avoid causing a particular effect or minimize the effect's intensity. Effect analyses do not consider compensatory mitigation.

The following determinations were also used to describe effects on species:

- Project activities will not affect special status species
- Project activities may affect individuals but are not likely to result in a trend toward Federal listing or loss of viability for the special status species.
- Project activities may affect individuals and are likely to result in a trend toward Federal listing or loss of viability for special status species.

6. Environmental Setting

6.1 Trinity River Watershed

The Trinity River originates in the rugged Salmon-Trinity Mountains of northern California in the northeast corner of Trinity County, California. The entire Trinity River watershed is approximately 2,861 square miles and is the largest Klamath River tributary. From Lewiston Dam, the Trinity River flows westward for 112 miles until it enters the Klamath River near the town of Weitchpec on the Yurok Reservation. The Trinity River passes through Trinity and Humboldt counties and the Hoopa Valley (Hoopa Tribe) and Yurok Indian Reservations. The Klamath River flows northwesterly for approximately 40 miles from its confluence with the Trinity River before entering the Pacific Ocean.

Historically, the Trinity River functioned as a dynamic river reach that provided quality spawning and rearing habitat for anadromous fish. Construction of Lewiston Dam, part of the Central Valley Project (CVP), in 1963 near Lewiston is now the upper limit of anadromous fish migration on the Trinity River as no fish passage facilities were built. At times, 90% of the Trinity River flow was diverted into the Sacramento Basin, contributing to the decline of Chinook salmon, coho salmon, and Steelhead (NMFS 2014). These water withdrawals caused severe degradation of fish habitat of the Trinity River. The minimal flows released were insufficient to maintain the Upper Trinity River and, as a consequence, much of the river channel between Lewiston and the North Fork Trinity River confluence became confined within a narrow channel bordered by dense riparian berms.

Logging practices, road construction, mining, and floodplain development within the Trinity River watershed also contributed significantly to habitat degradation (USFWS and HVT 1999). Clear-cut logging, along with hundreds of miles of unpaved roads and skid trails, promoted increased sediment loading in the Trinity River and its

tributaries and removal of streamside vegetation increased water temperatures. Within the mainstem Trinity River, the distribution of Coho Salmon can likely be explained, at least in part, by water temperature (Reclamation 2019). Virtually all tributaries have been subjected to hydraulic mining activities. This has reduced the biological productivity and fish carrying capacity of much of the Trinity River basin (USFWS and HVT 1999; EPA 2001). In addition, degradation of freshwater habitat has been pervasive in the Lower Klamath River contributing to declines in native fish runs (Gale and Randolph 2000).

Subsequently, Congress enacted a number of legislative actions to restore Trinity River fishery resources. In 2000, the Secretary of the Interior signed the Record of Decision (ROD) for the Trinity River Mainstem Fishery Restoration Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) which required Reclamation (through TRRP) to implement a suite of actions to increase habitat quality and quantity for native anadromous fish. The five primary components of TRRP's river restoration work include:

1. **Variable Annual Instream Flows** – releasing water from Lewiston Dam, based on the water year type, to mimic natural Trinity River flows and interact with downstream areas to enhance conditions for all life stages of fish and wildlife. These variable annual instream flows are also called restoration releases or restoration flows and have generally occurred starting in April.
2. **Channel Rehabilitation** – restoring the functional floodplain of the river, which has been channelized and simplified by managed river flows and mining. To date, TRRP has constructed 34 of the rehabilitation projects identified in the 1999 Trinity River Flow Evaluation Study (USFWS and HVT 1999) and Trinity River FEIS (USFWS et al. 2000).
3. **Sediment Management** – introducing sediment to the river and providing flows to ensure its movement in the river. Sediment entering the river system upstream of Trinity Dam is blocked from the Trinity River below Lewiston Dam, which creates a downstream sediment deficit. TRRP resupplies the river with sediment downstream of the dams to offset the loss of sediment from upstream sources. Typically, coarse sediment additions are used to provide gravels (0.375 to 5 inches in diameter) downstream of Lewiston Dam, where the supply has been curtailed. Fine sediment control reduces silt and sand inputs from watershed sources (e.g., Grass Valley Creek, where sediment retention ponds have been periodically dredged to control impacts on redds). Recent studies indicate that the Trinity River reach near the dam is lacking fine sediment inputs, which is an objective addressed by the Proposed Action (Buxton 2021).
4. **Watershed Restoration** – addressing negative impacts resulting from land management in the Trinity River basin. Watershed restoration activities include ensuring fish passage to tributary habitat and creating better aquatic conditions in watershed areas to support stream life.
5. **Adaptive Environmental Assessment and Management** – monitoring, evaluating, and improving the effectiveness of river restoration actions.

Reclamation has been implementing, and continues to implement, the flows described in the ROD. Since the 2000 ROD, TRRP has both implemented and funded others to undertake restoration actions to improve instream habitat conditions in both the mainstem Trinity River and the tributaries.

6.2 Riparian Reserves and Key Watersheds

The ACS, which is described in Appendix B6 of the NWFP (Forest Service 1994), is a framework to guide the restoration and maintenance of the ecological health of watersheds and aquatic ecosystems on public lands within the habitat range of anadromous fish in the Pacific Northwest. The intent of the ACS is to maintain and restore ecosystem health at watershed and landscape scales to protect habitat for fish and other riparian-dependent species and resources and to restore currently degraded habitats. This approach seeks to prevent further habitat degradation and restore habitat over broad landscapes as opposed to implementing individual projects or focusing on small watersheds. The ACS provides a multi-agency framework and background for the activities and approach for this Project.

The ACS has 4 components:

- **Riparian Reserves/Riparian Management Areas** – Applies to all permanently flowing and intermittent streams, lakes, and wetland areas that are greater than one acre. They are the portions of a watershed directly coupled to streams and rivers that are required for maintaining hydrologic, geomorphic, and ecologic processes that affect standing and flowing water bodies, such lakes and ponds, wetlands, streams, stream processes, and fish habitats. The ACS objective is to maintain and restore riparian areas and enhance habitat conservation of streams. Management activities are limited to those benefiting aquatic and riparian-dependent species and guidelines may direct land uses to only those would meet the ACS objectives. The project area contains riparian reserves/Riparian Management Areas, as defined in the NCIP (BLM 2024) and Shasta-Trinity National Forest (STNF) LRMP. Watershed analyses have been completed by BLM and USFS for federal lands within the Trinity River watershed.
- **Key watersheds** – Applies to watersheds that serve as refugia for maintaining and recovering instream habitat for aquatic species. New roads are prohibited in roadless areas, and a no net increase of roads outside roadless areas is enforced. USFS manages four primary tier key watersheds in the upper Trinity River watershed, primarily associated with the Salmon-Trinity Alps Wilderness Area. These watersheds are the North Fork Trinity River, South Fork Trinity River, Canyon Creek, and the New River (Figure 3-1).
- **Watershed analysis** – Process to determine the current and desired conditions to provide both a framework and target for restoration efforts, along with specific goals and objectives. Watershed analysis is required in Key Watersheds and roadless areas prior to management activities.
- **Watershed restoration** – focuses on removing and improving roads, riparian vegetation and instream habitat improvements, and channel complexity and instream habitat restoration. By its nature, the Watershed Restoration Project is a comprehensive ecosystem restoration project intended to restore the physical processes and biological resources of the Trinity River watershed. The scale of the proposed activities ensures that restoration of ecological processes and functions will be consistent with the ACS.

ACS components are applied to the Proposed Action as follows: key watersheds (component 2) would be analyzed (component 3) and watershed restoration activities (component 4) would be applied primarily to riparian reserve areas (component 1). However, restoration activities would occur outside of key watersheds for this Project.

In addition, the ACS has 9 objectives that apply to all federal lands and funded projects within the Trinity River Watershed, and provide a basis and background for the proposed Watershed Restoration Project:

1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.

2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

6. Maintain and restore instream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.

7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

9. Maintain restore habitat to support well-distributed populations of native plants, invertebrate, and vertebrate riparian-dependent species.

The Project has been designed to assist TRRP, BLM, USFS, and its partners in achieving these nine ACS objectives for the Trinity River watershed.

7. Land Cover

7.1 Existing Conditions

The National Land Cover Database provides land use data for environmental modelling applications and is used to describe baseline landscape types throughout the Project activity area. The 15 land cover types found within the Project activity area are described in Table 6-1.

In general, evergreen forests have the highest cover within the Project activity area with about 56%. Scrub and shrub cover types are next common at approximately 24% of the Project Activity Area. Pastures, grassland/ herbaceous cover types follow at about 12%. Developed, open space, which included grassy spaces in developed areas, account for approximately 4% of the Project Activity Area. Mixed forest accounts for 2%. Open, natural land features including barren land, perennial snow and ice, and open water each make up less than 1% of the Project activity area.

Wetlands including emergent herbaceous and woody wetlands cover types make up a small amount of natural vegetation cover, each with less than 1%. Open water land cover type accounts for about 1% cover. Collectively, wetlands and open water account for a little over 1% and approximately 18,303 acres within the Project activity area. These cover types occur within areas designated as riparian reserves, which would be where most restoration activities are proposed.

The National Land Cover Database does not specify riparian vegetation, which may be included within shrub/scrub and deciduous forest. NWI-mapped wetlands, especially palustrine scrub-shrub and palustrine forested include areas typically considered riparian and are discussed in Section 8.

Table 6-1. National Land Cover Types within the Project Activity Area

National Land Cover Type	Classification Description	Percentage of the Project Activity Area	Acres within the Project Activity Area
Evergreen Forest	Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species maintain their leaves all year. Canopy is never without green foliage.	56%	895,805
Shrub/Scrub	Areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage or trees stunted from environmental conditions.	24%	385,472
Grassland/ Herbaceous	Areas dominated by graminoid or herbaceous vegetation, generally greater than 80% of total vegetation. These areas are not subject to intensive management such as tilling but can be utilized for grazing.	12%	186,657
Developed, Open Space	Areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.	4%	64,856

National Land Cover Type	Classification Description	Percentage of the Project Activity Area	Acres within the Project Activity Area
Mixed Forest	Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. Neither deciduous nor evergreen species are greater than 75% of total tree cover.	2%	25,965
Open Water	Areas of open water, generally with less than 25% cover of vegetation or soil.	1%	11,977
Barren Land	Areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits and other accumulations of earthen material. Generally, vegetation accounts for less than 15% of total cover.	1%	10,516
Deciduous Forest	Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species shed foliage simultaneously in response to seasonal change.	<1%	4,879
Developed, Low Intensity	Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20% to 49% percent of total cover. These areas most commonly include single-family housing units.	<1%	4,832
Emergent Herbaceous Wetland[2]	Areas where perennial herbaceous vegetation accounts for greater than 80% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.	<1%	4,075
Woody Wetlands[3]	Areas where forest or shrubland vegetation accounts for greater than 20% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.	<1%	2,251
Developed, Medium Intensity	Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20% to 49% percent of total cover. These areas most commonly include single-family housing units.	<1%	1,798
Perennial Snow/Ice	Areas characterized by a perennial cover of ice and/or snow, generally greater than 25% of total cover.	<1%	1,633
Developed, High Intensity	Highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80% to 100% of the total cover.	<1%	779
Hay/Pasture	Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20% of total vegetation.	<1%	31
Total		**~100%**	**1,601,525**

The highest cover of emergent herbaceous wetlands occurs in Swift Creek Trinity River watershed (2,093 acres), Stuart Fork (949 acres), East Fork Trinity River (676 acres), and Coffee Creek (142 acres; Table 6-2).Other watersheds, including Big French Creek, Middle South fork Trinity River, and Weaver Creek have less than 100 acres of emergent herbaceous wetlands, while Canyon Creek, Lower Hayfork, New River, North Fork Trinity River, and Upper South Fork Trinity River have less than 10 acres of emergent herbaceous wetlands. The highest cover of woody wetlands occurs in Coffee Creek (1,002 acres), Tangle Blue Creek (441 acres), Swift Creek Trinity River (310 acres), and Weaver Creek (218 acres). The remaining watersheds have less than 100 acres of woody

wetlands. The Swift Creek Trinity River has the highest cover of open water with 6,970 acres. Stuart Creek has 3,128 acres of open water, East Fork Trinity River has 586 acres, and Big French Trinity River has 241 acres of open water. The remaining watersheds have between zero and about 200 acres of open water. Big French Creek Trinity River, Middle south Fork Trinity River, and Stuart Fork have the highest acreage of deciduous forest.

Table 6-2. HUC 10 watershed National Land Cover types

National Land Cover Type	Big French Creek Trinity River	Browns Creek	Canyon Creek*	Coffee Creek	East Fork Trinity River	Lower Hayfork Creek	Lower South Fork Trinity River	Middle South Fork Trinity River	New River*	North Fork Trinity River	Stuart Fork	Swift Creek Trinity River	Tangle Blue Creek Trinity River	Upper Hayfork Creek	Upper South Fork Trinity River*	Weaver Creek Trinity River	Total
Barren Land	223	<1	1,058	320	590	4	286	26	64	786	2,705	2,457	1,963	<1	4	30	10,516
Deciduous Forest	551	474	131	121	9	224	269	532	33	223	633	364	33	229	25	1,028	4,879
Developed, High Intensity	30	1	3	55	2	63	22	26	22	270	58	56	64	3	3	101	779
Developed, Low Intensity	501	46	28	276	208	522	158	491	171	146	135	593	417	215	93	831	4,883
Developed, Medium Intensity	130	5	2+	111	32	196	90	114	81	138	71	193	166	33	33	388	1,798
Developed, Open Space	5,077	1,412	919	2,070	895	8,771	2,306	10,555	3,245	1,307	4,112	6,546	415	6,658	4,585	5,984	64,856
Emergent Herbaceous Wetlands	55	0	8	142	676	3	19	65	1	6	949	2,093	16	0	2	42	4,075
Evergreen Forest	91,949	32,086	21,463	54,572	53	78,762	17,385	76,288	50,095	54,965	54,624	70,618	81,894	55,909	20,187	81,043	895,805
Hay/Pasture	<1	0	0	0	963	24	<1	0	0	0	0	1	4	3	0	0	31
Herbaceous	3,482	1,420	7,032	2,719	6,126	6,550	5,108	31,128	49,053	615	2,703	7,515	1,237	8,001	43,662	10,307	186,657
Mixed Forest	1,800	1,495	907	867	598	2,244	367	1,832	248	1,337	2,108	3,665	590	1,533	135	6,237	25,956
Open Water	341	0	56	82	586	46	149	178	4	77	3,128	6,970	152	2	6	199	11,977
Perennial Snow/Ice	0	0	606	4	0	0	0	0	0	376	586	59	0	0	0	1	1,633
Shrub/Scrub	49,126	10,128	8,785	12,468	10,515	44,715	18,071	24,513	46,401	37,211	16,436	19,590	13,985	33,101	4,862	35,590	375,472
Woody Wetlands	60	28	20	1,002	102	36	0	1	0	13	7	310	441	11	3	218	2,251

Data from the United States Geological Survey (USGS) for National Land Cover Types

7.2 Effects

Most activities within the Project activity area, including instream and side channel restoration, floodplain restoration, water conservation projects, instream structure removal, bank stabilization, habitat enhancement and road decommissioning at stream crossing would be along streams and within floodplains, which would have the greatest effect on emergent herbaceous wetland and woody wetlands land cover types, which only consist of 0.38% of the land cover in the HUC 10 watersheds within the Project activity area. Effects on NWI-mapped wetlands and riparian vegetation, which would overlap with the herbaceous and woody wetland cover types, are discussed in Section 8. and not replicated in this section.

A suite of enhancement and invasive species management projects would occur on roads or other disturbed areas. While these effects on vegetation communities along roads and in other upland areas affected by NNIS control would be temporary, effects could last for several months to up to two years before vegetation is re-established. Reducing NNIS would be an overall long-term beneficial effect on the vegetation communities. An overall reduction in ecologically important land cover types, such as herbaceous and woody wetlands is unlikely to occur since the Proposed Action would restore habitat throughout the floodplain and in upland areas where NNIS control and revegetation would be implemented. Some roads would be decommissioned and restored with native vegetation, resulting in a gain in native habitat and higher quality vegetation communities.

8. Wetlands, Other Waters, and Riparian Vegetation

8.1 Existing Conditions

Table 8-1 summarizes the Cowardin classes of wetlands and other waters (Cowardin et al. 1979) that occur within the HUC 10 watersheds. The Cowardin classification system is used in the USFWS NWI (USFWS 2024b) for describing and categorizing wetlands and deepwater habitats based on a variety of characteristics. The following list describes the general Cowardin classes of wetlands and other waters that are known to occur within the Project activity area:

- Freshwater emergent wetlands are classified as palustrine emergent (PEM) wetlands and are dominated by herbaceous species such as pale spikerush (*Eleocharis macrostachya*), annual rabbitsfoot grass (*Polypogon monspeliensis*), annual hairgrass (*Deschampsia danthonioides*), reed canarygrass (*Phalaris arundinacea*), and mugwort (*Artemesia douglasiana*).
- Freshwater Forested wetlands are classified as palustrine forested (PFO) wetlands and are typically dominated by woody riparian species such as cottonwood *(Populus* spp.), big-leaf maple (*Acer macrophyllum*), black walnut (*Juglans nigra*), and blue elderberry (*Sambucus nigra* ssp. *cerulea*).
- Freshwater scrub-shrub wetlands are classified as palustrine scrub-shrub (PSS) wetlands and are typically dominated by woody riparian, such as willows (*Salix* spp.), white alder (*Alnus rhombifolia*), Oregon ash (*Fraxinus latifolia*), and Himalayan blackberry (*Rubus armeniacus).*
- Open water, including rivers, ponds and lakes, is classified as riverine streambed (RSB), riverine unconsolidated bottom (RUB), riverine unconsolidated shore (RUS), palustrine aquatic bed (PAB, palustrine unconsolidated bottom (PUB), palustrine unconsolidated shore (PUS), lacustrine unconsolidated bottom (LUB), and lacustrine unconsolidated shore (LUS).

Over 5,000 acres of NWI-mapped wetland habitat (PEM, PSS, and PFO), 17,000 acres of NWI-mapped lake habitat (LUB and LUS), and 24,000 acres of NWI-mapped riverine habitat occur throughout the watershed (Table 8-1). The Swift Creek Trinity River HUC 10 watershed has over 10,000 acres of NWI-mapped lake habitat because Trinity and Lewiston lakes occur within this watershed.

The Trinity River, the North Fork Trinity River, and the South Fork Trinity River, all perennial streams, are considered Waters of the U.S. that are subject to the jurisdiction of the USACE. Other perennial streams located throughout the watershed would also be under USACE jurisdiction, as well as some intermittent streams, both of which would also be Waters of the State of California because of their surface hydrologic connection with the Trinity River. Wetlands adjacent to perennial and intermittent streams would also likely be subject to USACE jurisdiction because of the continuous hydrologic connection with the Trinity River.

Table 8-1. Summary of wetland and other waters within HUC 10 watersheds.

Wetlands and Other Waters (NWI Type)[1]	Big French Creek Trinity River	Browns Creek	Canyon Creek[2]	Coffee Creek	East Fork Trinity River	Lower Hayfork Creek	Lower South Fork Trinity River	Middle South Fork Trinity River	New River[2]	North Fork Trinity River[2]	Stuart Fork	Swift Creek Trinity River	Tangle Blue Creek Trinity River	Upper Hayfork Creek	Upper South Fork Trinity River[2]	Weaver Creek Trinity River	Total
Freshwater emergent wetland (PEM)	2	10	0	270	256	44	9	4	5	0	7	334	389	5	4	42	1,381
Freshwater forested/ shrub wetland (PFO, PSS)	125	90	29	1,152	133	90	5	29	16	36	7	323	549	126	4	621	3,336
Freshwater pond (PAB, PUB, PUS)	49	0	28	74	65	20	15	<1	14	2	57	49	108	5	4	39	5230
Lake (LUB, LUS)	0	0	28	32	1,412	43	0	0	0	71	4,806	10,769	60	0	0	7	17,228
Riverine (RSB, RUB, RUS)	2,284	430	460	717	821	2,304	1,862	2,252	1,535	1,063	1,033	1,377	1,198	1,591	755	1,997	21,678

[1] PEM = palustrine emergent; PFO = palustrine forested wetland; PSS = palustrine scrub-shrub; PAB= palustrine aquatic bed; PUB = palustrine unconsolidated bottom; PUS = palustrine unconsolidated shore; LUB = lacustrine unconsolidated bottom; LUS = lacustrine unconsolidated shore; RSB = riverine streambed; RUB = riverine unconsolidated bottom; RUS = riverine unconsolidated shore

[2]HUC 10 waters included in the Key Watersheds

Most but not all project activities would occur within riparian reserves, where most wetland and riparian vegetation occurs (PEM, PSS, and PFO). Throughout the Trinity River, there are about 196,983 acres of riparian reserves. Many HUC 10 watersheds have over 10,000 acres, including North Fork Trinity River, Upper Hayfork Creek, Stuart Fork, Middle South Fork Trinity River, New River, Big French Creek Trinity River, and two HUC 10 watersheds (Lower Hayfork Creek and Swift Creek Trinity River) have over 20,000 acres of riparian reserves Table 8-2. Browns Creek watershed has the lowest acreage of riparian reserves with 2,441 acres. Wetland and riparian vegetation occur mostly in the riparian reserves.

Table 8-2. Acreage of riparian reserves for each HUC 10 watershed.

HUC 10 Watershed	Riparian Reserves (acres)
Big French Creek-Trinity River	19,010
Browns Creek	2,441
Canyon Creek	4,905
Coffee Creek	6,821
East Fork Trinity River	7,325
Lower Hayfork Creek	22,370
Lower South Fork Trinity River	6,545
Middle South Fork Trinity River	17,521
New River	18,487
North Fork Trinity River	12,483
Stuart Fork	17,088
Swift Creek-Trinity River	25,429
Tangle Blue Creek-Trinity River	8,075
Upper Hayfork Creek	15,761
Upper South Fork Trinity River	7,632
Weaver Creek-Trinity River	5,089
Total	**196,983**

8.2 Effects

A suite of restoration and enhancement activities and invasive species management projects would occur within riparian areas and floodplains, which are typically within the riparian reserves. In-channel projects and floodplain enhancement that require heavy equipment would require removal of vegetation for access roads, staging areas, grading of floodplain areas, and re-contouring of streambanks. Effects on NWI-mapped wetlands (PEM, PSS, and PFO) and riparian vegetation within riparian reserves would occur from habitat restoration and enhancement, floodplain restoration, removal or retrofitting of fish passage barriers, small dams, flood gates, pilings, and other in-water structures, bioengineered bank stabilization, and road rehabilitation that entail access roads and staging areas and vegetation removal. While these effects would be temporary, they could last for several months to up to two years before vegetation is re-established. The overall effect of Project activities would be a long-term benefit on wetlands.

Implementing water conservation measures would benefit wetland and riparian vegetation in the long-term by maintaining or increasing instream flow. Increasing instream flow levels by reducing withdrawals and increasing use efficiency would increase groundwater levels, especially during the summer and early fall when flows are lowest, providing added hydrologic support for wetland and riparian vegetation.

Project activities would ultimately increase floodplain connectivity and reactivate channel migration across floodplains, which would improve and/or increase riparian and wetland habitat. Restoration activities that target vegetation could increase the quality of wetland and riparian vegetation by increasing species and structural diversity and restoring ecological functions. Dewatering necessary during construction for restoration activities would have a temporary effect on wetlands and riparian vegetation, but no long-term effects are expected from dewatering.

Effects on riverine habitat are discussed in detail in the Fisheries Technical Report (Appendix K of the EA). Effects would be unlikely to occur on pond (PAB, PUB, and PUS) and lake (LUB and LUS) habitat since the proposed restoration activities would target fish-bearing streams. Some of the NWI PSS and PFO wetlands would not be under USACE jurisdiction but would fall under riparian habitat, especially areas dominated by cottonwood and willow species with more variable groundwater levels. For each site-specific project, wetlands and other waters (streams) would be delineated per USACE guidelines, and CWA Section 404 authorization would be requested from the USACE for effects on wetlands subject to USACE jurisdiction.

Several CMs, including V-2, V-5, V-9, V-11, V-12, V-13, V-14, V-15, and V-18, would be used to avoid and minimize effects on wetland and riparian vegetation. CMs would include fencing sensitive wetland or riparian communities, selecting access routes and staging areas that avoid or minimize disturbance to riparian and wetland vegetation, and using equipment with the greatest practicable reach to minimize effects on vegetation and soil. Other CMs that provide mitigation for unavoidable impacts on vegetation communities are listed in Appendix B of the EA. With the use of CMs, short-term effects on NWI wetlands, wetland subject to USACE jurisdiction, and riparian vegetation, especially within riparian reserves and Key Watersheds, would be avoided and minimized. The Proposed Action is expected to have short-term adverse effects on wetland and riparian vegetation during construction but would provide a net long-term benefit on wetland and riparian habitat along the mainstem and many Trinity River tributaries, which would be a moderate beneficial effect.

9. Special Status Species

9.1 Existing Conditions

Several special status plant species, including ESA-listed species, CESA-listed species, BLM sensitive species, USFS sensitive species, and species considered rare or endangered in California based on the Rare Plant Ranks are known to occur within the HUC 10s, many of which occur within riparian reserves or adjacent to roads (Table 9-1). Whitebark pine (*Pinus albicaulis*), a federally ESA-listed as threatened species, is known to occur within the Tangle Blue Creek Trinity River HUC 10 watershed at the upper elevations (USFWS 2024a). This species is also known to occur within riparian reserves. Other occurrences of this species are nearby but are outside the Trinity River watershed boundary.

Several of special status plant species, including watch species, are documented to occur within riparian reserves and/or within 10 feet of roads where many of the Project activities are proposed (Table 9-1). One special status plant community, upland Douglas fir (*Pseudotsuga menziesii)* forest, occurs within the Middle South Fork Trinity River and Upper South Fork Trinity River. This community is relatively undisturbed and was documented in a roadless area (not in riparian reserves or adjacent to roads).

Table 9-1. Status of Special Status Species with occurrence in Project activity area HUC 10s and project activity effects.

Scientific Name	Common Name	Documented HUC 10 Occurrence	Status[1]	Habitat	Known with Riparian Reserves	Adjacent to Roads	Project activities that would potentially affect species	Determination of effect
Federal ESA-Listed Species								
Pinus albicaulis	Whitebark pine	Tangle Blue Creek-Trinity River	FT	Upper red-fir forest to timberline, especially subalpine forest,6562 to 12139 ft (2000 to 3700 m)	Yes	No	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management	CM V-3 will be implemented and effects on *Pinus albicaulis* would be avoided; project activities will not affect *Pinus albicaulis*
CESA-listed Endangered, BLM and/or USFS sensitive species								
Brodiaea rosea	Indian Valley brodiaea	Stuart Fork	SE, 1B3.1, USFS_S	Chaparral, Cismontane woodland, Closed-cone coniferous forest, Valley and foothill grassland; 1,095–4,755 ft (334 to 1449 m)	No	Yes	Road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for the *Brodiaea rosea*
Eriogonum alpinum	Trinity buckwheat	East Fork Trinity River, Tangle Blue Creek	SE, S2, 1B.2, USFS_S	Serpentine; alpine boulder and rock field, Subalpine coniferous forest, Upper montane coniferous forest; 6562 to 9186 ft (2000 to 2800 m)	No	No	Project activities unlikely to affect *Eriogonum alpinum*	CM V-1 and V-2 would be implemented; project activities will not affect *Eriogonum alpinum*
BLM and /or USFS sensitive species								
Anisocarpus scabridus	Scabrid alpine tarplant	Coffee Creek, Tangle Blue Creek, Upper South Fork Trinity River	S3, 1B.3, USFS_S	Open ridges or slopes on metamorphics; 5249 to 7874 ft (1600 to 2400 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals but are not likely to result in a trend toward Federal listing or loss of viability for *Anisocarpus scabridus*.
Boletus pulcherrimus	red-pored bolete	Middle South Fork Trinity River	USFS_S	Perennially moist, mature or late-seral fir forest that includes tankoak. Elevations that support general habitat.	Yes	No	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Boletus pulcherrimus*
Botrychium crenulatum	Scalloped moonwort	East Fork Trinity River, Swift Creek	S3, 2B.2, USFS_S	Saturated hard water seeps and stream margins; 4921 to 11,811 ft (1500 to 3600 m)	Yes	No	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Botrychium crenulatum*
Botrychium minganense	Mingan moonwort	Tangle Blue Creek	S4, 4.2, USFS_S	Meadows, open forest along streams or around seeps; 4921 to 10,171 ft (1500 to 3100 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Botrychium minganense*

Scientific Name	Common Name	Documented HUC 10 Occurrence	Status[1]	Habitat	Known with Riparian Reserves	Adjacent to Roads	Project activities that would potentially affect species	Determination of effect
Botrychium montanum	Western goblin	Tangle Blue Creek-Trinity River	S2, 2B.1, USFS_S	Shady conifer woodland, especially under *Calocedrus* along streams; 4921 to 6890 ft (1500 to 2100 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Botrychium montanum*
Botrychium pinnatum	Northwestern moonwort	No CNDDB record in watershed	USFS_S	Saturated wetland soils and stream edges, often among dense, herbaceous vegetation. Partly to heavily shaded sites, 4700-12000 ft (1432 to 3658 m)	No	No	Project activities unlikely to affect *Botrychium pinnatum*	CM V-1 and V-2 would be implemented; project activities will not affect *Botrychium pinnatum*
Botrychium pumicola	Pumice moonwort	No CNDDB record in watershed	USFS_S	Saturated wetland soils and stream edges, often among dense, herbaceous vegetation. Partly to heavily shaded sites, 4700-12000 ft (1432 to 3658 m)	No	No	Project activities unlikely to affect *Botrychium pumicola*	CM V-1 and V-2 would be implemented; project activities will not affect *Botrychium pumicola*
Buxbaumia viridis	Green shield-moss	Big French Creek-Trinity River	S2, 2B.2, BLM_S, USFS_S	Large diameter coarse woody debris in advanced decay stage and inserted directly in perennially wet seeps or streams; riparian habitat in conifer forest. Any elevation below subalpine.	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Buxbaumia viridis*
Calochortus greenei	Green's mariposa-lily	No CNDDB record in watershed	USFS_S	Shrubby hillsides, open woodlands, pinyon-juniper, meadows, volcanics 3,400 – 6200 ft.	No	No	Project activities unlikely to affect *Calochortus greenei*	CM V-1 and V-2 would be implemented; project activities will not affect *Calochortus greenei*
Calochortus longebarbatus var. longebarbatus	Long-haired star-tulip	No CNDDB record in watershed	USFS_S	seasonally wet meadows with mesic conditions among openings in lower montane coniferous forests or Great Basin scrub, heavy clay soil	No	No	Project activities unlikely to affect *Calochortus longebarbatus var. longebarbatus*	CM V-1 and V-2 would be implemented; project activities will not affect *Calochortus longebarbatus var. longebarbatus*
Campanula shelteri	Castle Crags harebell	No CNDDB record in watershed	USFS_S	Rock crevices, rocky lower montane coniferous forest 4,000 to 6,000 ft.	No	No	Project activities unlikely to affect *Campanula shelteri*	CM V-1 and V-2 would be implemented; project activities will not affect *Campanula shelteri*
Campanula wilkinsiana	Wilkins' harebell	Canyon Creek, Stuart Fork	USFS_S	Streambanks & springs in red fir subalpine forests; 5500-8600 ft	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Campanula wilkinsiana*

Scientific Name	Common Name	Documented HUC 10 Occurrence	Status[1]	Habitat	Known with Riparian Reserves	Adjacent to Roads	Project activities that would potentially affect species	Determination of effect
Chaenactis suffrutescens	Shasta chaenactis	Big French Creek, Browns Creek, Coffee Creek, Middle South Fork Trinty River, New River, North Fork Trinity River, Swift Creek, Tangle Blue Creek, Upper Hayfork Creek	S2S3, 1B.3, BLM_S, USFS_S	Unstable, sandy to rocky, generally serpentine soils, scree, drainages; 2297 to 7546 ft (700 to 2300 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Chaenactis suffrutescens*
Clarkia borealis ssp. borealis	Northern clarkia	Swift Creek - Trinity River	S4, 4.3, BLM_S, USFS_S	Foothill woodland, forest margin; 1312 to 2625 ft (400 to 800 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Clarkia borealis ssp. boreali*
Collomia larsenii	Talus collomia	No CNDDB record in watershed	USFS_S	Volcanic talus (Little Mount Hoffman)	No	No	Project activities unlikely to affect *Collomia larsenii*	CM V-1 and V-2 would be implemented; project activities will not affect *Collomia larsenii*
Cordylanthes tenuis ssp. pallescens	Pallid bird's-beak	No CNDDB record in watershed	USFS_S	Open volcanic alluvium (near Black Butte)	No	No	Project activities unlikely to affect *Cordylanthes tenuis ssp. pallescens*	CM V-1 and V-2 would be implemented; project activities will not affect *Cordylanthes tenuis ssp. pallescens*
Cudonia monticola	none	No CNDDB record in watershed	USFS_S	On spruce needle mats and coniferous debris in perennially moist, shady late-seral forest. Elevations that support general habitat.	No	No	Project activities unlikely to affect *Cudonia monticola*	CM V-1 and V-2 would be implemented; project activities will not affect *Cudonia monticola*
Cypripedium fasciculatum	Clustered lady's slipper	Coffee Creek, Lower Hayfork Creek, Middle South Fork Trinity River, Stuart Fork,	S4, 4.2, BLM_S, USFS_S	Mesic to moist, shady conifer forest; 328 to 6562 ft (100 to 2000 m)	Yes	No	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Cypripedium fasciculatum*
Cypripedium montanum	Mountain lady's slipper	Coffee Creek, Lower Hayfork Creek, Middle South Fork Trinity River, North Fork Trinity River, Swift Creek Trinity River, Weaver Creek Trinity River,	S4, 4.2, BLM_S, USFS_S	Moist areas, dry slopes, mixed-evergreen or conifer forest; 656 to 7218 ft (200 to 2200 m)	Yes	No	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Cypripedium montanum*
Dendriscocaulon intricutalum	Northern moon shrub	No CNDDB record in watershed	S1, BLM_S	Open-grown conifer and mixed conifer/deciduous stands, mixed oak/conifer forested communities, coastal fog areas, old growth forests. Associated with high humidity and the presence of cyanolichens	No	No	Project activities unlikely to affect *Dendriscocaulon intricutalum*	CM V-1 and V-2 would be implemented; project activities will not affect *Dendriscocaulon intricutalum*

Scientific Name	Common Name	Documented HUC 10 Occurrence	Status[1]	Habitat	Known with Riparian Reserves	Adjacent to Roads	Project activities that would potentially affect species	Determination of effect
Dendrocollybia racemosa	branched shanklet	Big French Creek-Trinity River, Stuart Fork	USFS_S	Nutrient rich leaf mulch or decaying fungi in moist, mid-mature to late-seral conifer forest; Elevations that support general habitat.	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Dendrocollybia racemosa*
Draba carnosula	Mt. Eddy draba	Tangle Blue Creek - Trinity River	S2, 1B.3, USFS_S	Rocky slopes; 6562 to 9022 ft (2000 to 2750 m)	Yes	No	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Draba carnosula*
Epilobium oreganum	Oregon fireweed	Browns Creek, Coffee Creek, East Fork Trinity River, Lower South Fork Trinity River, Middle South Fork Trinty River, Stuart Fork, Swift Creek, Tangle Blue Creek, Upper Hayfork Creek, Upper South Fork Trinity River	S2, 1B.2, USFS_S	Bogs, small streams; 1804 to 5906 ft (550 to 1800 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Epilobium oreganum*
Eriastrum tracyi	Tracy's eriastrum	Lower South Fork Trinity River	Rare, S3, 3.2, USFS_S	Shale barrens, open hillsides, ridge tops, flats, floodplains, dry washes, disturbed areas, generally in chaparral, grassland, savannah, woodland, forest; 1050 to 5282 ft (320 to 1610 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Eriastrum tracyi*
Eriogonum ursinum var. erubescens	Blushing wild buckwheat	East Fork Trinity River, Swift Creek-Trinity River, Tangle Blue Creek -Trinity River, Weaver Creek	S3, 1B.3, USFS_S	Gravel; Chaparral (montane), Lower montane coniferous forest; 5249 to 6234 ft (1600 to 1900 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Eriogonum ursinum var. erubescens*
Eucephalus vialis	wayside aster	No CNDDB record in watershed	USFS_S	Openings in dry, conifer/hardwood forest, serpentine-influenced conifer forest with a dense grass and forb cover. 1800-5000 feet elev. Western Klamath Ranges and North Coast Ranges. No occurrences known from California.	No	No	Project activities unlikely to affect *Eucephalus vialis*	CM V-1 and V-2 would be implemented; project activities will not affect *Eucephalus vialis*
Frasera umpquaensis	Umpqua green-gentian	Middle South Fork Trinity River, Upper South Fork Trinity River	S1, 2B.2, USFS_S	Mountain meadows; 5577 to 6234 ft (1700 to 1900 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Frasera umpquaensis*

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Fritillaria eastwoodiae	Butte County fritillary	No CNDDB record in watershed	USFS_S	Dry benches, slopes, chaparral, woodland openings of lower montane coniferous forest, sometimes serpentine Below 5,000 ft west slope of Sierra-Cascades	No	No	Project activities unlikely to affect *Fritillaria eastwoodiae*	CM V-1 and V-2 would be implemented; project activities will not affect *Fritillaria eastwoodiae*
Galium serpenticum ssp. scotticum	Scott Mountain bedstraw	Coffee Creek, Tangle Blue Creek, Upper South Fork Trinity River	S2, 1B.2, BLM_S	Steep slopes in open pine forest; 3281 to 6562 ft (1000 to 2000 m)	No	Yes	Road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities will not affect *Galium serpenticum ssp. scotticum*
Harmonia doris-nilesiae	Niles' harmonia	Brown's Creek, Lower Hayfork Creek, Middle South Fork Trinity River, Upper Hayfork Creek, Upper South Fork Creek	S2S3, 1B.1, USFS_S	Serpentine slopes; 2625 to 5249 ft (800 to 1600 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Harmonia doris-nilesiae*
Harmonia stebbinsii	Stebbins' harmonia	Middle South Fork Trinity River, Upper Hayfork Creek, Upper South Fork Trinity River	S2, 1B.2, BLM_S, USFS_S	Serpentine slopes;chaparral, Lower montane coniferous forest; 3609 to 5249 ft (1100 to 1600 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Harmonia stebbinsii*
Hydrothyria venosa	Hydrothyria lichen	No CNDDB record in watershed	USFS_S	Grows on rocks in freshwater streams in North America	Yes	No	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Hydrothyria venosa*
Iliamna latibracteata	California globe mallow	Lower South Fork Trinity River, Middle South Fork Trinity River, New River	S2, 1B.2, USFS_S	Conifer forest, streamsides; 1640 to 6562 (500 to 2000 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Iliamna latibracteata*
Ivesia longibracteata	Castle Crags ivesia	No CNDDB record in watershed	USFS_S	Granite crevices-lower montane 3,900 ft to 4,600 ft.(Castle Crags)	No	No	Project activities unlikely to affect *Ivesia longibracteata*	CM V-1 and V-2 would be implemented; project activities will not affect *Ivesia longibracteata*
Ivesia pickeringii	Pickering's ivesia	East Fork Trinity River, Stuart Fork, Tangle Blue Creek	S2, 1B.2, USFS_S	Wet, rocky meadows, generally on serpentine clay; 2625 to 4921 ft (800 to 1500 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Ivesia pickeringii*

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Leptosiphon nuttallii ssp. *howellii*	Mount Tedoc leptosiphon	No CNDDB record in watershed	USFS_S	Open Jeffrey pine/incense cedar woodland on a variety of soils, but usually on ultramafic soil. 4000-5000 feet elev. Localized around the base of Tedoc Mountain, Tehama Co.	No	No	Project activities unlikely to affect *Leptosiphon nuttallii ssp. howellii*	CM V-1 and V-2 would be implemented; project activities will not affect *Leptosiphon nuttallii ssp. howellii*
Lewisia cantelovii	Cantelow's lewisia	No CNDDB record in watershed	USFS_S	Granite cliff faces, rocky outcrops, ravines, serpentine seeps, chaparral, woodland, conifer forest 10,85 to 4500 ft. west slope N Sierras & NE Shasta County	No	No	Project activities unlikely to affect *Lewisia cantelovii*	CM V-1 and V-2 would be implemented; project activities will not affect *Lewisia cantelovii*
Lewisia cotyledon var. heckneri	Heckner's lewisia	Big French Creek, Browns Creek, Canyon Creek, Coffee Creek, East Fork Trinity River, Lower Hayfork Creek, Lower Fork South Trinity River, Middle South Fork Creek, New River, North Fork Trinity River, Stuart Fork, Swift Creek, Tangle Blue Creek, Upper Hayfork Creek, Weaver Creek	S3, 1B.2, BLM_S	Crevices in cliffs, rocky slopes of granite or basalt, conifer forest; 738 to 7218 ft (225 to 2200 m)	No	Yes	Road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities will not affect *Lewisia cotyledon var. heckneri*
Lewisia kelloggii ssp *hutchinsonii*	Hutchison's lewisia	No CNDDB record in watershed	USFS_S	Habitat of ridge tops or relatively flat, open areas with bare, rocky soil at moderately high elevations from 5100-7000 ft in the Klamath Ranges.	No	No	Project activities unlikely to affect *Lewisia kelloggii ssp hutchinsonii*	CM V-1 and V-2 would be implemented; project activities will not affect *Lewisia kelloggii ssp hutchinsonii*
Meesia uliginosa	broad-nerved hump-moss	No CNDDB record in watershed	USFS_S	Fens and sloping wetlands between 5500 and 9200 feet. Eastern Trinity County and Shasta County.	No	No	Project activities unlikely to affect *Meesia uliginosa*	CM V-1 and V-2 would be implemented; project activities will not affect *Meesia uliginosa*
Mielichhoferia elongata	Elongate copper moss	North Fork Trinity River, Big French Creek	S3S4, 4.3, USFS_S	Seasonally moist seeps in rock outcrops containing copper or other heavy metals. Roadcuts. Narrow river drainages (Trinity River). Below 3600 m (11,811 ft).	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Mielichhoferia elongata*
Minuartia rosei	Peanut sandwort	Lower Hayfork Creek, Middle South Fork Trinity River, Upper Hayfork Creek	USFS_S	Rocky peridotite slopes and openings among shrubs and Jeffrey pine/incense cedar woodland. 2500-5800 ft; Rattlesnake Creek Terrane of southern Klamath Ranges.	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Minuartia rosei*

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Minuartia stolonifera	Scott Mountain sandwort	No CNDDB record in watershed	USFS_S	Rocky ultramafic soils; montane mixed conifer forest above 3800 ft Scott Mountain.	No	No	Project activities unlikely to affect *Minuartia stolonifera*	CM V-1 and V-2 would be implemented; project activities will not affect *Minuartia stolonifera*
Neuviusia cliftonii	Shasta snow-wreath	No CNDDB record in watershed	USFS_S	Shaded north facing slopes near Shasta Lake or tributaries. Sometimes limestone. 950 to 2000 ft	No	No	Project activities unlikely to affect *Neuviusia cliftonii*	CM V-1 and V-2 would be implemented; project activities will not affect *Neuviusia cliftonii*
Ophioglossum pusillum	northern adder's tongue	No CNDDB record in watershed	USFS_S	Periodically flooded wet meadows and lake margins. 3600-6600 feet elev. Eastern Klamath Range and upper N. Coast Range.	No	No	Project activities unlikely to affect *Ophioglossum pusillum*	CM V-1 and V-2 would be implemented; project activities will not affect *Ophioglossum pusillum*
Parnassia cirrata var. intermedia	Cascade grass-of-Parnassus	East Fork Trinity River, Stuart Fork, Swift Creek-Trinity River, Tangle Blue Creek -Trinity River	S3, 2B.2, USFS_S	Wet places; 2297 to 9514 ft (700 to 2900 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federl listing or loss of viability for *Parnassia cirrata var. intermedia*
Peltigera gowardii	western waterfan	No CNDDB record in watershed	USFS_S	Fully shaded streams less than 8" deep with low nutrient levels and good aeration, primarily in late-seral forest.	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Peltigera gowardii*
Penstemon tracyi	Tracy's beardtongue	Canyon Creek, Coffee Creek, New River, North Fork Trinity River, Weaver Creek	S2, 1B.3, USFS_S	Upper montane coniferous forest (rocky); Exposed outcrops; 6562 to 7382 ft (2000 to 2250 m)	No	Yes	Road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities will not affect *Penstemon tracyi*
Phacelia cookei	Cook's phacelia	No CNDDB record in watershed	USFS_S	Open areas of shrublands, sandy,volcanic soils north of Mt Shasta	No	No	Project activities unlikely to affect *Phacelia cookei*	CM V-1 and V-2 would be implemented; project activities will not affect *Phacelia cookei*
Phacelia greenei	Scott Valley phacelia	Tangle Blue Creek Trinity Creek	S2, 1B.2, BLM_S, USFS_S	Serpentine soils, openings in conifer forest; 2625 to 5906 ft (800--1800 m)	No	No	Project activities unlikely to affect *Phacelia greenei*	CM V-1 and V-2 would be implemented; project activities will not affect *Phacelia greenei*

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Phacelia leonis	Siskiyou phacelia	Coffee Creek, East Fork Trinity River, Middle South Fork Trinity River, New River, Swift Creek, Tangle Blue Creek	S2?, 1B.3, BLM_S	Sandy flats, slopes, conifer forest; 3937 to 9022 ft (1200--2750 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Phacelia leonis*
Phaeocollybia olivacea	olive phaeocollybia	Lower Hayfork Creek, Middle South Fork Trinity River, Stuart Fork	USFS_S	Moist, mixed conifer forest containing oak or tanoak. Elevations that support general habitat.	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Phaeocollybia olivacea*
Phaeocollybia spadicea	Spadicea phaecollybia	No CNDDB record in watershed	BLM_S	Restricted to very moist mesic late successional and old growth coniferous forests.	No	No	Project activities unlikely to affect *Phaeocollybia spadicea*	CM V-1 and V-2 would be implemented; project activities will not affect *Phaeocollybia spadicea*
Polemonium chartaceum	Mason's sky pilot	No CNDDB record in watershed	USFS_S	Rocky serpentine, alpine	No	No	Project activities unlikely to affect *Polemonium chartaceum*	CM V-1 and V-2 would be implemented; project activities will not affect *Polemonium chartaceum*
Ptilidium californicum	Pacific fuzzwort	East Fork Trinity River, Middle South Fork Trinity River, North Fork Trinity River	S3S4, 4.3, BLM_S	Lower montane coniferous forest, Upper montane coniferous forest	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Ptilidium californicum*
Raillardella pringlei	Showy raillardella	Coffee Creek, East Fork Trinity River, Stuart Fork, Swift Creek, Tangle Blue Creek	S2S3, 1B.2, USFS_S	Wet meadows, streambanks, seeps, on serpentine-derived soils, in conifer forest; 4265 to 7218 ft (1300--2200 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Raillardella pringlei*
Rorippa columbiae	Columbia yellow cress	No CNDDB record in watershed	USFS_S	Streambanks, lake or pond margins,meadows, wet fields, seeps, vernal pools-Mesic 3,900 to 5,900 ft. Mostly Modoc Plateau and east of Cascades (Humboldt County outlier)	No	No	Project activities unlikely to affect *Rorippa columbiae*	CM V-1 and V-2 would be implemented; project activities will not affect *Rorippa columbiae*
Sanicula tracyi	Tracy's sanicle	Lower South Fork Trinity River	S4, 4.2, USFS_S	Openings in conifer forest, woodland; 131 to 5085 ft (40--1550 m)	yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Sanicula tracyi*

Scientific Name	Common Name	Documented HUC 10 Occurrence	Status[1]	Habitat	Known with Riparian Reserves	Adjacent to Roads	Project activities that would potentially affect species	Determination of effect
Sedum paradisum ssp. paradisum (synonym= Sedum obtusatum)	Canyon Creek stonecrop	Big French Creek, Canyon Creek, Lower Hayfork Creek, Middle South Fork Creek, Stuart Fork, Weaver Creek	S3, 1B.3, USFS_S, BLM_S	Dry to mesic outcrops, rocky slopes, lava flows, not on serpentine; 656 to 6890 ft (200--2100 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Sedum paradisum ssp. paradisum*
Silene salmonacea	Klamath Mountain catchfly	Coffee Creek, East Fork Trinity River, Stuart Fork, Swift Creek, Tangle Blue Creek, Weaver Creek	S3, 1B.2, USFS_S	Serpentine and iron-rich soils in openings or mixed-evergreen forest; 2493 to 3445 ft (760 to 1050 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Silene salmonacea*
Smilax jamesii	English Peak greenbriar	Stuart Fork	S3S4, 1B.3, BLM_S	Lakesides, streambanks, alder thickets in montane conifer forest; generally 4921 to 8202 ft (1500 to 2500 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Smilax jamesii*
Smithiastrum wilkinsianum	Wilkin's harebell	Canyon Creek, Stuart Fork, Swift Creek	S2, 1B.2, USFS_S	Meadows and seeps, subalpine coniferous forest, upper montane coniferous forest	No	No	Project activities unlikely to affect *Smithiastrum wilkinsianum;* if species is located in the project area, it would be avoided	CM V-1 and V-2 would be implemented; project activities will not affect *Smithiastrum wilkinsianum;* if species is located in the project area, it would be avoided
Streptanthus oblanceolatus	Trinity River jewelflower	Big French Creek	S1, 1B.2, USFS_S	Cliffs, canyon walls, in conifer forest; +-1312 ft (400 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Streptanthus oblanceolatus*
Sulcaria badia	bay horsehair	No CNDDB record in watershed	USFS_S	Coastally influenced, open white oak grassland or mature Douglas fir-oak forest with a black oak component, growing in tree canopy. Below 1800 ft in western Trinity County.	No	No	Project activities unlikely to affect *Sulcaria badia*	CM V-1 and V-2 would be implemented; project activities will not affect *Sulcaria badia*
Thermopsis robusta	Robust false lupine	Lower South Fork Trinity River	S2, 1B.2, USFS_S	Shale, serpentine, open sites, forest; 328 to 4921 ft (150 to 1500 m)	No	No	Project activities unlikely to affect *Thermopsis robusta*	CM V-1 and V-2 would be implemented; project activities will not affect *Thermopsis robusta*
Vaccinium shastense subsp. shastense	Shasta huckleberry	No CNDDB record in watershed	S3, 1B.3, BLM_S	Acidic soils, stream banks, conifer forest understory, crevices or seeps among rock outcrops, chaparral; 1050 to 4019 ft (320--1225 m)	No	No	Project activities unlikely to affect *Vaccinium shastense* subsp. *shastense*	CM V-1 and V-2 would be implemented; project activities will not affect *Vaccinium shastense* subsp. *shastense*
Other Rare Plants								

Scientific Name	Common Name	Documented HUC 10 Occurrence	Status[1]	Habitat	Known with Riparian Reserves	Adjacent to Roads	Project activities that would potentially affect species	Determination of effect
Antennaria sawyeri	Sawyer's pussy-toes	Stuart Fork	S2, 1B.2	Open, subalpine serpentine slopes, ridges; 6808 to 7972 ft (2075 to 2430 m)	No	No	Project activities unlikely to affect *Antennaria sawyeri*	CM V-1 and V-2 would be implemented; project activities will not affect *Antennaria sawyeri*
Arabis rigidissima var. rigidissima	Trinity Mountains rockcress	East Fork Trinity River, New River, North Fork Trinity River	S3, 1B.3	Rocky areas in open conifer forest; 5906 to 6890 ft (1800 to 2100 m)	No	Yes	Road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities will not affect *Arabis rigidissima* var. *rigidissima*
Arctostaphylos klamathensis	Klamath manzanita	Coffee Creek, East Fork Trinity River, Stuart Fork, Swift Creek, Tangle Blue Creek	S2, 1B.2	Rocky outcrops, slopes, subalpine forest; 5249 to 6562 ft (1600 to 2000 m)	No	Yes	Road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities will not affect *Arctostaphylos klamathensis*
Arctostaphylos manzanita ssp. elegans	Konocti manzanita	Middle South Fork Trinity River, Upper Hayfork Creek	S3, 1B.3	Woodland, chaparral, conifer forest, generally volcanic soils; 722 to 6070 ft (220 to 1850 m)	No	Yes	Road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities will not affect *Arctostaphylos manzanita* ssp. *elegans*
Arnica venosa	Shasta County arnica	Coffee Creek, Swift Creek Trinity River, Upper South Fork Trinity River	S3, 4.2	Open, often disturbed oak/pine woodland; 1312 to 4593 ft (400 to 1400 m)	No	No	Project activities unlikely to affect *Arnica venosa*	CM V-1 and V-2 would be implemented; project activities will not affect *Arnica venosa*
Balsamorhiza sericea	Silky balsamroot	Tangle Blue Creek - Trinity River	S3, 1B.3	Serpentine outcrops, rocky slopes; 1312 to 5906 ft (400 to 1800 m)	No	Yes	Road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities will not affect *Balsamorhiza sericea*
Boechera serpenticola	Serpentine rockcress	Lower Hayfork Creek, Middle South Fork Trinity River, North Fork Trinity River, Weaver Creek	S1, 1B.2	Serpentine ridges, talus; 3609 to 6890 ft (1100 to 2100 m)	No	Yes	Road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities will not affect *Boechera serpenticola*
Botrypus virginianus	Rattlesnake fern	Tangle Blue Creek, Weaver Creek	S2, 2B.2	Moist shaded valleys along small streams; 2297 to 3937 ft (700 to 1200 m)	No	Yes	Road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities will not affect *Botrypus virginianus*
Campylopodiella stenocarpa	Flagella-like atractylocarpus	No CNDDB record in watershed	2B.2	Cismontane woodland	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Campylopodiella stenocarpa*
Carex leptalea	Bristle-stalked sedge	Swift Creek-Trinity River	S1, 2B.2	Wet meadows, swamps; < 2297 ft (700 m)	yes	No	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Carex leptalea*
Cuscuta jepsonii	Jepson's dodder	East Fork Trinity River, Lower Hayfork Creek, Lower Fork South Trinity River, Stuart Fork, Swift Creek, Upper Hayfork Creek, Upper South Fork Trinity River	S3, 1B.2	Mesic to moist, shady conifer forest; 328 to 6562 ft (100 to 2000 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Cuscuta jepsonii*

Scientific Name	Common Name	Documented HUC 10 Occurrence	Status[1]	Habitat	Known with Riparian Reserves	Adjacent to Roads	Project activities that would potentially affect species	Determination of effect
Dermatocarpon meiophyllizum	Silverskin lichen	North Fork Trinity River, Swift Creek, Tangle Blue Creek	S3, 2B.3	Coastal prairie, Lower montane coniferous forest, North Coast coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest	No	No	Project activities unlikely to affect *Dermatocarpon meiophyllizum*	CM V-1 and V-2 would be implemented; project activities will not affect *Dermatocarpon meiophyllizum*
Epilobium siskiyouense	Siskiyou fireweed	Coffee Creek, East Fork Trinity River, Stuart Fork, Swift Creek, Tangle Blue Creek	S3, 1B.3	Scree, moist ledges, serpentine ridges; 5577 to 8202 ft (1700 to 2500 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Epilobium siskiyouense*
Erigeron bloomeri var. nudatus	Waldo daisy	Tangle Blue Creek - Trinity River	S3, 2B.3	Serpentine slopes, rocky ridges; 1969 to 7546 ft (600 to 2300 m)	No	No	Project activities unlikely to affect *Erigeron bloomeri* var. *nudatus*	CM V-1 and V-2 would be implemented; project activities will not affect *Erigeron bloomeri* var. *nudatus*
Erythranthe trinitiensis	Pink-margined monkeyflower	Lower Hayfork Creek, Lower South Fork Trinity River, Middle South Fork Trinity River,	S2, 1B.3	Moist, generally clay soils in full sun; 4265 to 6562 ft (1300 to 2000 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Erythranthe trinitiensis*
Gilia capitata ssp. pacifica	Pacific gilia	Lower South Fork Trinity River	S2, 1B.2	Steep slopes, ravines, open flats, or coastal bluffs, grassland, dunes; generally <1312 ft (400 m)	No	Yes	Road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Gilia capitata* ssp. *pacifica*
Hemieva ranunculifolia	Buttercup-leaf hemieva	Canyon Creek	S2, 2B.2	Moist rocky slopes; Meadows and seeps, Upper montane coniferous forest; 4921 to 8202 ft (1500 to 2500 m)	Yes	No	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Hemieva ranunculifolia*
Hosackia yollabolliensis	Yolla Bolly Mtns. bird's-foot trefoil	Lower South Fork Trinity River, Middle South Fork Trinity River, Upper South Fork Trinity River	S2, 1B.2	Open, dry slopes, fir forest; 5577 to 6890 ft (1700 to 2100 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Hosackia yollabolliensis*
Howellanthus dalesianus	Scott Mountain howellanthus	East Fork Trinity River, Swift Creek, Tangle Blue Creek	S3, 4.3	Ultramafic substrates, meadows, streambanks, conifer forest; 4921 to 6562 ft (1500 to 2000 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Howellanthus dalesianus*

Scientific Name	Common Name	Documented HUC 10 Occurrence	Status[1]	Habitat	Known with Riparian Reserves	Adjacent to Roads	Project activities that would potentially affect species	Determination of effect
Iliamna bakeri	Baker's globe mallow	Canyon Creek	S3, 4.2	Mountain slopes, juniper woodland, lava beds; 3281 to 8202 ft (1000 to 2500 m)	Yes	No	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Iliamna bakeri*
Juncus dudleyi	Dudley's rush	Canyon Creek, Swift Creek Trinity River, Weaver Creek Trinity River	S1, 2B.3	Wet areas in montane conifer forest; <6562 ft (2000 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Juncus dudleyi*
Kopsiopsis hookeri	Small groundcone	Lower South Fork Trinity River	S1S2, 2B.3	Open woodland, mixed conifer forest, generally on Gaultheria shallon, occassionally on *Arbutus menziesii*, <2297 ft (700 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Kopsiopsis hookeri*
Limnanthes floccosa ssp. floccosa	Woolly meadowfoam	Lower Hayfork Creek	S3, 4.2	Vernal pool edges; <1969 ft (600 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Limnanthes floccosa* ssp. f*loccosa*
Lupinus elmeri	South Fork Mountain lupine	Lower South Fork Trinity River, Middle South Fork Trinity River	S2, 1B.2	Open areas in conifer forest; 4495 to 6562 ft (1370 to 2000 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Lupinus elmeri*
Lycopodium clavatum	Running-pine	Lower South Fork Trinity River	S3, 3.1	Moist ground, swamps (on trees); <656 ft (200 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Lycopodium clavatum*
Montia howellii	Howell's montia	Big French Creek	S2, 2B.2	Vernally wet sites, often compacted soil; <1312 ft (400 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Montia howellii*

Scientific Name	Common Name	Documented HUC 10 Occurrence	Status[1]	Habitat	Known with Riparian Reserves	Adjacent to Roads	Project activities that would potentially affect species	Determination of effect
Oenothera wolfii	Wolf's evening-primrose	Swift Creek - Trinity River	S1, 1B.1	Coastal sand, including dunes, bluffs, roadsides, Lower montane coniferous forest; generally moist places; <328 up to 2625 ft (<100 up to 800 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Oenothera wolfii*
Penstemon filiformis	Thread-leaved beardtongue	Coffee Creek, East Fork Trinity River, Stuart Fork, Swift Creek, Tangle Blue Creek, Weaver Creek	S4, 4.2	Open, rocky places among shrubs, yellow-pine forest; 1312 to 5577 ft (400 to 1700 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Penstemon filiformis*
Picea engelmannii	Engelmann spruce	Stuart Fork, Swift Creek Trinity River	S2, 2B.2	Cool, moist, mixed-conifer, subalpine forests; 3937 to 6890 (1200--2100 m)	No	No	Project activities unlikely to affect *Picea engelmannii*	CM V-1 and V-2 would be implemented; project activities will not affect *Picea engelmannii*
Piperia candida	White flowered rein orchid	Middle South Fork Trinity River	S3, 1B.2	Open to shady sites, conifer and mixed-evergreen forest; < 5085 ft (1500 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Piperia candida*
Polemonium eddyense	Mt. Eddy sky pilot	Tangle Blue Creek - Trinity River	S1, 1B.2	Serpentine soils; 8690 to 9022 ft (2649--2750 m)	No	No	Project activities unlikely to affect *Polemonium eddyense*	CM V-1 and V-2 would be implemented; project activities will not affect *Polemonium eddyense*
Potentilla cristae	Crested potentilla	Tangle Blue Creek - Trinity River	S2, 1B.3	Seasonally moist, often serpentine-like gravels, talus; 5906 to 9186 ft (1800-2800 m)	Yes	No	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federl listing or loss of viability for *Potentilla cristae*
Rhynchospora alba	White beaked-rush	Middle South Fork Trinity River, Swift Creek Trinity River	S2, 2B.2	Boggy open sites; <6562 ft (2000 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Rhynchospora alba*
Rhynchospora capitellata	Brownish beaked rush	Swift Creek-Trinity River	S2, 2B.2	et meadows, fens, seeps, marshes; <6562 ft (2000 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Rhynchospora capitellata*
Scytinium siskiyouense	Siskiyou jellyskin lichen	Lower Hayfork Creek	S1, 1B.1	Lower montane coniferous forest, North Coast coniferous forest	No	No	Project activities unlikely to affect *Scytinium siskiyouense*	CM V-1 and V-2 would be implemented; project activities will not affect *Scytinium siskiyouense*

Scientific Name	Common Name	Documented HUC 10 Occurrence	Status[1]	Habitat	Known with Riparian Reserves	Adjacent to Roads	Project activities that would potentially affect species	Determination of effect
Sedum flavidum	Pale yellow stonecrop	Lower Hayfork Creek, Lower South Fork Trinity River, Middle South Fork Trinity River, Upper Hayfork Creek, Upper South Fork Trinity River	S3, 4.3	Dry sunny or partly shaded rocky slopes, scree, outcrops, barrens, serpentine, basalt, or metamorphic; also duff of scattered pines in chaparral; 656 to 7218 ft (200 to 2200 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Sedum flavidum*
Sedum sanhedrinum	Sanhedrin Mountain stonecrop	Upper South Fork Trinity River	S2S3, 1B.2	Dry rocky slopes, ridges, talus, full sun or partial shade; on varied substrates including serpentine; 4593 to 7546 ft (1400--2300 m)	No	No	Project activities unlikely to affect *Sedum sanhedrinum*	CM V-1 and V-2 would be implemented; project activities will not affect *Sedum sanhedrinum*
Selaginella scopulorum	Rocky Mountain spike-moss	Stuart Fork, Canyon Creek	S2S3, 2B.3	Open, rocky spots, conifer forest; Elevation: 4593 to 7218 ft (1400-2200 m)	No	No	Project activities unlikely to affect *Selaginella scopulorum*	CM V-1 and V-2 would be implemented; project activities will not affect *Selaginella scopulorum*
Sidalcea malviflora ssp. patula	Siskiyou checkerbloom	Lower South Fork Trinity River	S2, 1B.2	Open coastal forests, bluffs; generally <2297 ft (700 m)	Yes	No	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Sidalcea malviflora ssp. patula*
Sidalcea oregana ssp. eximia	Coast checkerbloom	Lower South Fork Trinity River	S1, 1B.2	Meadows; < 3937 ft (1200 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Sidalcea oregana ssp. eximia*
Silene hookeri	Hooker's catchfly	Lower Hayfork Creek, Middle South Fork Trinity River	S2, 2B.2	Serpentine soils, dry rocky ground, talus, or pine or oak forest; <4593 ft (1400 m)	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Silene hookeri*
Tonestus lyallii	Lyall's tonestus	Canyon Creek, North Fork Trinity River, Stuart Fork	S1, 2B.3	Meadows, barrens, rocky sites; 4921 to 986 ft (1500--2800 m)	Yes	No	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Tonestus lyallii*
Tracyina rostrata	Beaked tracyina	No CNDDB record; likely found in Upper South Fork Trinity River	S2, 1B.2	Grassy slopes; 328 to 1312 ft (100--400+ m)	No	No	Project activities unlikely to affect *Tracyina rostrata*	CM V-1 and V-2 would be implemented; project activities will not affect *Tracyina rostrata*

Scientific Name	Common Name	Documented HUC 10 Occurrence	Status[1]	Habitat	Known with Riparian Reserves	Adjacent to Roads	Project activities that would potentially affect species	Determination of effect
STNF Watch Species								
Arnica viscosa	Mount Shasta arnica	Stuart Fork	Species of conservation concern	Open, rocky, subalpine to alpine sites: 2000 to 2500 m	Yes	No	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Arnica viscosa*
Asclepias solanoana	Serpentine milkweed	Upper South Fork Trinity River	Species of conservation concern	Serpentine outcrops; 700 to 1600 m	Yes	No	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Asclepias solanoana*
Cypripedium californicum	California lady's-slipper	Swift Creek-Trinity River	Species of conservation concern	Streambanks, moist slopes, fens, partial shade to full sun, mixed-evergreen or conifer forest; 50 to 2200 m	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Cypripedium californicum*
Erythronium citrinum var. roderickii	Scott Mountains fawn lily	East Fork Trinity River, Stuart Fork, Swift Creek-Trinity River, Tangle Blue Creek-Trinity River	Species of conservation concern	Dry conifer woodland (+- on serpentine); 850 to 1300 m	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Erythronium citrinum var. roderickii*
Fritillaria glauca	Siskiyou fritillaria	Lower Hayfork Creek, Middle South Fork Trinity River	Species of conservation concern	Talus slopes, serpentine; 600 to 2100 m	No	Yes	Road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Fritillaria glauca*
Fritillaria purdyi	Purdy's fritillary	Middle South Fork Trinity River	Species of conservation concern	Dry ridges, generally on serpentine; 400 to 2100 m	No	Yes	Road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Fritillaria purdyi*
Galium serpenticum ssp. scotticum	Scott Mountain bedstraw	Tangle Blue Creek-Trinity River	Species of conservation concern	Steep slopes in open pine forest; 1000 to 2000 m	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Galium serpenticum ssp. scotticum*

Scientific Name	Common Name	Documented HUC 10 Occurrence	Status[1]	Habitat	Known with Riparian Reserves	Adjacent to Roads	Project activities that would potentially affect species	Determination of effect
Lewisia cotyledon var. heckneri	Heckner's lewisia	Big French Creek-Trinity River, Canyon Creek, New River, North Fork Trinity River, Stuart Fork, Swift Creek-Trinity River	Species of conservation concern	Crevices in cliffs, rocky slopes of granite or basalt, conifer forest; 225 to 2200 m	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Lewisia cotyledon var. heckneri*
Lilium rubescens	Redwood lily	Lower Hayfork Creek, Middle South Fork Trinity River, Stuart Fork	Species of conservation concern	Dry soils in chaparral, gaps in conifer forest; 30 to 1800 m	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Lilium rubescens*
Phacelia leonis	Siskiyou phacelia	Tangle Blue Creek-Trinity River	Species of conservation concern	Sandy flats, slopes, conifer forest; 1200 to 2750 m	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Phacelia leonis*
Sedum laxum ssp. flavidum	Pale-yellow stonecrop	Lower Hayfork Creek, Middle South Fork Trinity River, Tangle Blue Creek-Trinity River, Upper Hayfork Creek	Species of conservation concern	Dry sunny or partly shaded rocky slopes, scree, outcrops, barrens, serpentine, basalt, or metamorphic; also duff of scattered pines in chaparral; 200 to 2200 m	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Sedum laxum ssp. flavidum*
Trillium ovatum ssp. oettingeri	Salmon Mountains wakerobin	Tangle Blue Creek-Trinity River	Species of conservation concern	Mixed montane or conifer forest on moist slopes; 1200 to 2000 m	Yes	Yes	Channel restoration and enhancement, floodplain restoration, bioengineered bank stabilization, aquatic, wetland, riparian, and upslope habitat enhancement including noxious weed/invasive species management, road maintenance, rehabilitation and decommissioning activities	CM V-1 and V-2 would be implemented; project activities may affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for *Trillium ovatum ssp. oettingeri*
Rare Plant Community								
Upland *Pseudotsuga menziesii* Forest	Upland Douglas Fir Forest	Middle South Fork Trinity River, Upper South Fork Trinity River	S3.1	Conifer forests; between 2000 and 6000 ft (600 to 1850 m) in the California mountains	No	No	Project activities unlikely to affect Upland *Pseudotsuga menziesii* forest	CM V-1 and V-2 would be implemented; Project activities would not affect Upland *Pseudosuga menziesii* forest

[1]Federal ESA Listing Status (FESA): FT – Federally threatened

State ESA Listing Status (CESA): SE – State endangered; Rare - classification provided to a native plant species, subspecies, or variety when, although not presently threatened with extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens. This designation stems from the Native Plant Protection Act of 1977.

California Rare Plant Rank (CNPS): 1B.1 - plants rare, threatened, or endangered in California and elsewhere, seriously threatened in California; 1B.2 - plants rare, threatened, or endangered in California and elsewhere, fairly threatened in California; 1B.3 - plants rare, threatened, or endangered in California and elsewhere; not very threatened in California; 2B.1 – Plants rare, threatened, or endangered in California, but more common elsewhere, seriously threatened in California; 2B.2 - plants rare, threatened, or endangered in California, but more common elsewhere, fairly threatened in California; 2B.3 - plants rare, threatened, or endangered in California, but more common elsewhere, not very threatened in California; 3.1 – plants about which more information is needed, seriously threatened in California; 3.2 – plants about which more information is needed, fairly threatened in California; 4.1 – plants of limited distribution, seriously threatened in California; 4.2 – plants of limited distribution, fairly threatened in California; 4.3 - plants of limited distribution, not very threatened in California

California State Rank:S1 — Critically imperiled in the state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state; S2 — Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state; S3 — Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation; S4 - Apparently secure; at a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible factors.

Agency listing status: BLM_S – BLM sensitive species; USFS_S – U.S. Forest Service sensitive species; Species of Conservation Concern - a plant or animal for which the USFS has concerns about its ability to remain on a landscape for a long time.

Source: CDFW 2024 and with a follow up review from CNDDB January 2025 Special Vascular Plants, Bryophytes, and Lichens List

9.2 Effects

Many special status plant species would not be affected by the Proposed Action because they have not been documented within riparian reserves, or along or on roads, where most of the restoration activities are proposed (Table 9-1). Some NNIS management may occur outside of riparian reserves, but this activity would be in already degraded habitat. Special status species that occur within the Project activity area are less likely to be affected with the implementation of CMs V-1 and V-2. Although whitebark pine, a federal ESA-listed as threatened species, has been documented within riparian reserves, with the implementation of CM V-3, effects on whitebark pine would be avoided, and the project activities would not affect whitebark pine.

Water conservation measures that would benefit wetland and riparian vegetation by maintaining or increasing instream flow and groundwater levels would also provide benefits to special status plant species that occur in riparian habitat. Proposed activities, such as restoration and enhancement of off-channel and side channel habitat, floodplain restoration, and wetland and riparian habitat enhancement could affect species within riparian reserves. Species that occur within riparian reserves or along roads are listed in Table 9-1. For species that have been documented within riparian reserves and/or adjacent to roads, project activities may affect individuals but are not likely to result in a trend toward Federal listing or loss of viability. With the implementation of CM V-1 and V-2, most effects on these species would be avoided. It was determined that species not known to occur in riparian reserves or adjacent to roads would not be affected, especially when CMs V-1 and V-2 are implemented. To avoid and minimize effects on a special status species, CMs V-1 and V-2, which include preconstruction surveys, species salvage and translocation, biological monitoring, and leaving plants in place, when possible, during project activities, would be implemented during site-specific activities. A full list of GPMs, design guidelines, and CMs is in Appendix B of the EA. These GPMs, design guidelines, and CMs would ensure that effects would not lead to a special status plant species population decline or result in a trend toward Federal listing or loss of viability. The proposed activities would result in short-term effects on species within riparian reserves and/or adjacent to roads but would provide long-term benefits as new habitat is created and disturbed areas are restored.

10. Non-native Invasive Species

10.1 Existing Conditions

NNIS occur throughout the Trinity River watershed, particularly in areas that have been subject to ground-disturbing activities (e.g., roads and recreation sites). NNIS affect the functions and values of native ecosystems. Further, under Executive Order (EO) 13112 as amended by EO 13751, executive departments and federal agencies are required to prevent the introduction of NNIS due to federal actions and to coordinate federal prevention and control efforts related to NNIS. Some of NNIS have a California Department of Food and Agriculture (CDFA) Pest rating of either C or as a CCR 4500 noxious weed (Table 10-1). The California invasive plant council (Cal-IPC) ratings are also provided in Table 10-1. In addition to the NNIS listed in Table 10-1, STNF maintains a list of priority species for NNIS management. Table 10-2 provides a list of STNF priority species.

Weed Management Areas (WMAs) are local organizations that bring together landowners and managers (private, city, county, state, and federal) in a county, multi-county, or other geographical area to coordinate

efforts and expertise against common invasive (noxious) weed species. The WMAs function under the authority of a mutually developed memorandum of understanding and are subject to statutory and regulatory weed control requirements. The lead agency for the WMAs is the CDFA. The Trinity County Weed Management Cooperative (TCWMC) acts as the local Trinity County WMA. TCWMC cooperators include the Trinity County Department of Agriculture, Trinity County Planning Department, Natural Resources Conservation Service, STNF, and the Trinity County Resource Conservation District.

Trinity County has weed eradication programs in place for spotted knapweed (*Centaurea maculosa*), diffuse knapweed (*Centaurea diffusa*), dalmatian toadflax (*Linaria genistifolia ssp. dalmatica*), and plumeless thistle (*Carduus acanthoides*). Table 10-1 lists other common invasive plant species known to occur within the Project activity area. Invasive plant species can occur with greater density in areas that have been previously disturbed such as road rights-of-way, areas near parking areas, around buildings, or bare areas from natural or human causes. Two especially prevalent species that are known to occur throughout the watershed are Himalayan blackberry (*Rubus armeniacus*) and yellow star thistle (*Centaurea solstitialis*).

Didymo is an invasive aquatic algae that forms a slimy mass and attaches to plants and rocks along stream bottoms. This organism can cover up to 100% of stream bottoms and has potential to cause ecological damage and disrupt stream ecosystems by causing higher mortality rates in fish and aquatic plants (Spaulding and Elwell 2007). Didymo has been documented to occur in the Trinity River from the Trinity Dam to Helena and spreads easily through contaminated fishing gear, watercraft, or vehicles.

Table 10-1. NNIS documented to occur in the HUC 10 watersheds and riparian reserves.

Scientific Name	Common Name	Documented within Riparian Reserves	Life Form/Habit	CDFA Rating[1]	Cal-IPC Rating[2]	Known in HUC 10 watershed[3]
Ailanthus altissima	tree of heaven	Yes	Tree	C	Moderate	Swift Creek- Trinity River, Stuart Fork, North Fork Trinity River, Upper Hayfork Creek
Bromus tectorum	cheatgrass	Yes	Grass	C	High	Big French Creek-Trinity River, Coffee Creek, Lower Hayfork Creek, Lower South Fork-Trinity River, New River, Tangle Blue Creek-Trinity River, Upper Hayfork Creek, Weaver Creek-Trinity River
Genista monspessulana	french broom	Yes	Shrub	C	High	Lower South Fork Trinity River, Swift Creek-Trinity Creek
Hypericum perforatum	common St. Johnswort	Yes	Perennial forb	C	Limited	Canyon Creek, Lower South Fork Trinity River, New River, North Fork Trinity River, Swift Creek-Trinity River, Upper Hayfork Creek
Aegilops triuncialis	barbed goatgrass	Yes	Grass	CCR 4500 noxious weed	High	Lower Hayfork Creek, Middle South Fork Trinity River
Cardaria chalepensis	hoary cress	Unknown	Perennial forb	CCR 4500 noxious weed	Moderate	Middle South Fork Trinity River
Carduus acanthoides	plumeless thistle	Unknown	Perennial forb	CCR 4500 noxious weed	Limited	No mapping available
Carduus nutans	nodding plumeless thistle	Yes	Perennial forb	CCR 4500 noxious weed	Moderate	Middle South Fork Trinity River
Carduus pycnocephalus	Italian plumeless thistle	Yes	Perennial forb	CCR 4500 noxious weed	Moderate	Big French Creek, North Fork Trinity River, Swift Creek Trinity River
Centaurea calcitrapa	purple star-thistle	Unknown	Perennial forb	CCR 4500 noxious weed	Moderate	Unknown
Centaurea diffusa	diffuse knapweed	Yes	Perennial forb	CCR 4500 noxious weed	Moderate	Lower Hayfork Creek, Lower South Fork Trinity River, Middle South Fork Trinity River, Upper Hayfork Creek, Weaver Creek-Trinity River

Scientific Name	Common Name	Documented within Riparian Reserves	Life Form/Habit	CDFA Rating[1]	Cal-IPC Rating[2]	Known in HUC 10 watershed[3]
Centaurea solstitialis	yellow star thistle	Yes	Perennial forb	CCR 4500 noxious weed	High	Big French Creek-Trinity River, Browns Creek, Canyon Creek, Coffee Creek, Lower Hayfork Creek, Lower South Fork Trinity River, Middle South Fork Creek Trinity River, New River, North Fork Trinity River, Stuart Creek, Swift Creek-Trinity River, Tangle Blue Creek-Trinity River, Upper Hayfork Creek, Upper South Fork Trinity River, Weaver Creek-Trinity River
Chondrilla juncea	rush skeletonweed	Yes	Perennial forb	CCR 4500 noxious weed	Moderate	Middle South Fork Trinity River
Cirsium arvense	Canada thistle	Yes	Perennial forb	CCR 4500 noxious weed	Moderate	Browns Creek, Coffee Creek, Lower Hayfork Creek, Lower South Fork Trinty River, Middle South Fork Trinity River, Upper Hayfork Creek, Upper South Fork Trinity River
Cirsium vulgare	bull thistle	Yes	Perennial forb	CCR 4500 noxious weed	Moderate	Big French Creek-Trinity River, Canyon Creek, Coffee Creek, Lower Hayfork Creek, Lower South Fork Trinity River, Middle South Fork Creek Trinity River, New River, North Fork Trinity River, Stuart Creek, Swift Creek-Trinity River, Tangle Blue Creek-Trinity River, Upper Hayfork Creek, Upper South Fork Trinity River, Weaver Creek-Trinity River
Cynara cardunculus	artichoke thistle	Unknown	Perennial forb	CCR 4500 noxious weed	Moderate	Unknown
Cytisus scoparius	Scotch broom	Unknown	Shrub	CCR 4500 noxious weed	High	Big French Creek-Trinity River, Lower Hayfork Creek, Lower South Fork Trinity River, Weaver Creek-Trinity River
Isatis tinctoria	Dyer's woad	Unknown	Annual to short-lived perennial forb	CCR 4500 noxious weed	Moderate	Big French Creek-Trinity River, Coffee Creek, East Fork Trinity River, Lower Hayfork Creek, Lower South Fork Trinity River, Middle South Fork Creek Trinity River, North Fork Trinity River, Stuart Creek, Swift Creek-Trinity River, Tangle Blue Creek-Trinity River, Upper South Fork Trinity River, Weaver Creek-Trinity River
Lepidium latifolium	perennial pepperweed	Unknown	Perennial forb	CCR 4500 noxious weed	High	Unknown

Scientific Name	Common Name	Documented within Riparian Reserves	Life Form/Habit	CDFA Rating[1]	Cal-IPC Rating[2]	Known in HUC 10 watershed[3]
Linaria genistifolia ssp. dalmatica	Dalmation toadflax	Unknown	Perennial forb	CCR 4500 noxious weed	Moderate	Big French Creek-Trinity River
Potentilla recta	sulphur cinquefoil	Yes	Perennial forb	CCR 4500 noxious weed	Watch	Big French Creek
Spartium junceum	Spanish broom	Yes	Shrub	CCR 4500 noxious weed	High	Big French Creek-Trinity River, Stuart Fork, Swift Creek-Trinity River
*Taeniatherum caput-medusae (*synonym = *Elymus caput-medusae)*	medusahead	Yes	Annual grass	CCR 4500 noxious weed	High	Lower Hayfork Creek, Middle South Fork Trinity River, Weaver Creek-Trinity River
Tribulus terrestris	puncturevine	Yes	Perennial forb	CCR 4500 noxious weed	Limited	Big French Creek-Trinity River
Avena barbata	slender oat	Yes	Grass	Not rated (STNF invasive species)	Moderate	Weaver Creek-Trinity River
Bromus diandrus	ripgut brome	Yes	Grass	Not rated (STNF invasive species)	Moderate	Lower South Fork Trinity River
Bromus madritensis ssp. rubens	red brome	Yes	Grass	Not rated (STNF invasive species)	High	Lower South Fork Trinity River
*Centaurea maculosa (*synonym = *Centaurea stoebe ssp. micranthos)*	spotted knapweed	Yes	Perennial forb	CCR 4500 noxious weed	High	Big French Creek-Trinity River, Lower Hayfork Creek, Middle South Fork Trinity River, New River, Stuart Creek, Swift Creek Trinity River, Tangle Blue Creek-Trinity River, Upper Hayfork Creek
Conium maculatum	poison hemlock	Yes	Perennial forb	Not rated (STNF invasive species)	Moderate	Lower South Fork Trinity River
Cynoglossum officinale	gypsyflower	Yes	Perennial forb	Not rated (STNF invasive species)	Moderate	Stuart Creek
Didymosphenia geminata	didymo	Yes	Aquatic diatom	Not rated (STNF invasive species)	No rating provided	Stuart Fork, Weaver Creek-Trinity River, Big French Creek-Trinity River

Scientific Name	Common Name	Documented within Riparian Reserves	Life Form/Habit	CDFA Rating[1]	Cal-IPC Rating[2]	Known in HUC 10 watershed[3]
Digitalis purpurea	purple foxglove	Yes	Perennial forb	Not rated (STNF invasive species)	Limited	Coffee Creek
Foeniculum vulgare	sweet fennel	Yes	Perennial forb	Not rated (STNF invasive species)	Moderate	Big French Creek-Trinity River, Tangle Blue Creek-Trinity River, Upper Hayfork Creek
Holcus lanatus	common velvetgrass	Yes	Grass	Not rated (STNF invasive species)	Moderate	Stuart Creek
Hordeum marinum ssp. gussoneanum	Mediterranean barley	Yes	Grass	Not rated (STNF invasive species)	Moderate	Lower Hayfork Creek, Lower South Fork Trinity River, Middle South Fork Trinity River
Ilex aquifolium	English holly	Yes	Shrub, tree	Not rated (STNF invasive species)	Limited	Swift Creek-Trinity River
Lathyrus latifolius	perennial pea	Yes	Perennial forb	Not rated (STNF invasive species)	Watch	Big French Creek-Trinity River, Coffee Creek, Lower South Fork Trinity River, Middle South Fork Creek Trinity River, New River, North Fork Trinity River, Stuart Creek, Swift Creek-Trinity River, Tangle Blue Creek-Trinity River, Upper Hayfork Creek, Weaver Creek
Leucanthemum vulgare	oxeye daisy	Yes	Perennial forb	Not rated (STNF invasive species)	Moderate	New River
Melilotus albus	sweetclover	Yes	Perennial forb	Not rated (STNF invasive species)	No rating provided	Lower Hayfork Creek, Middle South Fork Trinity River
Phalaris aquatica	bulbous canarygrass	Yes	Grass	Not rated (STNF invasive species)	Moderate	North Fork Trinity River
Robinia pseudoacacia	Black locust	Unknown	Tree	Not rated (STNF invasive species)	Limited	Big French Creek-Trinity River, North Fork Trinity River, Weaver Creek-Trinity Creek

Scientific Name	Common Name	Documented within Riparian Reserves	Life Form/Habit	CDFA Rating[1]	Cal-IPC Rating[2]	Known in HUC 10 watershed[3]
Rubus armeniacus	Himalayan blackberry	Yes	Shrub	Not rated (STNF invasive species)	High	Big French Creek-Trinity River, Coffee Creek, Lower South Fork Trinity River, New River, North Fork Trinity River, Swift Creek-Trinity River, Upper Hayfork Creek, Weaver Creek-Trinity River
Rubus laciniatus	cutleaf blackberry	Yes	Shrub	Not rated (STNF invasive species)	No rating provided	Weaver Creek-Trinity River
Saponaria officinalis	bouncingbet	Yes	Perennial forb	Not rated (STNF invasive species)	Limited	Weaver Creek-Trinity River
Verbascum blattaria	moth mullein	Yes	Perennial forb	Not rated (STNF invasive species)	No rating provided	North Fork Trinity River
Verbascum thapsus	common mullein	Yes	Perennial forb	Not rated (STNF invasive species)	Limited	Big French Creek-Trinity River, Canyon Creek, Coffee Creek, Lower Hayfork Creek, Lower South Fork Trinity River, Middle South Fork Creek Trinity River, New River, Stuart Creek, Swift Creek-Trinity River, Upper Hayfork Creek, Upper South Fork Trinity River
Vinca major	bigleaf periwinkle	Yes	Perennial forb	Not rated (STNF invasive species)	Moderate	New River

[1]CDFA rating: C - State endorsed holding action and eradication only when found in a nursery; action to retard spread outside of nurseries at the discretion of the commissioner; reject only when found in a cropseed for planting or at the discretion of the commissioner. CCR 4500 noxious weed – the specific purpose of section 4500 is to provide authority to the state to regulate the movement of the listed noxious weed species into or within California

[2]High - These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically. Moderate - These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread. Limited - These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic. Alert - An Alert is listed on species with High or Moderate impacts that have limited distribution in California but may have the potential to spread much further. Watch - These species have been assessed as posing a high risk of becoming invasive in the future in California.

[3]Mapping locations provided from STNF Forest Biologist

CDFA Weed Pest Ratings and CCR 4500 Noxious Weeds as of June 22, 2021.

Table 10-2. STNF NNIS Priority List

Species	Common Name	Cal-IPC Raing	CDFA Rating	Family
Terrestrial Species				
Acroptilon repens (Rhaponticum repens)	Russian knapweed	Moderate	CCR 4500	Asteraceae
Aegilops cylindrica	jointed goatgrass	Watch	CCR 4500	Poaceae
Aegilops triuncialis	barb goatgrass	High	CCR 4500	Poaceae
Ailanthus altissima	tree-of-heaven	Moderate	C / CCR 4500	Simaroubaceae
Alliaria petiolata	garlic mustard	Moderate	No rating	Brassicaceae
Arundo donax	giant reed	High	CCR 4500	Poaceae
Carduus acanthoides	plumeless thistle	Limited	CCR 4500	Asteraceae
Carduus nutans	musk thistle	Moderate	CCR 4500	Asteraceae
Carduus tenuiflorus and C. pycnocephalus	slenderflower and Italian thistle	Moderate	CCR 4500	Asteraceae
Centaurea diffusa	diffuse knapweed	Moderate	CCR 4500	Asteraceae
Centaurea jacea nothossp. pratensis (= Centaurea debeauxii)	meadow knapweed	Moderate	CCR 4500	Asteraceae
Centaurea melitensis	Malta starthistle, tocalote	Moderate	CCR 4500	Asteraceae
Centaurea solstitialis	yellow starthistle	High	CCR 4500	Asteraceae
Centaurea stoebe ssp. micranthos (= Centaurea maculosa)	spotted knapweed	High	CCR 4500	Asteraceae
Centaurea virgata ssp. squarrosa	squarrose knapweed	Moderate	CCR 4500	Asteraceae
Chondrilla juncea	rush skeletonweed	Moderate	CCR 4500	Asteraceae
Cirsium arvense	Canada thistle	Moderate	CCR 4500	Asteraceae
Cortaderia jubata	jubatagrass	High	CCR 4500	Poaceae
Cortaderia selloana	pampasgrass	High	No rating	Poaceae
Cynara cardunculus	artichoke thistle	Moderate	CCR 4500	Asteraceae
Cynoglossum officinale	houndstongue	Moderate	No rating	Boraginaceae
Cytisus scoparius	Scotch broom	High	CCR 4500	Fabaceae
Dittrichia graveolens	stinkwort	Moderate	CCR 4500	Asteraceae
Elymus caput-medusae (= Taeniatherum caput-medusae)	medusahead	High	CCR 4500	Poaceae
Euphorbia lathyris	caper spurge	Watch	No rating	Euphorbiaceae
Euphorbia oblongata	Oblong spurge	Limited	CCR 4500	Euphorbiaceae
Euphorbia virgata (= Euphorbia esula)	leafy spurge	High	CCR 4500	Euphorbiaceae

Species	Common Name	Cal-IPC Raing	CDFA Rating	Family
Fallopia japonica (= Polygonum cuspidatum)	Japanese knotweed	Moderate	A / CCR 4500	Polygonaceae
Genista monspessulana	French broom	High	C / CCR 4500	Fabaceae
Holcus lanatus	common velvet grass	Moderate	No rating	Poaceae
Ilex aquifolium	English holly	Limited	No rating	Aquifoliaceae
Isatis tinctoria	dyer's woad	Moderate	CCR 4500	Brassicaceae
Lathrus latifolius	perennial sweet pea	Watch	No rating	Fabaceae
Lepidium appelianum (= Cardaria pubescens)	hairy whitetop	No rating	No rating	Brassicaceae
Lepidium chalepense (= Cardaria chalepensis and C. draba)	Lenspod whitetop and whitetop	No rating	CCR 4500	Brassicaceae
Lepidium latifolium	perennial pepperweed	High	CCR 4500	Brassicaceae
Linaria dalmatica ssp. dalmatica (= Linaria genistifolia ssp. dalmatica)	Dalmatian toadflax	Moderate	CCR 4500	Plantaginaceae
Lythrum salicaria	purple loosestrife	High	CCR 4500	Lythraceae
Melilotus albus	sweetclover	No rating	No rating	Fabaceae
Melilotus officinalis	yellow sweetclover	No rating	No rating	Fabaceae
Onopordum acanthium	Scotch thistle	High	CCR 4500	Asteraceae
Rubus armeniacus (= Rubus discolor)	Himalayan blackberry	High	No rating	Rosaceae
Rubus laciniatus	cutleaf blackberry	No rating	No rating	Rosaceae
Sesbania punicea	red sesbania, scarlet wisteria	High	CCR 4500	Fabaceae
Sorghum halepense	Johnson grass	No rating	No rating	Poaceae
Spartium junceum	Spanish broom	High	CCR 4500	Fabaceae
Tamarix parviflora	smallflower tamarisk	High	CCR 4500	Tamaricaceae
Tamarix ramosissima	saltcedar, tamarisk	High	CCR 4500	Tamaricaceae
Tribulus terrestris	punctureVine	Limited	CCR 4500	Zygophyllaceae
Ventenata dubia	North Africa grass	Watch	No rating	Poaceae
Verbena bonariensis	tall vervain, seashore vervain	Watch	No rating	Verbenaceae
Aquatic Species				
Alternanthera philoxeroides	alligator weed	High	A	Amaranthaceae
Didymosphenia geminata	Didymo / rock snot	No rating	No rating	diatomaceous algae
Dopatrium junceum	Horsefly's eye	No rating	No rating	Plantaginaceae

Species	Common Name	Cal-IPC Raing	CDFA Rating	Family
Eichhornia crassipes	water hyacinth	High	No rating	Pontederiaceae
Limnobium spongia	South American spongeplant	High	CCR 4500	Hydrocharitaceae
Ludwigia hexapetala	Uruguay and creeping water-primrose	High	C / CCR 4500	Onagraceae
Ludwigia peploides	creeping water-primrose	High	No rating	Onagraceae
Myriophyllum aquaticum	parrotfeather	High	C	Haloragaceae
Myriophyllum spicatum	Eurasian watermilfoil	High	No rating	Haloragaceae

Source: STNF Forest Botanist (01/31/2025); CDFA ratings updated based on CDFA Weed Pest Ratings and CCR 4500 Noxious Weeds as of June 22, 2021.

For definitions, see footnotes below Table 10-1.

10.2 Effects

One of the activities for the Proposed Action is to restore and enhance aquatic, wetland, riparian and upslope habitats by removing NNIS and revegetating with native plants. This activity would have a beneficial effect on native plant communities. Implementation of restoration activities could result in the spread of NNIS, some of which are listed on the CDFA noxious weed list. Prior to any disturbance, noxious weeds would be inventoried and managed according to treatment plans for specific species. Several CMs (Appendix B) are proposed that would reduce the spread of invasive and noxious weeds before, during, and following site-specific project activities. Protocols would be followed to ensure vehicles are not spreading seeds or vegetative parts of noxious weeds.

The invasive aquatic species didymo could spread easily into new areas during instream activities if construction vehicles, hand tools, or contractors' boots have been in areas where it exists and are not cleaned properly. Once in a stream, this organism can alter the stream environment including invertebrate and fish species diversity and population size (Spaulding and Elwell 2007). Effects on the abundance and diversity of benthic macroinvertebrates from the spread of didymo would eventually adversely affect fish and other organisms that feed on them. Extensive mats of didymo could impact stream processes, including ecosystem metabolism and nutrient cycling. CM NNIS-11 would eliminate the possibility of this species spreading from project activities. CMs such as educating the contractors working on restoration projects and thoroughly cleaning equipment coming from other streams would prevent the spread of didymo. With the use of CMs, the effect of the Proposed Action on the spread of didymo would be minor.

Federal EO 13112 as amended by EO 13751 requires federal agencies to use relevant programs and authorities to:

- Prevent the introduction of invasive species and provide for their control;
- Detect and control populations in a cost-effective and environmentally sound manner;
- Provide for restoration of native species;
- Promote public education on invasive species;
- Not authorize, fund or carry out actions to cause or promote the spread or introduction of invasive species; and
- Coordinate Federal prevention and control efforts related to invasive species.

Trinity County has several policies that discourage the use of synthetic herbicides for weed control. The Board of Supervisors has passed the following resolutions declaring forest herbicides a public nuisance:

- Resolution # 45-91 – April 2, 1991: Declares that the application of forestry herbicides in Trinity County is a public nuisance and that alternatives to forestry herbicides are available that create jobs. The resolution proclaims Trinity County timberlands an herbicide-free zone and requests forest managers not use herbicides on Trinity County timberlands.
- Resolution re-declaring the application of forest herbicides in Trinity County a public nuisance – April 7, 1997: This resolution identifies dangers associated with herbicide use and declares their use a public nuisance.
- Resolution # 2004-066 – July 20, 2004: This resolution acknowledges Trinity County's history of concerns about spraying herbicides and reaffirms its stance that herbicides are a public nuisance, and that Trinity County is an herbicide-free zone.

County ordinances would not apply to USFS lands; regardless, TRRP has determined that herbicides would not be used to control NNIS in the Project activity area as part of the Proposed Action. Some species, including Himalayan blackberry, scotch broom, tree of heaven, and yellow star thistle, are difficult to impossible to control without herbicides. For example, tree of heaven has been observed to come back aggressively within five years with more stems and vegetative volume when it is chopped or mowed. Management of these species would likely be labor and time intensive through manual or mechanical removal and continued monitoring and management. Without the use of herbicides, these species may spread into more areas than they currently occupy. For other species, GPMs, design guidelines, and CMs would avoid and minimize the spread of NNIS from the implementation of project activities. The net effect of controlling existing NNIS, using these environmental commitments to prevent new infestations and replanting native species, would be an overall benefit on native vegetation communities, but the benefits may be diminished by the increase in Himalayan blackberry, tree of heaven, scotch broom, and yellow star thistle, which would have minor adverse effects throughout the Project activity area.

11. Regional Effects

Regional effects include the short- and long-term impacts of the Project together with the past, present, and future actions of other projects. This analysis looks at other actions that have affected or could affect the same resources as action alternatives, in this case, vegetation and wetland resources. The effects of past actions are reflected in the descriptions of current existing conditions. Lands in the vicinity of the Project activity area include USFS-, BLM-, and privately-owned land.

Potential adverse effects of the Project on vegetation resources consist of temporary vegetation removal, adverse effects to special status plant species habitat, and NNIS spread from project activities. The incremental effects on vegetation resources are considered in relation to several past, present, and reasonably foreseeable actions, including cannabis farming, residential development, resources extraction, wildland fire control, fuels reduction, aquatic habitat restoration, and increased average temperatures and precipitation extremes that could contribute to regional effects.

11.1 Cannabis Farming

In 2018, the State of California legalized the recreational use of cannabis, as well as the cultivation and manufacture of cannabis plants and products. In Trinity and Humbold counties, there are many cannabis farms which collectively reduce flow volume and increase discharge of waste and pollutants in streams which affects water quantity and quality in the Project activity area. Presently, there is no watershed scale evaluation of the effects of cannabis farming on aquatic habitat in the Trinity River or to particular streams from cannabis farms. The operation of cannabis farms throughout the watershed will continue to negatively affect aquatic resources in the Trinity River and tributaries (NMFS 2020).

Illegal cannabis gardens on public lands also occurs. Marijuana cultivation on USFS land is an illegal activity. The Forest Service law enforcement actively searches for and removes any grow-sites found; however, it is unknown how many sites exist on national forest land. This illegal activity contributes to the loss of native vegetation communities, could adversely affect habitat for special status species, and spread NNIS.

11.2 Residential Development

Human population growth in the Project activity area is expected to remain relatively stable over the next 10 years as California's economy continues to recover from a long-lasting nationwide recession. The recession has had significant economic impacts at both the statewide and local scales with widespread impacts to residential development and resource industries such as timber and fisheries. However, some development will continue to occur which, on a small-scale, can affect localized aquatic habitat. Once development and associated infrastructure (e.g., roads, drainage, and water development) are established, the effects to aquatic species are expected to be permanent (NMFS 2020).

Anticipated effects to aquatic resources include loss of riparian vegetation, changes to channel morphology and dynamics, altered hydrologic regimes (increased storm runoff and increased water diversions for residential use), increased sediment loading, and elevated water temperatures where shade-providing canopy is removed (NMFS 2020).

The presence of structures and/or roads near waters may lead to the removal of large wood to protect those structures from flood impacts. The anticipated effects on vegetation resources from continued residential development are expected to be sustained and locally intense. Commonly, there are also effects of home pesticide use and roadway runoff of automobile pollutants, introductions of invasive species to nearby streams and ponds, and loss of riparian and upland habitat due to land clearing activities. All these factors associated with residential development can have negative effects on vegetation resources by impacting vegetation communities and habitat for special status species. However, population growth rate in Trinity County decreased by about 11% between 2010 and 2019 (U.S. Census Bureau 2020). This may indicate a trend that could ameliorate or reduce the effects of residential development (NMFS 2020).

11.3 Resource Extraction

Resource-based industries are likely to continue to have an influence on environmental conditions within the Project activity area for the indefinite future. Logging continues to be conducted on both public and private lands throughout the HUC 10 watersheds, except in Canyon Creek (Reclamation 2019). STNF's vegetation management projects include those for forest health/thinning and fuels reduction. Some mining for gravel, aggregate, and minor precious metals occurs on the Trinity River floodplain and a few tributary watersheds. If flow is decreased by mining operations, riparian vegetation could be affected. The lack of protective measures in existing regulatory mechanisms, including land management plans (e.g., State Forest Practice Rules), contributes in varying degrees to the decline of vegetation resources. However, resource extraction industries have adopted management practices that reduce many of their most harmful impacts, which were unknown or not commonly used until recently (NMFS 2020). The STNF regularly implements forestry projects using resource protection measures and BMPs to reduce sedimentation into streams and otherwise reduce effects to environmental resources.

11.4 Wildland Fire Control and Fuels Reduction

Control of wildland fires may include the removal or modification of vegetation due to the construction of firebreaks or setting of backfires to control the spread of fire. This removal of vegetation can trigger post-fire

landslides as well as create chronic sediment erosion. In addition, the use of fire retardants may adversely affect vegetation communities.

Fuels reduction is often employed by BLM and USFS to proactively prevent wildfires or to slow the spread of fire, especially near human structures. The BLM has initiated the Statewide Wildland Urban Interface Fuels Treatments (SWFT) program (BLM 2023). Fuels reduction treatments are intended to reduce fire by modifying the vegetation structure, density, and fuel loads by removing live and dead vegetation. Fuels reduction implementation affects vegetation resources by removing, altering, or destroying native vegetation and altering habitat for special status species. It would also create conditions favorable for the spread of noxious weeds/invasive species. Reducing fuels in specific areas may prevent catastrophic wildfires that would alter a greater number and acreage of native communities and special species habitats. Fuels reduction is proposed more often in and adjacent to the Wildland Urban Interface. Streams create a natural fire break, and most fuels reduction treatments would not affect streams or riparian habitat. Because the Project restoration activities would improve and increase native vegetation, the Proposed Action would offset some of the loss of vegetation from fuels reduction and would not add incrementally to regional effects.

11.5 Aquatic Habitat Restoration

Since 2009, the TRRP has implemented Trinity River mainstem channel rehabilitation projects at all the Phase 1 channel rehabilitation sites named in the 2000 Master EIR and at nine of the Phase 2 sites. The Deep Gulch and Sheridan sites were constructed in 2017. The Bucktail site constructed in 2008 was expanded in 2016 to include additional areas. The Dutch Creek project was constructed in 2020. The Chapman Ranch Phase A site was constructed in 2019, and the Phase B site was completed in 2021. The Oregon Gulch project was completed 2023. These mainstem projects have restore riparian vegetation by creating a greater diversity of wetland and riparian habitat within the Trinity River floodplain.

TRRP continues to add sediment within the 40-mile reach downstream of Lewiston Dam. In addition, TRRP-managed flows have been implemented yearly since 2004. Ongoing monitoring efforts by TRRP partners continue to document improvements in aquatic habitat use, alluvial processes, and riparian vegetative communities along the mainstem.

Beyond TRRP's mainstem channel rehabilitation and sediment augmentation projects, there have been several restoration and road sediment reduction projects implemented by various agencies and organizations throughout the Trinity River watershed. While some of these were considered in the 2009 Master EIR, USFS, Five Counties Salmonid Conservation Program, Watershed Research and Training Center, Trinity County Resource Conservation District, Northwest Resource Conservation and Development Council, Yurok Tribe, Hoopa Valley Tribe, Nor Rel Muk Wintu Nation, and other local nonprofits and governments have been funded for and/or completed additional projects intended to improve watershed conditions, restore aquatic habitat, improve aquatic connectivity, and reduce road-related sediment delivery to streams and rivers. These watershed restoration projects are intended to improve water quantity and quality as well as spawning and rearing habitat in the Trinity River watershed.

11.6 Conclusion

Restoration activities and NNIS control under the Proposed Action would have long-term benefits on native vegetation communities. The Proposed Action and past, present, and future restoration projects would offset the adverse effects on wetland and riparian habitat and other vegetation communities from cannabis farming, residential development, resource extraction, and wildland fires. The Proposed Action could have minor adverse effects on the vegetative communities throughout the Project activity area because NNIS, such as tree of heaven, scotch broom, Himalayan blackberry, and yellow star thistle, may spread and become more abundant and vigorous when only managed with manual or mechanical treatments. If cannabis farming (legal and illegal), residential development, resource extraction, wildland fire control, and fuels reduction also cause these invasive species to spread, the overall regional effect on vegetation resources including wetland and riparian vegetation, would be a minor adverse effect.

The Proposed Action would have long-term beneficial effects on special status plant species as more disturbed habitat is restored and floodplains become more connected with the streams. No potentially adverse regional effects on special status plant species are anticipated from the Proposed Action.

12. References

Bureau of Land Management (BLM). 2023. *Programmatic Environmental Assessment Statewide Wildland Urban Interface Fuels Treatments.* https://eplanning.blm.gov/public_projects/2016583/200502688/20083595/250089777/Final%20Programmatic%20EA%20SWFT_07AUG2023.pdf.

---. June 2024 2024. *Northwest California Integrated Proposed Resource Management Plan and Final Environmental Impact Statement.* https://eplanning.blm.gov/eplanning-ui/project/2012803/570.

Buxton, T. H. 2021. *History of fine sediment and its impacts on physical processes and biological populations in the restoration reach of the Trinity River, CA.* Trinity River Restoration Program (Weaverville, California). Report TRRP-2021-1. https://www.trrp.net/library/document?id=2483.

California Department of Fish and Game (CDFG). 2004. *Recovery Strategy for California Coho Salmon.* https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=99401&inline.

California Department of Fish and Wildlife (CDFW). 2024. "California Natural Diversity Database (CNDDB)." Accessed May 2024. https://wildlife.ca.gov/Data/CNDDB.

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States.* U.S. Department of the Interior Fish and Wildlife Service, Office of Biological Services (Washington, D.C.). https://pubs.usgs.gov/publication/2000109; https://mtnhp.org/nwi/Cowardin.pdf.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual.* U.S. Army Corps of Engineers (Vicksburg, MS). Wetlands Research Program Technical Report Y-87-1. https://www.nrc.gov/docs/ML1217/ML12178A585.pdf.

Gale, D.B, and D.B. Randolph. 2000. *Lower Klamath River Sub-basin Watershed Restoration Plan.* . Yurok Tribal Fisheries Program (Klamath, CA).

National Marine Fisheries Service (NMFS). 2014. *Final Recovery Plan for the Southern Oregon/Northern California Coast (SONCC) Evolutionarily Significant Unit of Coho Salmon (Oncorhynchus kisutch).* National Marine Fisheries Service (Arcata, California). http://www.trrp.net/library/document?id=2398.

---. 2020. *Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Trinity River Restoration Program's Mechanical Channel Rehabilitation, Sediment Management, Watershed Restoration, and Monitoring Actions in Trinity County, California.* (Santa Rosa, California). https://www.trrp.net/library/document?id=2472.

Spaulding, S. A., and L. Elwell. 2007. *Increase in Nuisance Blooms and Geographic Expansion of the Freshwater Diatom Didymosphenia geminata.* https://pubs.usgs.gov/of/2007/1425/report.pdf.

U.S. Army Corps of Engineers (USACE). 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0).* Environmental Laboratory, ERDC/EL TR-10-3. https://usace.contentdm.oclc.org/utils/getfile/collection/p266001coll1/id/7646.

U.S. Bureau of Reclamation (Reclamation). 2019. *Threatened, Endangered, and Proposed Fish Species that May be Affected by the Trinity River Restoration Program's Mechanical Channel Rehabilitation, Sediment Management, Watershed Restoration, and Monitoring Actions [Biological Assessment and Essential Fish Habitat Assessment For the Trinity River Restoration Program, California].* (Weaverville, California). www.trrp.net/library/document?id=2471.

U.S. Census Bureau. 2020. "QuickFacks, Trinity County, California: United States " V2023." https://www.census.gov/quickfacts/fact/table/trinitycountycalifornia,US/PST045223.

U.S. Department of Agriculture (USDA) Forest Service. 1995. *Land and Resource Management Plan.* (Washington, DC). https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5209391.pdf.

U.S. Environmental Protection Agency (EPA). 2001. *Trinity River Total Maximum Daily Load for Sediment.* EPA Region IX. https://archive.epa.gov/region09/water/archive/tmdl/trinity/finaltrinitytmdl.pdf.

U.S. Environmental Protection Agency (EPA), Region IX. December 1998. *South Fork Trinity River and Hayfork Creek Sediment Total Maximum Daily Loads.* https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/trinity_river_south_fork/pdf/fsftmdl.pdf.

U.S. Fish & Wildlife Service (USFWS). 2024a. "IPaC Information for Planning and Consultation." https://ipac.ecosphere.fws.gov/.

---. 2024b. "National Wetlands Inventory, Wetlands Mapper." https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper.

---. 2025. Programmatic Biological and Conference Opinion California Statewide Programmatic Restoration Effort. FWS Reference: 2022-0005149-S7. https://www.fws.gov/sites/default/files/documents/2025-02/final-reinitiated-pbo-20250207-2022-005149-s7.pdf

U.S. Fish & Wildlife Service (USFWS), and Hoopa Valley Tribe (HVT). 1999. *Trinity River Flow Evaluation. Final Report.* (Washington, D.C.). https://www.trrp.net/library/document?id=226.

U.S. Fish & Wildlife Service (USFWS), U.S. Bureau of Reclamation (USBR), Hoopa Valley Tribe (HVT), and Trinity County. 2000. *Trinity River Mainstem Fishery Restoration Final Environmental Impact Statement Record of Decision.* https://www.trrp.net/program-structure/background/rod/.

U.S. Forest Service (Forest Service), and Bureau of Land Management (BLM). 1994. *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl.* https://www.fs.usda.gov/r6/reo/library/downloads/documents/NWFP-FSEIS-1994-I.pdf.